

A Study on Risk Quantification of Indian Equity Markets Adopted by Beta Analysis

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ABSTRACT

Equity capital represents ownership capital, equity shareholders collectively own the company. They equity shares appear to be the most romantic. While fixed income investment avenues may more important to most of the investors, equity shares seem to capture their interest the most. The potential rewards and penalties associated with equity shares making them an interesting, even exciting, proposition. The amount of capital that a company can issue as per its memorandum represents the authorized capital. The amount offered by the company to the investors is called the issued capital. That part of the issued capital that has been subscribed to by the investors is called the subscribed capital; the actual amount paid is called the paid up capital. Typically the issued, subscribed, and paid-up capitals are the same. The par value is stated in the memorandum and written on the share scrip.

1. INTRODUCTION

The evolution of capital market for formal trading can be traced back to 1861 i.e. during the period of American Civil War. Several companies came to formal existence during this period, which were into the business of exports to the United Kingdom and the United States of America. This triggered need for formal banking system as an outcome good number of banks came into existence creating formal financial system in their respective economies, undertaking various financial transactions for their clients/customers across their trading continents. These financial institutions were commonly registered under the British Companies Act. With the onset of globalization and the subsequent policy reforms, significant improvements have been made in the area of securities market in India. Dematerialization of shares was one of the revolutionary steps that the government implemented. This led to faster and cheaper transactions, and increased the volumes traded by many folds. The adoption of the market-oriented economic policies and online trading facility transformed Indian equity markets from a broker-regulated market to a mass market. This boosted the sentiment of investors in and outside India and elevated the Indian equity markets to the standards of the major global equity markets.

Equity Markets and its Operations in India

2. STATEMENT OF THE PROBLEM

Equity markets in India have seen a metamorphic change in the past two decades exposing the markets and its participants to various kinds of risks and valuations. Valuation is the process of assigning a rupee value to a specific share. It states the true or intrinsic value of an asset. An ideal valuation technique would assign an accurate value to all shares. In general valuation is a

complex topic, no single valuation model can truly predict the intrinsic value of a share and no valuation model can predict with certainty how the price of a share will vary in future. There are different types of valuation models like balance sheet valuation which is based on accounting information like book value, liquidation value, replacement cost, discounted cash flow techniques like dividend discount model, free cash flow model and relative valuation techniques like price earnings ratio, price to book value ratio, price – sales ratio. However valuation models provide a basis to compare the relative merits of two different shares. Among all these market value is most watched by investment and fund managers.

Valuation in this study refers to equity market value. Equity valuation is a central question which the fund managers, investment advisors, and stock brokers in the field of Capital markets are trying to address through different angles with various clues. As most of the fund managers, individual investors and investment advisors in the process of valuation facing challenges in determining the right avenue for investment. In this regard they try to analyze the fundamental factors which are related to economy such as GDP growth, inflation related factors majorly, and then start analyzing industry related factors, to choose a specific company for investment, and there starts a need, for investment managers to collect the company specific information (accounting variables) relating to companies for assessment of equity valuation. In this background they undertake a number of valuation tools that can facilitate them in assessing the right potential and information about the price of securities that the trader will be waiting for taking various investment decisions like buying of shares, selling of shares or for holding of shares.

Risk also plays a prominent role towards portfolio construction by different fund managers, investment advisors and stock brokers. Risk is an unfavourable deviation from expected returns. In the Indian books the risk is defined as the actual outcome of an investment will differ from the expected outcome. This risk is divided into two types i.e., systematic risk and unsystematic risk. Systematic risk deals with a kind of risk which is uncontrollable, unavoidable and unpredictable in nature, on the other hand unsystematic risk is a kind of risk which is controllable, avoidable and predictable in nature. As the risk and return being considered as two faces of a coin, if there is any increase in risk then automatically it may lead to increase in return and vice versa. So, risk and return go hand in hand and help the fund managers for portfolio construction and hedging of shares.

3. REVIEW OF LITERATURE

James A. Gentry (1982) In this study, In order to use the capital asset pricing model (CAPM) to make operating and financial decisions, financial managers must confront the problem of estimating a security's systematic risk, or beta. By regressing the time series of a security's realized financial return on the contemporaneous realized financial return on a market portfolio is the approach adapted to this problem. This paper adds to this body of knowledge by developing and analyzing a model that demonstrates how the degrees of operating and financial leverage, along with the coefficient of variation of revenue and a cash flow correlation coefficient, affect a security's systematic risk, expected return, and value. It also provides a simple conceptualization of the sources of systematic risk: revenue variability, its magnification by operating and financial leverage, and the degree of sensitivity of the firm's cash flow to developments in the economic and financial environment.

Steven Toms, (2005) this study derives that operating and financial measures of leverage and tests their association with market based measures of equity risk. The percentage changes are computed using data from 1997 to 2003 inclusive to compute ratios for 1998 to 2003 and then averaged. It is the first such study to use purely accounting-based data to derive the leverage measures. In line with previous literature it conducts a new test on the relative importance of operating and financial leverage. The linear relationship between operating cost and stock market beta suggest there is a security market line equivalent representing the underlying fixed costs of the business. The results suggest that operating costs have a greater impact.

4. OBJECTIVES OF THE STUDY

- To assess the impact of selected accounting variables in quantification adopted by beta analysis in Indian Equity Market.
- To study the variables in assessing market value and risk by the fund managers.

5. SCOPE OF THE STUDY

This study is exclusively made to understand, and analyze the usage of accounting variables, with Market Value to Valuation of equity markets and with Beta to Risk quantification of Indian equity markets. There are few models existing related to valuations. However valuation models provide a basis to compare the relative merits of two different shares. Market value is determined by fundamental factors such as economy, industry, and company specific risk factors and the study is confined to accounting related variables. Valuation in this study refers to equity market value. The evaluation of the market performance of real value of selected 50 companies using financial statements like balance sheet, profit and loss accounts and annual reports of selected companies. Since beta is related to company factors it is included in the study, and the total risk is confined to economy related factors, so it is excluded from the study.

6. METHODS OF DATA COLLECTION

The study is basically an empirical in nature. The data for the present study are collected from both primary and secondary sources. Primary data are collected by administering a structured questionnaire to 50 respondents. They are the stock brokers, investment advisors, and fund managers in different private and public limited companies. However, secondary data is collected from capital line database, Bangalore stock exchange, the top 50 companies selected, which are listed in both NSE and BSE for the period of 5 years, from the year 2012-2013 to 2017-2018.

SAMPLING

For the study the researcher has collected two types of samples for collecting the required data. Firstly from secondary sources the data available in capital line database from Bangalore stock exchange for the period of five years i.e. from the year 2012 – 2017. For the study the top 50 companies is selected in the ranking of companies by market value as listed by Business To-day survey for 2017. This top 50 companies sample includes almost all the sectors for the study. For

the collection of data purposive sampling is conducted to fulfil the said objectives from fund managers. For the study a sample size of 50 respondents are selected to collect the primary data.

7. LIMITATIONS OF THE STUDY

The calculations are based on an analysis of only five year data and to make generalizations of dependence, we need to take samples of companies over about 25-30 years, and run a panel data regression. The companies selected for the study is about only 50 in number. Results derived are only a comprehensive insight about the India's most valuable companies list of 500 companies and hence the characteristics cannot be generalized. For the collection of primary data only 50 respondents been chosen from the field.

REFERENCE PERIOD

The required primary data collection was commenced on 11.02.2016 to 25.06.2018 from the different stock brokers, fund managers and few investment advisors, who belongs to the public and private limited companies and the secondary data is collected from capital line database for the period of five years from 2017 to 2018.

INTERCEPT VALUES OF EARNINGS PER SHARE OF INDIAN EQUITY MARKETS (2012-13 TO 2016-17)

YEAR	INTERCEPT	T - VALUES	P – VALUES
2012-13	16.69	1.17	0.24
2013-14	72.05	3.80	0.00
2014-15	10.01	0.78	0.43
2015-16	27.85	1.78	0.81
2016-17	66.25	2.90	0.00

Source: The Inferential analysis is carried at a significance level of 5%.

TABLE NO 1

The above table shows regression coefficient beta is significant in all the 5 years that we have analyzed. Hence we can conclude that EPS and market value of equity share in the Indian context are positively related. We accept the hypothesis of this study. Above table gives the details of intercept values analysis of an accounting variable Earnings per Share of selected sample companies. The results clearly show that the intercept values except for year 2012-13 and 2016-17, 72.05 and 66.25 are not significant. We are in-conclusive regarding the intercept values. We need to analyze the data over a longer period of time to get a clear picture of the behaviour of the intercept. We have analyzed data over only 5 years. We see that in the following table the regression coefficient beta is significant in all the 5 years that we have analyzed. Hence we can conclude that EPS and market value of equity share in the Indian context are positively related. We accept the hypothesis of this study. The observation reveals that the selected accounting variable is having a linear relationship existing with beta value.

ANALYSIS OF REGRESSION COEFFICIENT EARNINGS PER SHARE OF INDIAN EQUITY MARKETS (2012-13 TO 2016-17)

YEAR	REGRESSION COEFFICIENT OF BETA	STANDARD ERRORS	T-VALUES	P-VALUE	REMARKS
2012-13	25.85	3.88	06.66	0.00	Significant
2013-14	09.98	2.98	03.00	0.00	Significant
2014-15	11.48	1.80	06.30	0.00	Significant
2015-16	25.89	2.56	10.01	0.00	Significant
2016-17	16.69	2.30	07.03	0.00	Significant

Note: The Inferential analysis is carried at a significance level of 5%.

TABLE NO 2

Next, we have the details regarding the regression coefficients beta in all the years from 2012 – 13 to 2016 – 17. We find that the regression coefficients in all the 5 years are significant. Beta gives the rate of change of the dependent variable i.e. market value of the equity per unit change in EPS. Thus if EPS of a company increases (decreases) by Re – 1 the market value of equity of equity increases (decreases) by an average of Re 25.85 in 2012 – 13 But this measure suddenly falls to 9.98 in the next year i.e. 2013-14, and then increases marginally to 11.48 in the year 2014 – 15. It jumps to 25.89 in the year 2015 – 16, the falls to 16.69 in the year 2016 – 17. It is observed that in the above table ‘t’ values as well as ‘p’ values are showing a significant relationship existing between Earnings per share and the market value of Indian Equity markets. So it is observed that Earnings per share are having a linear relationship with Indian markets.

INTERCEPT VALUES OF BOOK VALUE PER SHARE AND MARKET VALUE OF INDIAN EQUITY MARKETS (2012-13 TO 2016-17)

YEAR	INTERCEPT	T – VALUES	REMARKS
2012-13	55.42	3.65	Significant
2013-14	76.49	2.59	Significant
2014-15	55.53	1.46	Not Significant
2015-16	58.61	2.32	Significant
2016-17	67.52	1.55	Not Significant

Note: The Inferential analysis is carried at a significance level of 5%.

TABLE NO 3

Table 4.8.2 shows the intercept values between market value and book value. For the all the years 2012-13, 2013-14, 2014-15, 2015-16 and 2016-17 the values are significant at 5%, 55.42, 76.49, 55.53, 58.61 and 67.52. The ‘t’ values for the year 2012-13, 2013-14 and 2015-16 of 3.65, 2.59 and 2.32 are showing significant relationship. But only for the year 2014-15 and 2016-17 the values are not significant. But the above table shows that Book Value per Share and Market Value for all the years which are significant and showing a linear relationship existing. So the hypothesis is accepted.

ANALYSIS OF REGRESSION COEFFICIENT BETWEEN BOOK VALUE PER SHARE AND MARKET VALUE OF INDIAN EQUITY MARKETS (2012-13 TO 2016-17)

YEAR	REGRESSION COEFFICIENT OF BETA	STANDARD ERRORS	T-VALUES	P-VALUE	REMARKS
2012-13	3.50	0.40	3.09	0.00	Significant
2013-14	3.13	0.33	2.94	0.00	Significant
2014-15	2.12	0.21	1.79	0.00	Not Significant
2015-16	2.46	0.24	3.04	0.00	Significant
2016-17	2.84	0.41	4.14	0.00	Significant

Note: The Inferential analysis is carried at a significance level of 5%.

TABLE NO 4

In the table the analysis shows that Slope values for the accounting variable Book Value per share, in all the years from 2012-13 till 2016-11 is showing the significant level i.e. the rate of change of explained variables are more than the rate of change in markets (independent variables), Thus if BV of a company increases (decreases) by Re – 1 the market value of equity of equity increases (decreases) by an average of Re 3.13 in 2012– 07 The analysis shows that the Book Value per share in the year 2012-13 and 2013-14 of 3.50 and 3.13. In the year 2014-15 the values are decreased to. 2.12 and the values are increased in the following years 2015-16 and 2016-11, 2.46 and 2.84 are moving constantly in same directions from the benchmark value of market and in the year 2014-15 to 2016-17 the values clearly show that there is a linear relationship existing between the regression and repressor variables in the study. The above table is also showing the standard error (Se) and T values for operating leverage in all the years from 2012-13 till 2016-11. The Se value shows the variation in estimates. In the year 2012-13, 2013-14, 2015-16 and 2016-17 Book Value per share estimated value (T) is 3.09, 2.94, 3.04 and 4.14. It shows the variation of 0.40, 0.33, 0.24 and 0.41. The year 2014-15 shows the 't' value of 1.79 the variation shown is 0.21. Next, in Table 5 we have the details regarding P values for all the years from 2012–13 to 2016–17. The above analysis finds that in all the 5 years there is a significant relationship existing between Book Value per share and market value of Indian Equity Markets at 5% level of significance. This shows that in the Indian context there is a linear relationship existing between Book Value per share and market value of Indian Equity Markets, so the hypothesis is accepted.

8. SUGGESTIONS

EPS (Earnings per Share) is considered as an important variable by different fund managers, Investment advisors & stock brokers in the field for taking right decision. In the present study both an Empirical Research and Survey results observed that EPS has about 45.10% of explanatory power of variation in Equity markets. Respondents in the field has ranked EPS as number one variable considered by them, The Gap analysis table of Valuation shows no Gap existing. Further the statistical results prove that EPS is having a linear relationship with Market value. Book value (BV) is also considered as an important factor affecting the various Investment decisions in the field. Both an empirical research and survey results observed that Book value has about 19.83% of explanatory power of variation in Equity markets. Respondents in the field has ranked Book value as number three variable

considered by them, The Gap analysis table of Valuation shows no Gap existing. Further the statistical results prove that Book value is having a linear relationship with Market value. Dividend per Share (DPS) is most important factor watched by the Investment managers in the field. In the present study an empirical research is showing about 32.60% of explanatory power of variation in Equity markets. Even though the explanatory power is 32.60% the Survey results observed that DPS is ranked as number four by the Respondents in the field and it is also shown in the Gap analysis table of Valuation the Gap is existing. Further the statistical results prove that DPS is having a linear relationship with Market value. Further it is suggested that more importance should be given by the companies towards the payment of dividends towards Investors. Dividend payout Ratio (DPR) is also one of the most important factors watched by the managers in the field. In the present study both an Statistical results and Survey results observed that DPR has very less explanatory power of variation in Equity markets compare to DPS and BV. Respondents in the field has ranked DPR as number five variable considered by them in the ranking list, as it is shown in the Gap analysis table of Valuation is existing. But theoretically DPR is important as it affects the market value. Researchers in the future should try other forms of regression functions the results may get improve. Return on Equity (ROE) is considered as one of the most relevant factor in the field by most of the managers. The Empirical Research conducted at the International level by Zhaang (2017) fit the Non-linear Relationship and proved the explanatory power of ROE with US market value. But in the present study the survey results obtained is showing number two ranking is given and the Gap analysis table shows the existence of Gap. But Empirical Research in India conducted by Monica Singhania (2012), Dr. Sanjeet Sharma (2017), does not showing any linear relationship exist and the present study also not able to establish the linear relationship with ROE and Market value. Growth is measured in terms of Net Sales and considered as one of the important factor for decision making. In the present study the survey results obtained is showing number Size and Growth variables where the survey results shows the respondents gave number three and two Ranking but the statistical Results are not showing the linear relationship existing because a Simple linear Regression is used. It is wrong that if we say Size and Growth variables are not having any relationship. Research at the International level shows that there is significant level between the Size and Growth variables and Market Beta value. But in India the linear relationship is not proved the reason may be using of a Simple linear Regression in the study. So, it is suggested that the future Researchers should try other forms of regression functions the results may get improve.

9. CONCLUSIONS

The research program has been an inquisitor affair to gain the research knowledge on the topic. The present study has been undertaken to examine the empirical relationship between equity market value and explanatory variables such as Earning per share (EPS), Book value, Profitability (ROE), Growth of company, dividend per share, dividend payout ratio, are some of the variables used to explain equity valuation for the period of 2012-13 to 2016-11. The study is conducted in two parts i.e., through secondary data by collecting all the required financial Information through the financial statements and through the survey. The results of study indicated that dividend per share and earning per share being the strongest determinants of market price, so the results of the present study supports liberal dividend policy and suggests companies to pay regular dividends. This policy will affect market price of share in positive direction. Since, book value per share depicts the owner's funds, a higher book value per share is perhaps perceived by an investor to be an indicator of the sound

financial position of a company for investing. All this shows that the study of financial factors prove to be beneficial for the investor in India, as these factors possess strong explanatory power and hence, can be used to make accurate future forecasts of stock prices. So, investors are suggested to take care of accounting variables of company before investing. Finally it is concluded that all this shows that the study of financial factors prove to be beneficial for the investor in the India, as these factors possess strong explanatory power and hence, can be used to make accurate future forecasts of stock prices. So, the fund managers and Investment advisors are suggested to take care of accounting variables of company before investing.

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