

TESTING THE VALIDITY OF THE CAPITAL ASSET PRICING MODEL FOR THE MID-CAP STOCKS ON THE BOMBAY STOCK EXCHANGE

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Capital Asset Pricing Model (CAPM) establishes the relationship between risks and returns in the efficient capital markets. The present study examines the validity of the Capital Asset Pricing Model for the medium sized firms using daily returns of 79 companies listed on the Bombay Stock Exchange (BSE Mid-Cap Index) for the period of January 2007 to December 2011.

The research was conducted to test if higher risk (beta) is associated with higher return. According to the CAPM the intercept should be zero and the slope should be equal to the excess return of market portfolio over and above the risk free rate. This study also checks for nonlinearity of the relationship between return and beta and the residual variance of stocks. The results of the study show that CAPM is not valid for mid cap stocks for the period studied.

Key Words: CAPM, Mid-Cap Stocks, Bombay Stock Exchange

JEL Classification: G10, G12

INTRODUCTION

Capital market plays an important role in the development of an economy and is an integral part of financial system wherein medium sized firms provide crucial benefits to the economic development and strengthen economic vitality of a nation. In 2002-2003, the Bombay Stock Exchange introduced a new index called 'BSE Mid-Cap' index that tracks the performance of the companies with relatively less market capitalization and exclusively represents the mid cap companies listed on BSE.

In the capital market, the manner in which securities are priced is a core issue that has

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attracted the attention of researchers. The risk-return relationship performs a central role in pricing of securities consequently helps in judicious investment decision making. If empirically true, the relation given by capital asset pricing model has wide-ranging implications for problems in capital budgeting, cost benefit analysis, portfolio selection etc. CAPM has been tested extensively for over four decades, in various forms primarily in developed capital markets and to some extent in developing markets; however, the debate on the empirical validity of CAPM continues.

The present study aims to test the standard form of CAPM in the Indian context. An attempt is made to see if systematic risk beta as independent variable can explain the cross-sectional variation in security returns in the mid-cap market.

THE CAPITAL ASSET PRICING MODEL

The simplest form of an equilibrium model is the standard CAPM or the one-factor CAPM. The credit for the CAPM goes to Sharpe (1964), Lintner (1965) and Mossin (1966) who developed the model almost simultaneously.¹ Every investment carries two distinct risks, the risk of being in the market, which is called systematic risk or beta, and the other the unsystematic risk which is company specific and can be diversified through creation of portfolios. Investors hold portfolios comprising of the market portfolio and lend or borrow at the risk free rate depending on individual risk preferences. The capital asset pricing model (CAPM) is used to determine the required rate of return on an asset in a well diversified portfolio. It measures the asset's sensitivity to the systematic risk (beta) and the reward for bearing the risk. CAPM is therefore an equilibrium model that relates the required rate of return for a security or portfolio with the risk for that security as measured by beta. The total required return comprises of the risk free return plus the reward for bearing the systematic risk.

LIMITATIONS OF THE CAPM:

Although the CAPM allows focus on the market risk the major drawbacks are :

- a) CAPM makes many simplifying assumptions. The market is perfect; no investor can influence the market price. All relevant information regarding information is

¹ Fama (1968) showed that the Sharpe and Lintner models lead to the same measure of risk and the same relationship between risk and return. See Litzenberger (1969) for a brief comparison of the three approaches.

freely available to all investors. There are no transaction costs or taxes. All securities are infinitely divisible. All investors can borrow or lend any amount at the risk free rate. All investors have the same single period investment horizon. Investors are rational and risk averse and take decisions using the mean-variance rule. Unlimited short sales are allowed. All assets including human capital are marketable. In spite of all these unrealistic assumptions the model has been found by some to be a good description of the process.

- b) Some studies have highlighted the danger of focusing exclusively on mean-beta space as they found that the return generation process also depends on other variables like size, book to market ratio and earnings price ratio.²
- c) There are also many problems in testing CAPM: CAPM is an ex-ante (forward looking) model and we need to estimate future beta using the world market portfolio. Since there are no figures for future returns, we use ex-post (historical) data.³ Beta varies considerably with method of computation and the major reason for variation seems to be the interval between data points.⁴ Historical betas for individual stocks have not been found to be stationary over time and should not be used for future projection. Since portfolio betas are comparatively more stationary than individual stocks, most studies use portfolios. In the absence of a market portfolio most empirical studies also use the stock market index as a proxy for the market portfolio.

OBJECTIVES OF THE STUDY

The objective of this paper is to examine whether the CAPM holds true in Indian Mid Cap market i.e.:

- a) Whether higher beta stocks give higher return.
- b) Whether risk and return are linearly related.
- c) Whether unsystematic risk is a determinant of portfolios returns.

² Banz (1981), Reinganum (1981), Gibbons (1982), Shanken (1985) and Fama and French (1992)

³ Regression of return on the stock with return on the market index yields the characteristic line with intercept alpha and slope beta. The betas are calculated for all the stocks/portfolios being studied, then their returns are regressed with the betas to find the slope and intercept of the security market line.

⁴ Singh Rohini, (2008).

