JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

CAPITAL ASSETS PRICING MODEL: A STUDY OF INDIAN AUTOMOBILE SECTOR USING S&P 500 INDEX IN NSE.

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ABSTRACT

CAPM has been an incredible achievement in resource valuing hypothesis, clarifying the risk return normal for monetary resources. CAPM has been put to test by an enormous number of scholars. In this study, we test the legitimacy of CAPM in India on the stocks recorded on the National Stock Exchange. The focus of this paper is to study the CAPM holds in the area of Indian Stock Market (NSE). The present paper is a true endeavor to discover answers of the inquiries by applying CAPM - Is higher beta yields higher anticipated return? Is there exist linearity between the stock beta and the normal return. For similar destinations, the paper is centering to examine the under and over esteemed supply of three Automobile sector companies.

KEY WORDS: Beta, CAPM, NSE, Risk Return.

INTRODUCTION

The establishment of the CAPM is that a financial backer can decide to open himself to an extensive measure of hazard through a mix of loaning acquiring and an effectively made portfolio out of hazardous protections. The model stresses that the arrangement of this ideal danger portfolio depends totally on the financial backer's assessment of things to come possibilities of various protections, and not on the financial backers' own mentalities towards hazard. The last is reflected only in the decision of a mix of a hazardous portfolio and hazard free venture or acquiring. On account of a financial backer who doesn't have any uncommon data, that is preferred data over different financial backers, there is zero excuse to hold an alternate arrangement of offers than different financial backers, which can be depicted as the market arrangement of offers. The Capital Asset Pricing Model (CAPM) fuses a factor that is known as the "beta worth" of an offer. The beta of an offer assigns its minimal commitment to the danger of the whole market arrangement of dangerous protections. This infers that offers assigned with high beta coefficient over 1 is relied upon to have over-normal impact on the danger of the absolute portfolio while shares with a low beta coefficient under 1 is relied upon to have an under-normal impact on the total portfolio. In effective market as indicated by CAPM, the danger premium and the expected profit from a resource will differ in direct extent to the beta worth. The balance value development on proficient capital market produces these relations. The model is considered as the foundation of contemporary value hypothesis for monetary business sectors what's more, it additionally broadly utilized in experimental examinations, so the wealth of monetary measurable information can be used deliberately and proficiently. The National Stock Exchange (NSE) is India's driving stock trade covering different urban areas and towns the nation over. NSE was set up by driving foundations to give a cutting edge, completely mechanized screen-based exchanging framework with public reach. The Exchange has achieved unrivaled straightforwardness, speed and productivity, security and market honesty. It has set up offices that fill in as a model for the protections industry as far as frameworks, practices and strategies.

THEORITICAL FRAMEWORK OF THE MODEL

The Capital Asset Pricing Model regularly communicated as CAPM of William Sharpe (1964) and John Litner (1965) focuses the introduction of resource valuing hypothesis. It depicts the connection between hazards what's more, anticipated return and is utilized in the evaluating of unsafe protections. The CAPM is still generally utilized in assessing the exhibition of oversaw

portfolio and assessing the expense of capital for firms despite the fact that, it is around four and a half many years old. The Capital Asset Pricing Model, CAPM accentuates that to ascertain the normal return of a security; two significant things should be known by the financial backers:

• The danger premium of the general value/portfolio (expecting that the security is just hazardous resource)

• The security's beta versus the market.

This can be communicated numerically as:

E [Ri] = Rf+ βi(E[Rm] – Rf) 1

Where: E[Ri] = Expected Return

Rf= sans risk rate

βi= Beta of the security I

E[Rm] = Expected Return available

E[Rm] – Rf= Market premium

The CAPM model presents basic system for financial backers and corporate chiefs to assess their speculations. The model shows that all financial backers and chiefs need to do is an assessment and correlation between anticipated return and required return. On the off chance that the normal result is generally ominous, it is important to cut short aims for expected interest in the specific security.

REVIEW OF EXISTING LITERATURE

In this day and age, the financial backers are keen on exceptional yields for their speculations, regardless of whether the speculation is done in more dangerous protections or business projects. For this reason, the financial backers continually attempt to discover and figure the danger existing behind their ventures, and in this way they utilize various models for their estimations. The capital resource valuing model (CAPM), in this respect has been broadly utilized by the financial backers or money chiefs, for discovering the danger and return of their ventures (Jagannathan& Wang, 1993). It has been expressed by Blume (1993) that the CAPM gives a model, clarifying the harmony hazard/return relationship, likewise, that the CAPM depends on the idea, that there is a direct connection between the orderly danger (non-diversifiable), estimated by beta and the anticipated returns. This direct relationship is portrayed by security market line (SML), which thinks about the deliberate danger of an offer and the return, alongside the danger of the market and hazard free pace of return (Watson and Head, 1998)Like different models, the CAPM as well, has a few suspicions (Van Horne, 2006). Higher the danger (precise danger), higher will be the return; unsystematic danger can be limited totally, through diversification of the portfolio; financial backers are to be made up for the efficient danger of the securities, that can't be broadened away (Lau and Quay, 1974). The efficient danger is estimated by beta (β), which is in positive relationship with return. The CAPM utilizes beta for discovering the danger, and furthermore employments beta for deciding the normal returns (O' Brien and Srivastava, 1995). Beta empowers us to discover the variances in cost of an offer, alongside deciding the relative development of offer portfolio to the market portfolio (Jones, 1998). After the improvement of the CAPM, the utilization of beta has been seen to increment, particularly in speculation local area for discovering hazard (Blume, 1993). Numerous specialists have attempted to test the legitimacy of CAPM, in various arrangements, and furthermore were ready to give various outcomes with critical experimental proof. The CAPM model was tried in Japanese arrangement, by applying the model to Tokyo financial exchange, where the outcomes upheld the model, and the financial backers were made up for the methodical danger (Lau&Quay, 1974). Additionally, this model was applied to the Swedish securities exchange by Bjorn and Hordahl, (1998), and demonstrated that their outcomes showed a distinction from worldwide proof in regards to CAPM. The aftereffects of Bossaert et al (1999), as refered to in Levy et al (2000), at first, upheld the CAPM, however later on the measurable tests, disposed of the model, due to either showcase slenderness or time imperatives. Further examinations by Levy, Levy and Solomon (2000), utilizing tiny reproduction (PC – based examination), drove them to give results, supporting the CAPM. The CAPM, was tried regarding

US protections from S&P 500 record by Gomez and Zapatro,(2003), whereby their outcomes upheld the two Beta model, likewise, the scientists thought of same results, supporting the CAPM in UK, most presumably because of the likenesses in both US and UK setups.In South African setting, the specialists Keogh, (1994), discovered the changes in beta, adversely influencing the meaning of beta and CAPM, particularly in South Africa. Though, the results given by Bradfield, Barr and Affleck-Graves' examination (1988) upheld the CAPM, and pronounced it to be a helpful model, with regards to JSE. The legitimacy of CAPM was additionally brought to test in Greek financial exchanges, by Grigoris and Stravos (2006), where the aftereffects of their investigation didn't uphold the idea of high danger and exceptional yield. For additional examination and testing, the CAPM, was tried in two distinct arrangements, US and Japan, simultaneously, where the outcomes showed the failure of CAPM to clarify returns when applied to the financial exchanges of both countries(Hui and Christopher, (2008).Similarly, to test the legitimacy of CAPM, various examinations have been directed in Pakistan, which included KSE, Karachi Stock Exchange by Eatzaz and Attiya, (2008), where the consequences of their investigation upheld the conventional CAPM in clarifying the danger and return relationship, however their outcomes were fulfilling just for a very long time. Later on, one more investigation led by Hanif, (2009), showed the in appropriateness of the CAPM, in his examination, which had considered the tobacco business for a very long time of time. On the entire the experimental outcomes with respect to CAPM talked about in this part lead to blended ends. Some the backer multifaceted models because of disappointment of market beta alone to clarify crosssectional variety in security returns and others featured the methodological issues in testing CAPM. Muhammad Ibrahim Khan (June 2015) surveyed and tried the Capital Asset Pricing Model. The computation of Beta of ten organizations enlisted on KSE, and genuine and expected returns have been looked at. It was tracked down that the Capital Asset Pricing Model (CAPM), neglected to give precise outcomes. Toward the finish of conversation of existing writing, it tends to be inferred that the CAPM can be utilized as it has possible degree to tackle the issues and track down the normal outcomes. Anyway some of the investigations discovered erroneous outcomes yet this model is proper for research in finance. This model might be utilized as a device for key arranging by partnerships that own an arrangement of organizations.

OBJECTIVE OF THE STUDY

The point of this paper is to consider whether the CAPM holds in Automobile Sector in Indian stock

Exchange (NSE) by utilizing auto record. The destinations of the exploration paper are to discover the

Answers of the accompanying inquiries:

1. Is higher beta yields higher anticipated return?

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

3. Explore the under and over esteemed supply of three auto organizations utilizing Capital assets Pricing Model.

RESEARCH METHODOLOGY

This investigation has essentially centered on the computation of Beta of six three automobile organizations for tracking down the expected return and afterward by contrasting it with the actual return, for testing the CAPM for its down to empical application. The research configuration is expressive and logical in the examination as Capital Asset Pricing Model is being tried concerning organizations in Automobile Sector in India. Along these lines, auxiliary information will be utilized. Information will be gathered from the sources accessible. Sites, libraries and the articles from different web search tools like Google, yahoo search and answers are being looked to gather the genuine information so that suitable outcome can be imagined. The example taken for this examination isn't covering all the Automobile area organizations recorded at NSE, as just three organizations have been considered for this examination.

• BAJAJ AUTO

• MAHINDRA & MAHINDRA

• TATA MOTORS

DATA ANALYSIS AND 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 reveals the data analysis of period from Jan 2019 to Dec 2019. Table 2.1 depicts the data analysis of period from Jan 2020 to Dec 2020. 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 3 Automobile Companies listed on the National Stock Exchange ranging from 2019-01-01 to 2020-12-31. The stocks used in the study are considered the most traded on the National Stock Exchange.

Judgment inspecting is utilized to pick test of Automobile Sector organizations. The information investigation apparatus utilized for this examination is the MS (2010). The stock cost or the offer costs of the organizations, considered for this examination, have been taken from the site of NSE and different sites and data release. Then, at that point the return was determined by taking the end costs, deducting the end cost from the initial cost and isolating it by the initial cost. Essentially, the recipe was applied to the market record, for ascertaining the profits. Beta was determined by applying slant β = slope(y,x), where the'y' addresses the organization returns and 'x' addresses the market returns. The risk free rate utilized in the research was the pace of national saving certificate in Indian post office.

TABLE 1.1 BAJAJ AUTO

Date	A.R	M.R	R,F.R.R	BETA	E.R	AR-ER	VALUATION
1//2019	-0.12	-0.03	0.07	1.56	-0.09	-0.03	UNDERPRICED
2/1/2019	0	-0.02	0.07	1.54	-0.07	0.07	UNDERPRICED
3/1/2019	-0.02	-0.04	0.07	1.54	-0.1	0.08	OVERPRICED
4/1/2019	0.02	0.07	0.07	1.56	0.07	-0.05	UNDERPRICED
5/1/2019	0.03	-0.06	0.07	1.69	-0.15	0.18	UNDERPRICED
6/1/2019	0.12	-0.01	0.07	1.77	-0.07	0.19	UNDERPRICED
7/1/2019	-0.12	0.02	0.07	1.77	-0.02	-0.1	OVERPRICED
8/1/2019	-0.05	-0.02	0.07	1.86	-0.1	0.05	OVERPRICED
9/1/2019	-0.09	-0.02	0.07	1.85	-0.1	0.01	OVERPRICED
10/1/2019	0.02	-0.03	0.07	1.84	-0.11	0.13	UNDERPRICED
11/1/2019	0	-0.03	0.07	1.86	-0.11	0.11	UNDERPRICED
12/1/2019	0	0	0.07	1.87	-0.06	0.06	UNDERPRICED

TABLE 2.1 BAJAJ AUTO

DATE	A.R	M.R	R.F.R.R	BETA	E.R	AR-ER	VALUATION
1/1/2020	0.1	0.09	0.07	1.87	0.11	-0.01	UNDERPRICED
2/1/2020	0.43	0.14	0.07	2.08	0.22	0.21	UNDERPRICED
3/1/2020	-0.26	-0.11	0.07	1.2	-0.15	-0.11	OVERPRICED
4/1/2020	-0.03	-0.04	0.07	0.61	0	-0.03	OVERPRICED
5/1/2020	-0.04	-0.02	0.07	0.62	0.01	-0.05	OVERPRICED
6/1/2020	-0.06	-0.05	0.07	0.63	-0.01	-0.05	OVERPRICED
7/1/2020	0.01	-0.07	0.07	0.6	-0.01	0.02	UNDERPRICED
8/1/2020	0.03	0.04	0.07	0.85	0.04	-0.01	UNDERPRICED
9/1/2020	0	0.03	0.07	0.71	0.04	-0.04	UNDERPRICED
10/1/2020	-0.09	-0.1	0.07	0.17	0.04	-0.13	OVERPRICED
11/1/2020	0.03	.01	0.07	.011	0.04	-0.01	OVERPRICED
12/1/2020	0.04	.002	0.07	.015	0.01	0.03	UNDERPRICED

In the table 1.1 year 2019, 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 Mar, July, August, Sept. Bajaj auto stock found undervalued. In table 2.1 year 2020, same result about relation about beta and expected return is extracted. In moth of Jan, Feb, July August Sept, Dec, it was undervalued it means there is higher expectancy about rising prices of stock.

TABLE 1.2 and 2.2 for the year 2019 -2020

MAHINDRA &MAHINDRA

Date	M.R	A.R	R.F.R.R	BETA	E.R	AR-ER	VALUATION
1-Jan-19	-0.03	0.05	0.07	2.19	(0.14)	0.20	UNDEPRICED
1-Feb-19	-0.02	-0.04	0.07	2.21	(0.12)	0.08	UNDERPRICED
1-Mar-19	-0.04	0.04	0.07	2.21	(0.17)	0.21	UNDERPRICED
1-Apr-19	0.07	0.00	0.07	2.24	0.07	(0.08)	UNDERPRICED
1-May-19	-0.06	-0.01	0.07	2.47	(0.26)	0.25	UNDERPRICED
1-Jun-19	-0.01	0.19	0.07	2.56	(0.14)	0.33	OVERPRICED
1-Jul-19	0.02	0.03	0.07	2.57	(0.06)	0.09	UNDERPRICED
1-Aug-19	-0.02	-0.03	0.07	2.59	(0.15)	0.12	UNDERPRICED
1-Sep-19	-0.02	-0.10	0.07	2.59	(0.16)	0.06	UNDERPRICED
1-Oct-19	-0.03	0.14	0.07	2.58	(0.19)	0.34	UNDERPRICED
1-Nov-19	-0.03	0.00	0.07	2.65	(0.19)	0.18	UNDERPRICED
1-Dec-19	0.00	-0.06	0.07	2.66	(0.11)	0.05	UNDERPRICED
1-Jan-20	0.09	0.24	0.07	2.68	0.13	0.11	OVERPRICED
1-Feb-20	0.14	0.60	0.07	2.73	0.27	0.33	OVERPRICED
1-Mar-20	-0.11	-0.22	0.07	1.29	(0.17)	(0.06)	UNDERPRICED
1-Apr-20	-0.04	-0.16	0.07	1.11	(0.06)	(0.10)	UNDERPRICED
1-May-20	-0.02	-0.15	0.07	1.03	(0.02)	(0.12)	UNDERPRICED
1-Jun-20	-0.05	-0.16	0.07	1.07	(0.06)	(0.10)	UNDERPRICED
1-Jul-20	-0.07	-0.01	0.07	0.91	(0.05)	0.05	UNDERPRICED
1-Aug-20	0.04	0.00	0.07	1.21	0.03	(0.04)	UNDERPRICED
1-Sep-20	0.03	0.02	0.07	1.37	0.01	0.01	OVERPRICED
1-Oct-20	-0.10	-0.18	0.07	1.32	(0.15)	(0.03)	UNDERPRICED
1-Nov-20	-0.04	0.00	0.07	(0.41)	0.11	(0.11)	UNDERPRICED
1-Dec-20	0.01	-0.04	0.07	0.87	0.02	(0.06)	UNDERPRICED

In the table 1.2 year 2019, after analyzing, 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. And for the table 2.2 in the year 2020 stocks for the month of mar, April may June, July august are undervalued.

TABLE 1.3 AND TABLE 2.3 FOR THE YEAR 2019-2020 FOR TATA MOTARS							
Date	**A.R**	**M.R**	**R.F.R.R**	**BETA**	**E.R**	**AR-ER**	**VALUATION**
1/1/2019	0.02	-0.03	0.07	3.48	-0.27	0.29	OVERPRICED
2/1/2019	0.02	-0.02	0.07	3.49	-0.23	0.25	OVERPRICED
3/1/2019	-0.19	-0.04	0.07	3.49	-0.3	0.12	UNDERPRICED
4/1/2019	0.24	0.07	0.07	3.45	0.07	0.17	OVERPRICED
5/1/2019	0.06	-0.06	0.07	3.53	-0.4	0.46	OVERPRICED
6/1/2019	0.2	-0.01	0.07	3.72	-0.24	0.43	OVERPRICED
7/1/2019	0.16	0.02	0.07	3.72	-0.12	0.28	OVERPRICED
8/1/2019	-0.01	-0.02	0.07	3.70	-0.25	0.24	OVERPRICED
9/1/2019	-0.34	-0.02	0.07	3.71	-0.26	-0.08	OVERPRICED
10/1/2019	0.1	-0.03	0.07	3.66	-0.3	0.4	OVERPRICED
11/1/2019	-0.13	-0.03	0.07	3.72	-0.29	0.16	OVERPRICED
12/1/2019	0.05	0	0.07	3.69	-0.18	0.23	OVERPRICED
1/1/2020	0.37	0.09	0.07	3.69	0.15	0.22	OVERPRICED
2/1/2020	0.81	0.14	0.07	3.78	0.35	0.46	OVERPRICED
3/1/2020	-0.24	-0.11	0.07	2.07	-0.31	0.07	OVERPRICED
4/1/2020	0.07	-0.04	0.07	2.14	-0.17	0.24	OVERPRICED
5/1/2020	-0.11	-0.02	0.07	2.33	-0.13	0.02	OVERPRICED
6/1/2020	-0.06	-0.05	0.07	2.36	-0.22	0.16	OVERPRICED
7/1/2020	-0.27	-0.07	0.07	2.55	-0.27	0.01	UNDIFFERNCE
8/1/2020	0.07	0.04	0.07	2.32	0	0.07	UNDERPRICED
9/1/2020	0	0.03	0.07	2.14	-0.02	0.02	OVERPRICED
10/1/2020	-0.26	-0.1	0.07	3.07	0.07	-0.33	UNDERPRICED
11/1/2020	0.02	0.04	0.07	2.01	0.07	-6.87	UNDERPRICED
12/12020	0.01	0.01	0.07	2.04	-0.11	2.03	OVERPRICED

In the table 1.3 year 2019, After analyzing ,it is found that Linear relation between Beta and Expected return exist to large extent .Majority of month are showing Overvalued priced. In table 2.3 year 2020, in majority of month it is found that the relation between Beta and Expected return is perfect positive. In this year, in month of July, Aug, Oct, Nov Tata motors stock has been undervalued priced.

CONCLUSION

The examination can be inferred that every one of the examinations led is an affirmation of the other that the experimental examinations did during this investigation doesn't completely hold up with CAPM. The information didn't give proof that higher beta yields better yield .The information too gives a contrast between normal risk free rate, market premium and their assessed values. Notwithstanding, a straight connection among beta and return is set up. To a degree, the result of the tests directed on the information with period 2019-01-01 to2020-12-31 gotten from the National Stock Exchange don't appear to totally dismiss CAPM. On the other hand, it could be referenced that the information don't uphold CAPM since there are other factors accessible and equipped for influencing the outcomes. The theory and ramifications of CAPM predicts that there exist a straight connection between anticipated return and beta. It happened that the discoveries from the test are additionally predictable with the suggestions and give proof for CAPM. The consequences of the tests led on example information for the time of January2019 to December 2020 don't appear to unmistakably dismiss the CAPM. In the light of above discoveries, it tends to be reasoned that beta isn't adequate to decide the normal profits from protections/portfolios. The exact discoveries of this paper would be valuable to monetary examiners in Indian capital market. Further exploration on the mixes of market factors, macroeconomic components and firms' particular variables can be done to address the CAPM puzzle.

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