TESTING PRACTICAL APPLICATION OF CAPM: A STUDY OF STOCKS OF AUTOMOBILE SECTOR USING CNX AUTO INDEX IN NSE

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Abstract: *Since the birth of the Capital Asset Pricing Model (CAPM), enormous efforts have been devoted to evaluate the validity of this model. No one can deny its unique breakthrough and valuable contribution to the world of financial economics. Some empirical studies conducted, have appeared to be in harmony with the principles of CAPM while others contradict the model. These differences in previously conducted studies serve as a major stimulating factor to researchers' curiosity verify its practical applicability of the CAPM. The aim of this paper is to study if the CAPM holds in the automobile sector in Indian Stock Market(NSE). The present paper is a sincere attempt to find answers of the questions by applying CAPM - Is higher beta yields higher expected return? Is there exist linearity between the stock beta and the expected return? For the same objectives, the paper is focusing to investigate the under & over valued stock of six firms of automobile sector.*

Key words: *Capital Asset Pricing Model; Higher beta; Expected return; Under and overvalued stock.*

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1. INTRODUCTION

The foundation of the CAPM is that an investor can choose to expose himself to a considerable amount of risk through a combination of lending-borrowing and a correctly composed portfolio of risky securities. The model emphasizes that the composition of this optimal risk portfolio depends entirely on the investor's evaluation of the future prospects of different securities, and not on the investors' own attitudes towards risk. The latter is reflected exclusively in the choice of a combination of a risky portfolio and risk-free investment or borrowing. In the case of an investor who does not have any special information, that is better information than other investors, there is no reason to hold a different portfolio of shares than other investors, which can be described as the market portfolio of shares.

The Capital Asset Pricing Model (CAPM) incorporates a factor that is known as the "beta value" of a share. The beta of a share designates its marginal contribution to the risk of the entire market portfolio of risky securities. This implies that shares designated with high beta coefficient above 1 is expected to have over-average effect on the risk of the total portfolio while shares with a low beta coefficient less than 1 is expected to have an under-average effect on the aggregate portfolio. In efficient market according to CAPM, the risk premium and the expected return on an asset will vary in direct proportion to the beta value. The equilibrium price formation on efficient capital market generates these relations.

The model is considered as the backbone of contemporary price theory for financial markets and it also widely used in empirical investigations, so that the abundance of financial statistical data can be utilized systematically and efficiently. The National Stock Exchange (NSE) is India's leading stock exchange covering various cities and towns across the country. NSE was set up by leading institutions to provide a modern, fully automated screen-based trading system with national reach. The Exchange has brought about unparalleled transparency, speed & efficiency, safety and market integrity. It has set up facilities that serve as a model for the securities industry in terms of systems, practices and procedures.

2. THEORETICAL FRAMEWORK OF THE MODEL

The Capital Asset Pricing Model often expressed as CAPM of William Sharpe (1964) and John Litner (1965) points the birth of asset pricing theory. It describes the relationship between risk and expected return and is used in the pricing of risky securities. The CAPM is still widely used

in evaluating the performance of managed portfolio and estimating the cost of capital for firms even though, it is about four and a half decades old.

The Capital Asset Pricing Model, CAPM emphasizes that to calculate the expected return of a security, two important things needs to be known by the investors:

- The risk premium of the overall equity/portfolio (assuming that the security is only risky asset)
- The security's beta versus the market.

This can be expressed mathematically as:

$E[R_i] = R_f + \beta_i(E[R_m] - R_f)$ 1

Where:

$E[R_i]$ = Expected Return

R_f = Risk-free rate

β_i = Beta of the security i

$E[R_m]$ = Expected Return on the market

$E[R_m] - R_f$ = Market premium

The CAPM model introduces simple mechanism for investors and corporate managers to evaluate their investments. The model indicates that all investors and managers need to do is an evaluation and comparison between expected return and required return. If the expected result is otherwise unfavourable, it is necessary to abort intentions for potential investment in the particular security.

3. REVIEW OF EXISTING LITERATURE

In today's world, the investors are interested in high returns for their investments, even if the investment is done in riskier securities or business projects. For this purpose, the investors constantly try to find out and calculate the risk existing behind their investments, and thus they use different models for their calculations. The capital asset pricing model (CAPM), in this regard has been widely used by the investors or finance managers, for finding out the risk and return of their investments (Jagannathan& Wang, 1993).

It has been stated by Blume (1993) that the CAPM provides a model, explaining the equilibrium risk/return relationship, also, that the CAPM is based on the concept, that there is a linear relationship between the systematic risk (non-diversifiable), measured by beta and the expected returns. This linear relationship is described by security market line (SML), which

compares the systematic risk of a share and the return, along with the risk of the market and risk-free rate of return (Watson and Head, 1998)Like other models, the CAPM too, has some assumptions (Van Horne, 2006). Higher the risk (systematic risk), higher will be the return; unsystematic risk can be minimized almost completely, throughdiversification of the portfolio; investors are to be compensated for the systematic risk of the securities,that can't be diversified away (Lau & Quay, 1974). The systematic risk is measured by beta (β), which is in positive correlation with return. The CAPM, uses beta for finding out the risk, and also uses beta for determining the expected returns (O' Brien and Srivastava, 1995).

Beta enables us to find out the fluctuations in price of a share, along with determining the relative movement of share portfolio to the market portfolio (Jones, 1998). After the enhancement of the CAPM, the use of beta has been noticed to increase, especially in investment community for finding out risk (Blume, 1993).

Many researchers have tried to test the validity of CAPM, in different setups, and also were able to give different results with significant empirical evidence. The CAPM model was tested in Japanese setup, by applying the model to Tokyo stock market, where the results supported the model, and the investors were compensated for the systematic risk (Lau&Quay, 1974).

Similarly, this model was applied to the Swedish stock market by Bjorn and Hordahl, (1998), and proved that their results showed a difference from international evidence regarding CAPM. The results of Bossaert et al (1999), as cited in Levy et al (2000), initially, did support the CAPM, but later on the statistical tests, discarded the model, due to either market thinness or time constraints. Further experiments by Levy, Levy and Solomon (2000), using microscopic simulation (computer –based study), led them to give results, supporting the CAPM. The CAPM, was tested with reference to US securities from S&P 500 index by Gomez and Zapatro,(2003), whereby their results supported the two Beta model, also, the researchers came up with same results, supporting the CAPM in UK, most probably due to the similarities in both US and UK setups.In South African context, the researchers Keogh, (1994), found the fluctuations in beta, negatively affecting the significance of beta and CAPM, especially in South Africa. Whereas, the results provided by Bradfield, Barr and Affleck-Graves's study (1988) supported the CAPM, and declared it to be a useful model, in the context of JSE.

The validity of CAPM was also brought to test in Greek stock markets, by Grigoris and Stravos (2006), where the results of their study didn't support the concept of high risk and high return.

For the sake of further investigation and testing, the CAPM, was tested in two different setups, US and Japan, at the same time, where the results showed the inability of CAPM to explain returns when applied to the stock markets of both countries(Hui and Christopher, 2008).Similarly, to test the validity of CAPM, different studies have been conducted in Pakistan, which involved KSE, Karachi Stock Exchange by Eatzaz and Attiya, (2008), where the results of their study supported the traditional CAPM in explaining the risk and return relationship, but their results were satisfying only for few years.

Later on, another study conducted by Hanif, (2009), showed the in applicability of the CAPM, in his study, which had taken the tobacco industry into account for four years of time. On the whole the empirical results regarding CAPM discussed in this section lead to mixed conclusions. Some the advocate multifactor models due to failure of market beta alone to explain cross-sectional variation in security returns and others highlighted the methodological issues in testing CAPM.

Muhammad Ibrahim Khan (June 2012) assessed and tested the Capital Asset Pricing Model. The calculation of Beta of ten companies registered on KSE, and actual and expected returns have been compared. It was found that the Capital Asset Pricing Model (CAPM), failed to give accurate results.

At the end of discussion of existing literature, it can be concluded that the CAPM can be used as it has potential scope to solve the problems and find the expected results. However some of the studies found inaccurate results yet this model is appropriate for research in finance. This model may be used as a tool for strategic planning by corporations that own a portfolio of businesses.

4. OBJECTIVE OF THE STUDY

The aim of this paper is to study whether the CAPM holds in Automobile Sector in Indian stock exchange(NSE) by using auto index. The objectives of the research paper are to find out the answers of the following questions:

1. Is higher beta yields higher expected return?

2. Does there exist linearity between the stock beta and the expected return?

3. Investigate the under & over valued stock of six automobile companies using Capital Asset Pricing Model.

5. RESEARCH METHODOLOGY

This study has primarily focused on the calculation of Beta of six automobile companies for finding the expected return and then by comparing it to the actual return, for testing the CAPM for its practical application.The research design is descriptive and analytical in the research as Capital Asset Pricing Model is being tested in reference to companies in Automobile Sector in India.

In this way, secondary data will be used. Data will be collected from the sources available. Websites, libraries and the articles from various search engines like Google, yahoo search and answers are being searched to collect the authentic data so that appropriate result can be pictured.

The sample taken for this study is not covering all the Automobile sector companies listed at NSE, as only 6 companies have been considered for this study.

- BAJAJ AUTO
- EICHER MOTORS LTD
- MAHINDRA AND MAHINDRA
- MARUTI SUJUKI
- TATA MOTORS
- HERO MOTOCORP

Judgement sampling is used to choose sample of Automobile Sector companies. The data analysis tool used for this study is the MS excel (2010).

The stock price or the share prices of the companies, considered for this study, have been taken from the website of NSE and other websites and information bulletin. Then the return was calculated by taking the closing prices, subtracting the closing price from the opening price and dividing it by the opening price. Similarly, the formula was applied to the market index, for calculating the returns. Beta was calculated by applying slope β = slope(y,x), where the'y' represents the company returns and 'x' represents the market returns. The risk free rate used in the analysis was the rate of national saving certificate in Indian post office.

6. DATA ANALYSIS & INTERPRETATION

In order to represent the data analysis two tables (table 1.1 and table 2.1) has been formed for each company. Table 1.1 reveal the data analysis of period from Jan 2011 to Dec 2011. Table

2.1 depict the data analysis of period from Jan 2012 to Dec 2012. In the same manner the data of each company is represented.

This study has been established to investigate the Practical application of CAPM in Automobile sector Listed on National Stock Exchange. It uses monthly stock returns from 6 Automobile Companies listed on the National Stock Exchange ranging from 2011-01-01 to 2012-12-31. The stocks used in the study are considered the most traded on the National Stock Exchange.

				TABLE 1.1	BAJAJ AUTO		
PERIOD	ACTUAL RETURN	MARKET RETURN	Risk free rate of return(Rf)	BETA (β)	EXPECTED RETURN(Er)	Difference b/w actual return and expected return	OVERPRICED/ UNDERPRICED
Jan-11	-0.16	-0.13	0.09	1.19	-0.17	0.02	UNDERPRICED
Feb-11	0.02	-0.04	0.09	-0.61	0.17	-0.15	OVERPRICED
Mar-11	0.10	0.07	0.09	1.34	0.06	0.03	UNDERPRICED
11-Apr	0.01	0.03	0.09	0.43	0.06	-0.05	OVERPRICED
May-11	-0.07	-0.05	0.09	1.33	-0.10	0.03	UNDERPRICED
Jun-11	0.05	-0.02	0.09	-3.18	0.43	-0.38	OVERPRICED
Jul-11	0.03	0.00	0.09	20.11	-1.69	1.73	UNDERPRICED
Aug-11	0.06	-0.05	0.09	-1.27	0.27	-0.21	OVERPRICED
Sep-11	-0.06	-0.01	0.09	11.46	-1.03	0.97	UNDERPRICED
Oct-11	0.14	0.12	0.09	1.19	0.12	0.02	UNDERPRICED
Nov-11	-0.03	-0.09	0.09	0.26	0.04	-0.07	OVERPRICED
Dec-11	-0.07	-0.06	0.09	1.13	-0.08	0.01	UNDERPRICED
				TABLE 2.1	BAJAJ AUTO		
Jan-11	-0.16	-0.13	0.09	1.19	-0.17	0.02	UNDERPRICED
Feb-11	0.02	-0.04	0.09	-0.61	0.17	-0.15	OVERPRICED
Mar-11	0.10	0.07	0.09	1.34	0.06	0.03	UNDERPRICED
11-Apr	0.01	0.03	0.09	0.43	0.06	-0.05	OVERPRICED
May-11	-0.07	-0.05	0.09	1.33	-0.10	0.03	UNDERPRICED
Jun-11	0.05	-0.02	0.09	-3.18	0.43	-0.38	OVERPRICED
Jul-11	0.03	0.00	0.09	20.11	-1.69	1.73	UNDERPRICED
Aug-11	0.06	-0.05	0.09	-1.27	0.27	-0.21	OVERPRICED
Sep-11	-0.06	-0.01	0.09	11.46	-1.03	0.97	UNDERPRICED
Oct-11	0.14	0.12	0.09	1.19	0.12	0.02	UNDERPRICED
Nov-11	-0.03	-0.09	0.09	0.26	0.04	-0.07	OVERPRICED
Dec-11	-0.07	-0.06	0.09	1.13	-0.08	0.01	UNDERPRICED
Source: Compiled by the researchers							

In the table 1.1 year 2011, as objective of the paper is to check whether high risk stock high yield expected return. In every month there is inverse relation between beta and expected return. With higher the beta, the expected return reduced. In the months of Jan, Mar, Jun, Sept., Oct, Dec. Bajaj auto stock found undervalued.

In table 2.1 year 2012, same result about relation about beta and expected return is extracted. In moth of Jan, Mar, June, Sept., Oct, Dec, it was undervalued it means there is higher expectancy about rising prices of stock.

PERIOD	ACTUAL RETURN	MARKET RETURN	Risk free rate of return(Rf)	BETA (β)	EXPECTED RETURN(Er)	Difference b/w actual return and expected return	OVERPRICED/ UNDERPRICED
TABLE 1.2				EICHER MOTORS LTD			
Jan-11	-0.18	-0.13	0.09	0.82	-0.09	-0.09	OVERPRICED
Feb-11	0.06	-0.04	0.09	0.50	0.03	0.03	UNDERPRICED
Mar-11	0.21	0.07	0.09	0.37	0.08	0.13	UNDERPRICED
11-Apr	-0.07	0.03	0.09	0.18	0.08	-0.15	OVERPRICED
May-11	0.10	-0.05	0.09	0.23	0.06	0.05	UNDERPRICED
Jun-11	-0.04	-0.02	0.09	1.23	-0.04	0.00	OVERPRICED
Jul-11	0.01	0.00	0.09	0.40	0.05	-0.04	OVERPRICED
Aug-11	0.00	-0.05	0.09	0.04	0.08	-0.09	OVERPRICED
Sep-11	0.19	-0.01	0.09	0.15	0.08	0.12	UNDERPRICED
Oct-11	0.04	0.12	0.09	0.03	0.09	-0.05	UNDERPRICED
Nov-11	-0.05	-0.09	0.09	0.07	0.08	-0.13	OVERPRICED
Dec-11	0.00	0.00	0.09	0.69	0.03	-0.03	OVERPRICED
TABLE 2.2				EICHER MOTORS LTD			
Jan-12	0.12	0.14	0.09	0.85	0.14	-0.02	OVERPRICED
Feb-12	0.02	0.06	0.09	0.35	0.08	-0.06	OVERPRICED
Mar-12	0.14	0.02	0.09	0.67	0.04	0.10	UNDERPRICED
11-Apr	0.08	0.05	0.09	1.08	0.05	0.03	UNDERPRICED
May-12	0.01	-0.14	0.09	0.26	0.03	-0.02	OVERPRICED
Jun-12	-0.11	0.08	0.09	0.33	0.09	-0.20	OVERPRICED
Jul-12	-0.02	-0.03	0.09	0.11	0.08	-0.10	OVERPRICED
Aug-12	0.10	0.02	0.09	0.96	0.02	0.08	UNDERPRICED
Sep-12	0.08	0.12	0.09	0.55	0.11	-0.02	OVERPRICED
Oct-12	0.03	-0.02	0.09	0.57	0.03	0.00	UNDERPRICED
Nov-12	0.16	0.03	0.09	0.93	0.03	0.13	UNDERPRICED
Dec-12	0.04	0.06	0.09	0.77	0.06	-0.03	OVERPRICED
Source: Compiled by the researchers							

In the table 1.2 year 2011, it is analysed that with increase in beta the expected return also increases. In month of Feb, Mar, May, Nov, Dec the Eicher motors stock has been undervalued. In table 2.2 year 2012, from month Jan to Dec, the capm model proved that with rise in beta expected return increased and with decline in beta, later is decreased. In month Mar, Apr, Aug, Oct, Nov, the stock has been undervalued. There is no regularity in return.

PERIOD	ACTUAL RETURN	MARKET RETURN	Risk free rate of return(Rf)	BETA (β)	EXPECTED RETURN(Er)	Difference b/w actual return and expected return	OVERPRICED/ UNDERPRICED
TABLE 1.3			MAHINDRA AND MAHINDRA				
Jan-11	-0.10	-0.13	0.09	1.22	-0.18	-0.21	OVERPRICED
Feb-11	-0.13	-0.04	0.09	0.81	-0.01	-0.07	OVERPRICED
Mar-11	0.05	0.07	0.09	1.15	0.07	0.00	UNDERPRICED
11-Apr	0.06	0.03	0.09	1.31	0.01	0.01	UNDERPRICED
May-11	-0.09	-0.05	0.09	0.91	-0.04	-0.09	OVERPRICED
Jun-11	0.04	-0.02	0.09	1.14	-0.03	0.04	UNDERPRICED
Jul-11	0.04	0.00	0.09	1.57	-0.05	0.04	UNDERPRICED
Aug-11	0.01	-0.05	0.09	1.09	-0.06	0.01	UNDERPRICED
Sep-11	0.05	-0.01	0.09	0.92	0.00	0.05	UNDERPRICED
Oct-11	0.07	0.12	0.09	0.95	0.11	0.07	UNDERPRICED
Nov-11	-0.13	-0.09	0.09	1.40	-0.16	-0.13	OVERPRICED
Dec-11	-0.06	-0.06	0.09	1.37	-0.11	-0.06	OVERPRICED
TABLE 2.3			MAHINDRA AND MAHINDRA				
Jan-12	0.00	0.14	0.09	1.54	0.17	0.00	OVERPRICED
Feb-12	0.03	0.06	0.09	0.99	0.06	0.03	UNDERPRICED
Mar-12	0.02	0.02	0.09	0.74	0.04	0.02	UNDERPRICED
11-Apr	0.00	0.05	0.09	0.65	0.07	0.00	UNDERPRICED
May-12	-0.09	-0.14	0.09	0.38	0.00	-0.09	OVERPRICED
Jun-12	0.10	0.08	0.09	0.89	0.08	0.10	UNDERPRICED
Jul-12	-0.02	-0.03	0.09	0.69	0.01	-0.02	OVERPRICED
Aug-12	0.00	0.00	0.09	1.01	0.00	0.00	0
Sep-12	0.14	0.12	0.09	0.91	0.12	0.14	UNDERPRICED
Oct-12	0.02	-0.02	0.09	1.43	-0.06	0.02	UNDERPRICED
Nov-12	0.05	0.03	0.09	0.72	0.05	0.05	UNDERPRICED
Dec-12	-0.03	0.06	0.09	1.18	0.05	-0.03	OVERPRICED
Source: Compiled by the researchers							

In the table 1.3 year 2011, after analysing, it is found that there is no perfect relation between beta and expected return as in months of Apr, Jun, Nov, with rise in beta, expected return

declines, but in remaining month there is high expected return with high beta and low expected return with beta. Majority of month are showing undervalued priced.

In table 2.3 year 2012, in months of Oct., Aug., there is linear relation with beta and expected return. In this year Jan, May, Jul, Dec. only these months the Mahindra and Mahindra stock has been overvalued.

PERIOD	ACTUAL RETURN	MARKET RETURN	Risk free rate of return(Rf)	BETA (β)	EXPECTED RETURN(Er)	Difference b/w actual return and expected return	OVERPRICED/ UNDERPRICED
TABLE 1.4				MARUTI SUZUKI			
Jan-11	-0.12	-0.13	0.09	0.73	-0.07	-0.05	OVERPRICED
Feb-11	-0.03	-0.04	0.09	0.67	0.00	-0.03	OVERPRICED
Mar-11	-0.02	0.07	0.09	1.34	0.06	-0.09	OVERPRICED
11-Apr	0.04	0.03	0.09	0.91	0.03	0.00	UNDERPRICED
May-11	-0.05	-0.05	0.09	0.46	0.03	-0.08	OVERPRICED
Jun-11	-0.07	-0.02	0.09	0.76	0.01	-0.08	OVERPRICED
Jul-11	0.06	0.00	0.09	0.62	0.04	0.02	UNDERPRICED
Aug-11	-0.10	-0.05	0.09	0.94	-0.04	-0.06	OVERPRICED
Sep-11	0.00	-0.01	0.09	1.00	-0.01	0.01	UNDERPRICED
Oct-11	0.05	0.12	0.09	0.07	0.09	-0.05	OVERPRICED
Nov-11	-0.14	-0.09	0.09	1.18	-0.12	-0.02	OVERPRICED
Dec-11	-0.04	-0.06	0.09	0.85	-0.04	-0.01	OVERPRICED
TABLE 2.4				MARUTI SUZUKI			
	0.27	0.14	0.09	0.90	0.14	0.13	UNDERPRICED
Feb-12	0.04	0.06	0.09	0.76	0.07	-0.04	OVERPRICED
Mar-12	0.03	0.02	0.09	0.76	0.04	-0.01	OVERPRICED
11-Apr	0.02	0.05	0.09	0.96	0.05	-0.03	OVERPRICED
May-12	-0.17	-0.14	0.09	0.42	-0.01	-0.16	OVERPRICED
Jun-12	0.09	0.08	0.09	1.19	0.08	0.01	UNDERPRICED
Jul-12	-0.04	-0.03	0.09	1.46	-0.08	0.04	UNDERPRICED
Aug-12	0.01	0.02	0.09	0.17	0.08	-0.06	OVERPRICED
Sep-12	0.16	0.12	0.09	1.23	0.13	0.04	UNDERPRICED
Oct-12	0.06	-0.02	0.09	0.18	0.07	-0.01	OVERPRICED
Nov-12	0.01	0.03	0.09	0.55	0.06	-0.04	OVERPRICED
Dec-12	0.00	0.06	0.09	0.78	0.06	-0.06	OVERPRICED
Source: Compiled by the researchers							

In the table 1.4 year 2011, After analysing, it is found that there is no perfect relation between Beta and Expected return .Majority of month are showing Overvalued priced.

In table 2.4 year 2012, in majority of month it is found that the relation between Beta and Expected return is linear. In this year, in month of Jan, Jun, Jul, Sept ,the Maruti Suzuki stock has been undervalued.

PERIOD	ACTUAL RETURN	MARKET RETURN	Risk free rate of return(Rf)	BETA (β)	EXPECTED RETURN(Er)	Difference b/w actual return and expected return	OVERPRICED/ UNDERPRICED
			TABLE 1.5	TATA MOTORS			
	-0.12	-0.13	0.09	-1.29	0.38	-0.50	OVERPRICED
Feb-11	0.01	-0.04	0.09	-1.65	0.30	-0.29	OVERPRICED
Mar-11	0.09	0.07	0.09	-1.35	0.12	-0.02	UNDERPRICED
11-Apr	0.00	0.03	0.09	-1.29	0.17	-0.18	UNDERPRICED
May-11	-0.11	-0.05	0.09	-1.57	0.31	-0.41	OVERPRICED
Jun-11	-0.08	-0.02	0.09	-1.17	0.22	-0.30	OVERPRICED
Jul-11	-0.05	0.00	0.09	-1.45	0.22	-0.27	OVERPRICED
Aug-11	-0.23	-0.05	0.09	-1.61	0.32	-0.54	OVERPRICED
Sep-11	0.03	-0.01	0.09	-1.97	0.28	-0.25	UNDERPRICED
Oct-11	0.29	0.12	0.09	-2.38	0.03	0.26	UNDERPRICED
Nov-11	-0.11	-0.09	0.09	-1.70	0.39	-0.50	OVERPRICED
Dec-11	-0.02	-0.06	0.09	-1.29	0.28	-0.31	OVERPRICED
			TABLE 2.5	TATA MOTORS			
Jan-12	0.33	0.14	0.09	-1.10	0.03	0.29	UNDERPRICED
Feb-12	0.09	0.06	0.09	-1.38	0.13	-0.04	UNDERPRICED
Mar-12	0.03	0.02	0.09	-1.41	0.19	-0.16	UNDERPRICED
11-Apr	0.14	0.05	0.09	-1.47	0.15	0.00	UNDERPRICED
May-12	-0.23	-0.14	0.09	-2.17	0.59	-0.83	OVERPRICED
Jun-12	0.08	0.08	0.09	-1.77	0.11	-0.03	UNDERPRICED
Jul-12	-0.05	-0.03	0.09	-1.60	0.28	-0.33	OVERPRICED
Aug-12	0.03	0.02	0.09	-1.88	0.23	-0.20	UNDERPRICED
Sep-12	0.16	0.12	0.09	-2.85	0.01	0.15	UNDERPRICED
Oct-12	-0.07	-0.02	0.09	-1.80	0.28	-0.35	OVERPRICED
Nov-12	0.02	0.03	0.09	-1.90	0.21	-0.18	UNDERPRICED
Dec-12	0.15	0.06	0.09	-1.61	0.14	0.01	UNDERPRICED
Source: Compiled by the researchers							

In the table 1.5 year 2011, After analysing ,it is found that Linear relation between Beta and Expected return exist to large extent .Majority of month are showing Overvalued priced.

In table 2.5 year 2012, in majority of month it is found that the relation between Beta and Expected return is perfect positive. In this year ,in month of Jan, Feb, May, Apr, Jun, Aug, Sep, Nov, Dec ,Tata motors stock has been undervalued priced.

PERIOD	ACTUAL RETURN	MARKET RETURN	Risk free rate of return(Rf)	BETA (β)	EXPECTED RETURN(Er)	Difference b/w actual return and expected return	OVERPRICED/ UNDERPRICED
			TABLE 1.6		HERO MOTOCORP		
Jan-11	-0.18	-0.13	0.09	0.70	-0.07	-0.11	OVERPRICED
Feb-11	-0.09	-0.04	0.09	0.91	-0.03	-0.06	OVERPRICED
Mar-11	0.07	0.07	0.09	0.52	0.08	-0.01	OVERPRICED
11-Apr	0.07	0.03	0.09	0.94	0.03	0.04	UNDERPRICED
May-11	0.1	-0.05	0.09	1.09	-0.06	0.16	UNDERPRICED
Jun-11	0.01	-0.02	0.09	0.90	-0.01	0.02	UNDERPRICED
Jul-11	-0.06	0.00	0.09	0.52	0.04	-0.10	OVERPRICED
Aug-11	0.14	-0.05	0.09	0.26	0.05	0.09	UNDERPRICED
Sep-11	-0.06	-0.01	0.09	0.73	0.02	-0.08	OVERPRICED
Oct-11	0.11	0.12	0.09	0.43	0.10	0.01	UNDERPRICED
Nov-11	-0.06	-0.09	0.09	0.07	0.08	-0.14	OVERPRICED
Dec-11	-0.09	-0.06	0.09	0.85	-0.04	-0.05	OVERPRICED
			TABLE 2.6		HERO MOTOCORP		
Jan-12	0.01	0.14	0.09	0.75	0.13	-0.12	OVERPRICED
Feb-12	0.01	0.06	0.09	0.14	0.09	-0.08	OVERPRICED
Mar-12	0.06	0.02	0.09	0.61	0.05	0.01	UNDERPRICED
11-Apr	0.09	0.05	0.09	1.30	0.04	0.05	UNDERPRICED
May-12	-0.18	-0.14	0.09	0.73	-0.08	-0.10	OVERPRICED
Jun-12	0.18	0.08	0.09	0.97	0.08	0.10	UNDERPRICED
Jul-12	-0.05	-0.03	0.09	0.50	0.03	-0.08	OVERPRICED
Aug-12	-0.09	0.02	0.09	0.75	0.04	-0.13	OVERPRICED
Sep-12	0.05	0.12	0.09	0.38	0.10	-0.05	OVERPRICED
Oct-12	0	-0.02	0.09	0.76	0.01	-0.01	OVERPRICED
Nov-12	-0.04	0.03	0.09	0.52	0.06	-0.10	OVERPRICED
Dec-12	0.04	0.06	0.09	0.62	0.07	-0.03	OVERPRICED
Source: Compiled by the researchers							

In the table 1.6 year 2011, after analysing, it is found that no hardly any positive relative relation exists between Beta and Expected return. The month of Feb, May, Jun, Aug, and Oct are showing underpriced value.

In table 2.6 year 2012, in month of Mar, Jul, Aug. and Dec it is found that the relation between Beta and Expected return is perfect positive. In this year, only in month of May, Apr, Jun, Hero Motocorp stock has been undervalued priced.

7. CONCLUSION

The analysis can be concluded that each of the investigation conducted is a confirmation of the other that the empirical investigations carried out during this study do not fully hold up with CAPM. The data did not provide evidence that higher beta yields higher return .The data also provide a difference between average risk free rate, risk premium and their estimated values. However, a linear relationship between beta and return is established. To an extent, the consequence of the tests conducted on the data with period 2011-01-01 to2012-12-31 obtained from the National Stock Exchange do not appear to absolutely reject CAPM. On the other hand, it may be mentioned that the data do not support CAPM since there are other factors available and capable of affecting the results.

The hypothesis and implications of CAPM predicts that there exist a linear relationship between expected return and beta. It occurred that the findings from the test are also consistent with the implications and provide evidence in favour of CAPM.

The results of the tests conducted on sample data for the period of January2011 to December 2012 do not appear to clearly reject the CAPM. In the light of above findings, it can be concluded that beta is not sufficient to determine the expected returns on securities/portfolios. The empirical findings of this paper would be useful to financial analysts in Indian capital market. Further research on the combinations of market factors, macroeconomic factors and firms' specific factors can be carried out to solve the CAPM puzzle.

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15. Internet Database Information

Notes:

1. This paper is considered as one of the most important one. It contains illustrative and in-depth theoretical framework. Substantial evidences favouring the model are presented as well as contra evidences.

2. The context of this section seeks simplicity intended to suit persons with little or no previous knowledge on the Capital Asset Pricing Model (CAPM).