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An Analysis Of Selected Stock In It Sector Based On CAPM Model

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ABSTRACT

In India securities trading mainly takes place in two important stock exchanges: the Bombay stock exchange (BSE) and the National stock exchange (NSE). Almost all the important company'sstock in India are listed on both the exchanges. Different types of securities of companies like equity shares, preference shares, debentures, warrants, bonds, mutual funds etc are being traded in the stock exchanges. Investors use this platform for purchasing and selling of shares with the expectation of earning additional income out of it. Every investment involves two important factors: return and risk. There is no complete safe investment, therefore a certain amount of risk is inevitable in any kind of investment. A rational investor always looks for highest return at a minimum amount of risk. This paper is an analysis of risk and return of selected stocks in Indian IT sector based on the CAPM (Capital Asset Pricing Model) .CAPM model have been used to predict the stock price movement in the near future in order to give some valuable suggestions for the investors in IT sector to whether buy or sell the securities at this particular point of time based on the analysis.

KEYWORDS:Stock exchange, Investment, Return, Risk, CAPM Model.

INTRODUCTION

Investment is an activity where funds are employed in order to achieve some return or growth in the value of money invested. Every investor invests his money with the expectation of getting additional income from it. But it is not certain that every investment will gives you the expected return. There is a chance of risk of losing your money invested. Thus, risk is an inevitable element in any kind of investment. But an investor can reduce the level of risk involved in a security investment through analysing the price movement of stock in the stock market. Capital Asset Pricing Model (CAPM) is one of the models used for analysing the securities in the market and to predict the expected return and risk from the security.

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CAPM (Capital Asset Pricing Model) was developed by William Sharpe, John Lintner and Jam Mossin in mid 1960s.Hence this model was referred as Sharpe-Lintner-Mossin Capital asset pricing model. CAPM model is used for establishing the relationship between expected return and risk from the securities in the market. Under CAPM the expected return of the security can be ascertained by the following equation:

$$\boldsymbol{ERi = Rf + \beta i(ERm - Rf)}$$

Where, ERi =Expected return of investment

In this model the parameter beta (β) is used for measuring the systematic risk of the security. It can be expressed as:

$$\boldsymbol{\beta i = \frac{cov(RiRm)}{var(Rm)}}$$

Where, $cov(RiRm)$ is the covariance between return of stock i and market and $cov(RiRm)$is the variance of return on the market.

Beta of the security can also be expressed as:

$$\boldsymbol{\beta = n\sum(xy) - (\sum x)(\sum y)/n\sum x^2 - (\sum x)^2}$$

When we apply the concept of beta to a portfolio then,

$$\boldsymbol{\beta p = W1\beta 1 + W2\beta 2 + W3\beta 3 + \cdots \sum_{i=1}^{n} Wi\beta i}$$

In addition to beta (β) another important coefficient we use in CAPM model is Alpha (α). It is used to measure the performance of stock as compared to that of market return.

$$\boldsymbol{\alpha = \sum y - \frac{\beta \sum x}{n}}$$

Risk-free rate of return $(Rf)$is the rate of return on investment with no risk or having zero risk. Government securities like Treasury bills, bonds and notes are riskless securities and safest security for investment. CAPM model assumes that the risk-free rate is constant throughout the year.

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Market return (Rm) is the rate of return of market. It can be derived by using the market index value at the beginning and end of the particular period. It is ascertained by:

$$\boldsymbol{Rm = M1 - \frac{M0}{M0} + d1}$$

Where, $M1$ is the value of market index at the beginning and $M0$ is the value of market index at the end. $d1$is the dividend yield for the market.

ASSUMPTIONS OF CAPM

The following are some of the assumptions of CAPM model:

- An investor takes investment decision mainly based on the risk and return analysis.
- Investors are risk-averse. They always opt for choosing a security with low risk.
- There is a risk-free asset in every portfolio and lending and borrowing will be at a risk-free rate.
- All investors try to concentrate on maximising their utility on investment.
- There is no taxes or transaction cost involved in buying and selling of securities.
- No inflation or interest rate changes.
- The purchase and sale of securities can be made infinite number of times.
- All the investors have identical time horizon

In this paper we used the CAPM model for analysing the stock price movement of selected securities in IT sector and recommended the investors to make a take or sell decision based on the analysis.

OBJECTIVE OF THE STUDY

- To study the return and risk variations of selected stocks in Indian IT sector.
- To provide suggestions for investors in IT sector to make a buy or sell decision based on CAPM model.
- To analyse the risk involved in selected stocks and to understand the relationship between risk and expected return of those selected stocks.

RESEARCH METHODOLOGY

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The study has been conducted to analyse the selected securities in IT sector based on CAPM model and suggest whether to invest in the selected securities in IT sector at this point time. The data has been collected from secondary sources, from yahoo finance and RBI website.

Five different stocks from IT sector (INFOSIS, WIPRO, TECHMAHINDRA, TCS, and HCL)has been selected for the study. Weekly data has been taken for the financial year 2018-019.

Table no 1. Statement showing calculation of average return of selected companies

company	Average return
INFOSIS	0.60025
WIPRO	0.402633
TCS	0.657544
TECHMAHINDRA	0.503954
HCL	0.322945

Average Return of stocks can be ascertained by the following formula:

Average Return = [(closing stock price- opening stock price1)/opening stock price] *100.

Or

$$= \left[\frac{P1-P0}{P0}\right] * 100$$

Table no 2. Statement showing expected return as per CAPM model

COMPANY	RISKFREE RATE OF RETURN(Rf)	MARKET RETURN (Rm)	BETA (β)	ALPHA (α)	EXPECTED RETURN (Ri)
INFOSIS	**5.32%**	13.92%	0.658946614	0.44%	10.99%
WIPRO	**5.32%**	13.92%	0.156092977	0.36%	6.66%
TCS	**5.32%**	13.92%	0.663427989	0.49%	11.03%

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TECHMAHINDRA	**5.32%**	13.92%	0.73027255	0.32%	11.60%
HCL	**5.32%**	13.92%	0.553201877	0.19%	10.08%

Under CAPM model the expected return from the stock can be calculated by:

Expected return $(Eri) = Rf + \beta i\ (ERm - Rf)$

Where, Eri =Expected return of investment

$\boldsymbol{Rf}$ = Risk-free rate

$\boldsymbol{\beta i}$ = Beta of the investment

$\boldsymbol{Erm}$ = Expected return of market

$(\boldsymbol{Erm - Rf})$ =Market risk premium.

The most remarkable thing about CAPM (Capital Asset Pricing Model) is that we are not bothering about the volatility of the security or not calculating standard deviation to measure the risk element of the security. It is the beta of the security that measures the risk element in investing in a security in stock market. If the beta value is greater than one, then the stock is assumed to be riskier in the market. Always a rational investor prefers a stock with beta value between 0 and 1.

From the above analysis none of the selected securities is having beta value more than one. Hence, all the selected securities from IT sector is ideal for the investor to choose. Also, the securities where beta value is more is having highest expected return. TECHMAHINDRA and TCS is having highest expected return among the others where their beta value is also higher.

Here the market return (Rm) is 13.92% which is same for all the securities in the market portfolio.

$$Rm = Risk\ free\ rate + Risk\ premium$$

Where, Risk free rate (Rf) = 5.32%

Risk premium = 8.60%

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Risk free rate of return(Rf) is the rate of return where no risk is assumed on an investment.it is determined by RBI every year and the current Risk-free rate of return for the financial year 2018-019 is 5.32%.

Alpha is another key coefficient used in CAPM model which measure the performance of a stock as compared to that of market return. If the alpha value is positive means the security is profitable and negative alpha value shows that the stock has underperformed in the market. From the above analysis it is found that all the selected securities are having positive alpha value.

Table no 3. Statement showing comparison between actual return and expected return as per CAPM.

COMPANY	ACTUAL RETURN	EXPECTED RETURN
INFOSIS	0.60025	0.1099
WIPRO	0.402633	0.0666
TCS	0.657544	0.1103
TECHMAHINDRA	0.503954	0.116
HCL	0.322945	0.1008

FINDINGS AND SUGGESTIONS

The study has been conducted to analyse the performance of selected stocks in IT sector using CAPM (Capital Asset Pricing Model) during the one-year period i.e., from April 2018-March 2019 and to provide valuable suggestions for the investors to invest in securities.

From the analysis it was found that actual return of INFOSIS is 0.60025 whereas according to CAPM the expected return was found to be 0.1099.The actual return is more than that of expected return and hence it is recommended to take or buy the stock of INFOSIS at this point of time as it is found to be undervalued.

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In case of WIPRO the actual return of the stock is 0.402633 and the expected return as per CAPM model was 0. 0666. Here, also the investors can buy the securities as the actual return is more than the expected return.

Similarly, the actual return of TCS, TECHMAHINDRA, and HCL is also more than the expected return. So, the stock is found to be undervalued. Thus, at this point of time it is advisable for the investors to buy the stocks of selected IT sector companies.

CAPM model has been used to derive the relationship between expected risk and return of individual securities and portfolios. According to CAPM model when beta value is seems to be higher it means the security is holding larger amount of risk. Also, when beta value or risk is higher the expected return from the security will also be higher. From the above analysis it was found that TECHMAHINDRA and TCS is having high beta values amongst the others i.e., 0.73027255 and 0.663427989 and also the expected return is also higher accordingly i.e., 11.60% and 11.03%. Hence it can be inferred that CAPM model is valid in Indian Stock Market for the selected securities.

CONCLUSION

CAPM model has been used in this study to analyse the stock behaviour and to show the relation between risk and expected return of selected securities. From this study CAPM model was found valid in analysing the stock price movement and provide a means of suggestion for investors to make their buy or sell decision. Even though there are many factors that determine the stock price movement in the market, CAPM model gave emphasise on two key factors of investment i.e., return and risk. It is true that a rational investor is always interested in return and risk of a security rather than other factors of investment. So, it can be concluded that the risk and return analysis of CAPM model helps the investor in taking his investment decision on a security in stock market.

LIMITATIONS OF THE STUDY

The scope of the study has been limited to five stocks in Indian IT sector. It can also be extended to other sectors in order to have a more comparative view on stock price movement. The relationship between expected risk and return based on CAPM model is been used to understand the stock price movement and to suggest the investors to make a buy or sell

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decision. There are other key factors other than risk and return which predict the stock price movements like dividend, EPS, P/E ratio etc. These factors can also be used under analysis to estimate the stock return.

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