CHAPTER – VI

SUMMARY OF FINDINGS, CONCLUSION AND
SCOPE OF FUTURE RESEARCH

This is a research work on risk-return relationship in equity shares. One of the critical aspects of such a study is related to the measurement of risk, because the return on equity shares is a function of risk premium. In very general terms, three major factors can be identified which determine the rate of return investors require are (i) the time preference for consumption as measured by the risk-free real rate of return, (ii) the expected rate of inflation, and (iii) the risk associated with the investment.

The first two determinants (factors) will affect the rate of return required on all potential investments. Only the third factor is unique to each investment opportunity in risk assets. In short,

Rate of return = risk-free real rate + inflation rate + risk premium.

For risk assets, a major factor which individuals must consider in their investment decisions is the issue of risk. If the future benefits from an investment are not known with certainty (i.e., the investment is risk), the investors will require a return on the investment which is higher than the risk free rate.

In this study, the rates of return on equity shares are the main inputs in the investigation and the equity investments being the highest risk assets, obviously, the emphasis in this study is on identifying the riskiness associated with equity investments.
The empirical strategy adopted is to examine the different theoretical propositions to classify the risks associated with equity investments and determine the relationship between such classes of risk and rates of return on equity shares.

Generally, in the Finance literature, the riskiness of an asset is represented by the variance of the rates of return. However, variance is not the only measure of total risk. Statistical theory provides a large number of measures of variation which could be used as substitutes for the variance. Moreover, some of the measures are independent of the nature of the returns distribution unlike the variance which assumes a normal data distribution.

Finance Theory, traditionally, looked at equity risk mainly in the context of risky decisions taken by the firm’s management. Empirical evidence using accounting data suggests that there are many accounting measures which could be good proxies for risks affecting the rates of return on equity shares.

Few persons who are interested in the behavior of the stock market will disagree with the idea of the prices of equities moving together. The stock market is subjected to a steady flow of information, much of which will have an effect on the set of anticipations that determine the equity prices. A change in the price of an equity stock from time ‘t-1’ to ‘t’ can be expressed as a sum of (a) price change related to a change in macro economic setting, viz., a change which affects all the stocks to varying degrees (i.e., the systematic risk), (b) price change related to changes in industry level factors (i.e., extra-market risks) and (c) price changes related to firm specific risk factors.

Modern Portfolio Theory (MPT) decomposed total risk into systematic and non-systematic components. Since investors can diversify away a part of the total risk by portfolio decisions, the MPT related the rates of return on equities to the non-diversifiable systematic risk and the diversifiable non-systematic (i.e. firm specific) risks are considered to be irrelevant to equity asset pricing. The Capital Asset Pricing Model (CAPM) of the MPT is based on this basic principle under the conditions of equilibrium.
Another Equilibrium Asset Pricing Model is the Arbitrage Pricing Theory (APT) Model which lays down that the return on any risky asset is linear combination of various risk factors. Though APT is considered to be an extension of CAPM, it is said to be more general than the CAPM. In any case, APT is a testable alternative to the CAPM and is more robust than CAPM because of its less arduous assumptions.

6.1 STATEMENT OF RESEARCH PROBLEM

Indian capital market is a developing one with a tremendous potential to play a pivotal role in Indian economic development. Hence, it is important that the Indian capital market should be subjected to a more rigorous investigation and capital market theories and asset pricing models need to be validated in Indian environment. A lot of ground work needs to be covered in the area of risk and return on equity shares in India. There is a need for empirical investigation into different facets of risk, different measures of risk and major equity asset pricing theories.

6.2 OBJECTIVES OF THE STUDY

The major objectives of this study may be summarized as follows.

1. To identify the different statistical distributional risk variables and the degree of inter-relationships among them,

2. To examine the relationship between different distributional risk variables and the returns on equity shares,

3. To determine the sources of systematic risk in equity shares in the context of the association between the market determined and firm specific financial risk measures,
To discover and explain the extent of cross sectional interdependence displayed by the residual equity returns, after the removal of the impact of the common market factor,

To test for the validity of the different forms of Capital Asset Pricing Model (CAPM) and the multi-factor Arbitrage Pricing Model (APM) in Indian conditions,

To compare the empirical performance of the Equilibrium Asset Pricing Models.

6.3 METHODOLOGY DESIGN

6.3.A Data

The study is predominantly based on secondary data consisting of month end price quotations of BSE. The month end equity prices consist of the quotations of the last two trading days in the month. The returns computed from the last trading day’s prices have been the basis for all computations and analysis, whereas the returns computed from the penultimate trading day’s prices have been used for cross sectional analysis in testing the APM.

However, primary data was collected using pre-structured interview schedule from the Finance Manager / Controller of the sample companies on bonus issues, dividends paid for all the sample stocks and financial data viz. annual sales, total assets, net worth, earnings per share (EPS), debt to equity ratio etc. Equity share prices have been appropriately adjusted for dividends, bonus issues, stock splits and stock consolidations.
6.3.B Sample

The main sample consists of 112 companies for which monthly share price information is available. The sample was chosen purely on the grounds of continuous data availability over the analysis period. Initially, more than 120 firms were selected but it was decided to drop those firms for which price data was not available continuously. The sample data of 112 stocks belonged to 15 groups consisting of 13 industry groups, 1 diversified group and 1 miscellaneous group.

6.3.C Period of Study

The sample period of the study covers a period of 159 months commencing from January 1997 and ending in March 2010. This constitutes a period of 13 years and 3 months. The main study period is the overall period of 158 months. Wherever the analysis required an inter-temporal enquiry, the study period was divided into suitable sub-periods.

6.3.D Sources of Data

Information relating to the month end stock prices, dividends, bonus issues, stock splits and stock consolidations were manually collected for all the 112 sample firms from the BSE Daily Official List and the financial statement data was collected from the finance manager / controller of the companies using pre-structured interview schedule.
6.4 MAIN FINDINGS

The Main findings of this study are as follows:

1. The different statistical measures of risk displayed a highly correlated interdependent structure.

2. Inter-temporal behavior of major statistical measures shows a lack of stationarity and most of the measures exhibit great dispersal behavior. Among the measures only mean deviations are relatively stable over time.

3. All the statistical measures of risk exhibited a significant relationship with the return on equity shares.

4. The 25 accounting measures of risk identified exhibit an inter-dependent structure which conforms to the hypothesized classification by risk. There are, however, a few variables which are misspecified.

5. Dividend measures and growth measures are significantly correlated with the return on equity shares. Leverage measures showed a negative association with the return on equity. Size measures, variance and covariance forms of accounting measures of risk have not displayed significant association with the return on equity shares.

6. Betas, representing the systematic risk in equity shares, are significantly associated, at both individual stock and portfolio of stocks levels, with variance and covariance measures. Mean form measures are also significantly associated with the systematic risk. Contrary to the theoretical argument, financial leverage is not associated with the systematic risk.
When five factors were extracted by a factor analytic procedure to represent the systematic risk, the association between the accounting measures of risk and the five risk factors is much more improved. Therefore, it may be said that accounting measures of risk do reflect the systematic risk.

7. Market factor explains, on an average, about 23 percent of the variance in equity returns. Analysis of residual returns shows evidence of the presence of industry factors for industries belonging to a strict 2 digit classification. Cluster analysis of the residual correlations confirms the presence of industry grouping behavior among equity stocks. However, there is also evidence to show that there may be some extra market factors which transcend the industry classifications. Industry effects explained roughly 13 percent of the variance in equity returns.

8. The CAPM tests reveal that the risk premium estimated by the model is in excess of the theoretical limits... The intercept term, in many cases, is significantly different from zero, with a negative sign indicating that the Sharpe Lintner version of the CAPM is misspecified. Allowing the regressions coefficients to vary stochastically over time, the results indicate that risk-return relationship (i.e. the risk premia) is not constant over time. While the risk return relationship is linear, the unsystematic risk seems to be an important factor in asset pricing. Further, inclusion of financial variables improves the adjusted $R^2$ values of the CAPM. All these anomalies point towards the rejection of the CAPM for Indian conditions.

9. The tests of APM show that a 5 factor model is adequate to explain the systematic risks in the returns data. Tests for priced factors show that there may be 2 priced factors. The evidence in support of a 3rd factor is very weak. Risk return relationships appear to be non-stationary over time. In a comparative analysis the APM was consistently better than the CAPM, but
both the models are not exactly parsimonious in their role as Asset Pricing Models. The evidence available with regard to the significance of ‘OWN VARIANCE’ included in the APM does not lead to a rejection of the 5 factor model.

6.5 CONCLUSION

This study has been undertaken with a view to identify the various risk factors and examine the risk-return relationship in equity shares. ‘Risk’ is a very difficult concept to quantify. This is evidenced by the fact that researchers and financial theorists world over have attempted to define risk in different terms. This study has merely tried to test the applicability of different risk classifications to Indian conditions. Because of various limitations, the empirical effort was limited to testing only the most likely chances for their relevance.

6.6 SCOPE OF FUTURE RESEARCH

In the course of this study, the work has come across a few aspects which, being outside the scope of the study, could not be tackled. Some of these aspects require an in depth investigation to throw more light on the risk-return relationship. Some of the aspects are mentioned below.

a. The presence of extra market factors needs an in depth investigation. Perhaps, the methodology adopted by Farrell would be ideal to unearth these factors.

b. The inter-temporal stability of risk measures is another area which requires a close attention. It is possible that the non stationarity of betas may be on account of errors associated with the measurement of betas. One possible source of error may be the infrequent trading in Stocks. This matter requires a detailed investigation.
c. One of the methods of testing the CAPM is to adopt the methodology of Black, Jensen and Scholes in a time series framework. Similarly, an exact replication of Fama and Macbeth methodology may also help in testing the CAPM more effectively. This study has adopted the Fama and Macbeth methodology with a few changes in Portfolio estimation procedures. Perhaps this might have been the source of misspecification of the Two Factor CAPM.

d. The empirical verification of the APM performed in this study suffered from one great limitation. Viz., the smallness of the sample. With a bigger sample and with weekly and daily returns covering a sufficiently long period of time should tackle the problem adequately. There is also a great need for identifying the macroeconomic variables which caused the systematic risk in equity shares.

e. Finally, the theoretically incorrect behavior of the financial leverage, the absence of any relationship of the size of the firm and the earnings variability with the rates of return on equity shares needs further research.

For an orderly growth of the capital market and for a proper investor education, there should be an interaction between researchers and practitioners. More research in capital market theories and financial instruments is certainly the need of the hour for India.