RISK-RETURN RELATIONSHIP ON EQUITY SHARES IN INDIA

1. Introduction

The Indian stock market has gained a new life in the post-liberalization era. It has experienced a structural change with the setting up of SEBI, opening up to the foreign investors, establishment of the NSE, initiation of the screen based trading system, dematerialization of securities and introduction of derivative instruments. The activities of the market have increased in all respects. Market capitalization has increased spectacularly. Number of listed companies has gone up. But the most important and amazing phenomena of all are the movement of secondary market share prices which are reflected in either the upward or downward trend in the major share price indices in the country. The stock market reflects the performance of an economy. When the economy does well and the companies make lucrative profit, people get induced to invest in stocks because they expect higher return from their stockholding.

In the present competitive globalised business scenario, risk is attached with every dimension. Financial markets are not free from imperfections, which make results inconsistent with the expectations. The concept of risk management in case of investment decision assumes greater importance in the modern day financial management. The objective of financial investing is to earn the largest possible profit or return on investment. Investing always involves a certain amount of risk, ie, there is a chance that an investment will yield not only profit but also loss. Thus investing aims at profit maximization and risk minimization.

2. The Research Problem

The aim of investors' is getting investment opportunities with minimum risk and maximum returns. Risk and returns are important variables that investors are looking for, at the time of investment decision making.

The Capital Asset Pricing Model (CAPM) developed by Sharpe (1964) and Lintner (1965) proposes that a linear relationship, existing between the expected returns on risky assets and the systematic risk measured by beta, is the only relevant risk measure. There is a positive relationship between risk and return. Naturally rational investors would expect a high return for bearing high risk. If there is no trade-off between risk and return, there is no need of considering about the risk. The rate of return on equities should commensurate with its riskiness.

Estimating the required return on investment to be made in the stock market is a challenging job before an ordinary investor. Different market models and techniques are being used for taking suitable investment decisions. The past behavior of the price of a security and the share price index play a very important role in security analysis. In fact, investors' perception of variability of ex-ante return contributes to their decision to buy or hold or to sell a security. A number of studies relating to the efficacy of the stock market have been conducted by the researchers. An enquiry into the various facets of risk-return relationship on equity shares in India is relatively less explored area. Therefore, the present attempt is to make empirically to gauge the relation between various risk variables on the average rate of return on equities in India. In this regard, the study tries to establish the possible risk-return relation in Indian capital market by analysing the influence of risk variables on security return. In addition this study also analyses the tendency of beta values in measuring the return.

3. Rationale of the Study

Stock market research is essential to good financial and investment decision making. It will be able to determine the market price and trading volume for the stock, high and low price for the stock over different periods and the earnings for the company. To ascertain the right choice of a security or portfolio to an investor, it depends on the level of risk that the stock carries. An estimation of the risk-return

profile of a security or portfolio is an important aspect in investment management. The stock market research will allow one to assess the possible risk of a stock against the possible rewards the stock may offer. The present study in this context is relevant in explaining the parity between risk and return in the Indian equity market. It will definitely help the stakeholders to take appropriate decision regarding the time of investment, horizon of investment, quantum of investment and even portfolio selection.

4. Scope of the Study

The scope of the present study is limited to the constituents of BSE500 index. It intends to examine the relationship between risk and return in the Indian equity market. The study considers the testing of the relationship between the average rate of return and distributional risk variables, namely, the variance, skewness and kurtosis of the returns distribution and security-market return correlation, on one hand, and the financial risk variables, namely, liquidity ratio, leverage ratio, dividend payout ratio, growth in assets, sales, earnings, size and earnings per share, on the other. The above mentioned distributional risk variables and financial risk variables are used to ascertain the reasons for the variability of returns on equities on ex-ante basis. In addition to this, the yearly beta values are considered to measure the importance of risk by testing the stationarity of beta coefficients in the market. The informational efficiency of the Indian stock market is tested in its weak form.

5. Review of Literature

Risk-return relation is one of the most important variables that researchers and investors have encountered. So different studies are conducted in this field and some of their results are as follows. Sharma (1989) studied the factors affecting the relative prices of equity shares in India and found that dividend payout, growth and size of the firm were significant factors. Rao and Jose (1996) found in

their study that the CAPM was valid in India. But Ansari (1997) investigated the applicability of CAPM in India and found no validity. Raj and Rakesh (2006) analyzed the relationship between risk and return, observed a high positive relation between portfolio return and risk. Sangeetha and Dheeraj (2007) studied the risk-return relation using market and accounting based information and found that risk computed on the basis of accounting information was not significantly captured by the market but financial risk had significant influence. Madhu and Tamimi (2010) in their study revealed that CAPM held good in Indian stock market in explaining the systematic risk and establishing the tradeoff between risk and return. In order to establish the positive risk-return relationship between equity returns and different distributional and financial risk variables, Arditti (1967) observed that the variables like the second and third moments of the probability distributions were reasonable risk measures and dividend pay-out, the dividend earnings ratio showed negative significance. The debt-equity ratio resulted in negative sign. Nerlov (1968) observed that sales, retention of earnings and growth in earnings were found to posses relationship with returns. Over long holding periods both dividend and leverage possessed significant relationship with the rate of return. Gulnur and Sheeja (2008) investigated the effect of a firm's leverage on stock returns in the London Stock Exchange and found that leverage had a negative relation with stock return. Hasanali and Habibolah (2010) examined the risk-return relations in Tehran stock market, where skewness had an important effect on returns but kurtosis didn't have significant relation with returns; the relationship between returns and beta was non-linear.

6. Objectives

The main objectives of the study are:

(1) To examine whether distributional risk variables, namely, the variance of the return, the skewness of the return, the kurtosis of the return distribution have any significant relationship with average rate of return on equity shares;

(2) To examine whether security-market return have any significant relation with average rate of return on equities;

(3) To test whether financial risk variables, namely, liquidity, leverage, dividend pay-out, growth related variables like, assets, sales, earnings , size and earnings per share have any significant role in determining the average rate of return on equities;

(4) To identify whether market related risk, *Beta*, is an appropriate measure of risk or it is proxying for CAPM by testing its stationarity over the period; and

(5) To ascertain the informational efficiency of the Indian stock market in explaining the return behavior in weak form.

7. Hypotheses

In order to establish a linear risk-return relationship, the study has made the following hypotheses-

H_1: There is an association between distributional risk variables and average rate of return on equities.

H_2: There is a positive relation between security-market return and average rate of return on equities.

H_3: The financial risk variables have significant relation with average rate of return on equities.

H_4: The market risk, beta, exhibits stationarity over time in Indian stock market.

H_5: There is a positive relation between systematic risk and average rate of return in Indian stock market.

H_6: There is randomness in the market returns in the Indian stock market.

H_7: There is randomness in the security returns in the Indian stock market.

H_8: The Indian stock market is efficient in weak form.

8. Period of Study

In order to conduct the study for finding answers to the objectives set, a 14 year period from January 1996 to December 2009 was selected.

9. Methodology and Data Analysis

As the main object of the study is to test the relation between risk and return on equity shares in India, the period covered is from January 1996 to December 2009 and the sample shares were randomly selected from amongst 60 equity shares included in the BSE500 index. For the research, the data were collected from the CMIE "PROWESS" data bank. In order to answer the above objectives under study, the entire analysis was made by using SPSS Ver.13.0 package.

The variables under consideration for the risk-return study are limited to only the distributional and financial risk variables. The distributional risk variables under observation are the variance of the return, skewness of the return and kurtosis of the return distribution. The security- market return correlation is also considered as a risk variable. The financial risk variables under study includes liquidity ratio, leverage ratio, dividend payout ratio, growth in assets, sales, earnings, size and earnings per share. They are measured as linear growth rates over the testing period of most recent three year period except size and earnings per share. It is analyzed by applying step-wise multiple regression equations.

In order to test the beta stationarity over the period under study to evaluate the importance of systematic risk in investment decisions, the monthly security return of the sample companies and the corresponding monthly market returns are used to calculate the beta values. As a result, for each company, 14 beta values for the 14 year period are found out. It is properly analyzed with suitable test statistics, use of regression equations, in the entire sample period (1996-2009) and different sub-periods of five and four years (1996-2000; 2001-2005 and 2006-2009) respectively.

The efficiency of Indian stock market in weak form is tested by ascertaining the randomness of market return and individual security return with appropriate test statistics, parametric and non-parametric tests, during the sample period(1996-2009) and different sub-periods (1996-2000; 2001-2005 and 2006-2009).

10. Limitations of the Study

1. The study is limited to distributional and financial risk variables to test the risk-return relationship on equity shares in India.
2. The analysis considered monthly security returns only.
3. In CAPM, a perfect efficiency of stock market is required, but the present study concentrates only on weak form market efficiency.
4. No attempt for pricing of securities.
5. Only yearly beta is computed for testing the stationarity of beta.

11. Presentation of Report

The outcome of the study is presented in eight chapters. The introduction, research problem, relevance and scope, objectives, hypotheses and methodology of the study are presented in first chapter. Second and third chapters are theoretical and empirical reviews of the study. Fourth and fifth chapters are the analysis and interpretation of the risk-return relationship. Sixth chapter explains the test of beta stationarity and chapter seven narrates the tests of weak form efficiency of the market. The last chapter consolidates the major findings and conclusions of the study.

12. Findings of the Study

The following are the major findings emerged from the study :

Average Rate of Return and Distributional Risk Variables-

1. The empirical results observed that the 'variability' of returns of equity shares establishes a significant positive relation with average rate of return in eight out of 14 years of study.
2. It is empirically observed that the variable 'skewness' showed a significant positive relation with average rate of return on equities in eight out of 14 years of study.
3. The study found that the variable 'kurtosis' possesses a negative significant sign with average rate of return in five out of 14 years of study.

Security- Market Return and Average Rate of Return-

1. Over the study period, the variable security-market return is positively related with average rate of return on equities.
2. The best fit can be found in a quadratic relation between average rate of return and security-market return correlation coefficient.

Average Rate of Return and Financial Risk Variables-

1. The empirical results posits no significant relation between liquidity ratio and average rate of return in 13 out of 14 years of study.
2. The analysis showed that the variable coefficient of leverage ratio found no significant relation with average rate of return during the period of study.
3. Dividend payout ratio shows no significant relation with average rate of return.

4. The growth in assets is not significantly related to average rate of return in 13 out of 14 years of study.
5. Growth in sales during the period of study shows a negative significant relation with average rate of return during the year 2004 only, after that there is no significant relation with average rate of return.
6. Growth in earnings and average rate of return show a significant negative relation with average rate of return in three years and in the remaining periods no significant association is disclosed.
7. Growth in size shows a significant relation with average rate of return only in the year 2008. In other periods, no significant relationship exists.
8. Growth in earnings per share is significantly related with average rate of return only in 1999; it is not a significant factor in the remaining years of study in explaining the average of return.

Stationarity of Beta-

The regression results of the analysis clearly establish that:-

1. The beta coefficients are stationary during the entire period(1996-2009)of the study where two regression equations are worked out; and
2. During different sub-periods (1996-2000; 2001-2005and2006-2009) the results of two regression equations worked out indicate that the beta coefficients as a measure of systematic risk are relatively stationary over time.

Weak Form Market Efficiency Test-

The market efficiency of the Indian stock market in weak form is tested by ascertaining the randomness of both monthly market return and monthly security return. The results of the parametric and non-parametric tests reveal that:-

1. Over the 14 year period together (1996-2009) and different sub-periods (1996-2000; 2001-2005 and 2006-2009) under consideration, there is randomness in monthly market return.
2. During the period of study from 1996 to 2009, the monthly security return series shows randomness.
3. Both monthly market return and monthly security return series during the entire and different period of study show randomness, which proves that Indian stock market is efficient in weak form.

13. Conclusion

The analysis of testing the relationship between risk and return in the Indian stock market reveals that of all the different risk variables considered in the study, the distributional risk variables, variance, skewness and kurtosis of the return distribution, confirm the working of risk-return trade-off in the Indian context. Also, a positive association was exhibited between the security-market return correlation and the average rate of return during the period of study. On the other hand, the financial risk variables, liquidity ratio, leverage ratio, dividend payout ratio, growth in assets, sales, earnings, size and earnings per share, during the period of study exhibited an insignificant association with the rate of return on equities in India. The importance of beta as a measure of risk is also considered in the analysis, which shows that during the study period the beta values of the sample companies are stationary. Hence it can be used for and considered as an important risk measurement in investment decision making process. It also exposes the relation between systematic risk and rate of return on equities in India. The presence of randomness of the return series of both monthly market and monthly security returns in India has proved that the Indian stock market is weakly efficient. It is noteworthy to express that the Indian capital market exhibits a positive risk-return relationship.

14. Recommendations

- As the ‘variance’ of the return distribution shows a significant positive association with average rate of return in majority of the years, it is recommended that the investors can consider for good ‘variance’ as a measure of risk in estimating the return on equities.
- A positive and significant relation exhibited by ‘skewness’ with average rate of return on equities during the analysis period has been satisfactorily arrived at. It is therefore, recommended that the investors in India can take seriously the skewness statistics of return distribution while measuring the risk.
- It is recommended that the investors can use the security-market return correlation coefficient while considering the investment options and evaluating the parity between security return and market return.
- It is recommended that an analysis of the risk-return relationship on equity shares in different time intervals, over short and long, is relevant for the investors, regulators and other stakeholders in framing their investment policy.
- The regular income-seeker-investors can use the beta values in fixing and formulating portfolios.
- It is recommended that a proper estimation and analysis of beta can be reliably taken recourse to in understanding the risk involved and the return generated from equity shares.
- The risk-return analysis can be used as a stable platform by the investors in establishing the tradeoff between portfolio risk and return.