CONSTRUCTING AN OPTIMAL PORTFOLIO USING SHARPE'S SINGLE INDEX MODEL

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Abstract
A Portfolio is a collection of investments held by an institution or a private individual. In building up an investment portfolio a financial institution will typically conduct its own investment analysis, whilst a private individual may make use of the services of a financial advisor or a financial institution which offers portfolio management services. Holding a portfolio is part of an investment and risk- limiting strategy called diversification. By owning several assets, certain type of risk (in particular specific risk) can be reduced. The assets in the portfolio could include stocks, bonds, options, warrants, gold certificates, real estate, and futures contracts production facilities, or any other item that is expected to retain its value. A premier financial services organization providing individual and corporate with customized financial solutions. The company work towards understanding the financial goals and risk profile. Company's expertise combined with thorough understanding of the financial markets results in appropriate investment solutions for investors. At Wealth Creators they realize the dreams, needs, aspirations, concerns and resources are unique. This is reflected in every move the company make with and for the investors. Investors have a lot of investment opportunities. The investor has to find good among the alternatives. It is very difficult to find the good opportunity so this analysis helps the investors to find good one among the alternatives. Many investors invest in securities without analyzing the fundamentals like financials, competition, industry growth, and company factors. Many invest in securities by their emotional forces. Then the investor end up with the losses.

***Keywords: optimal & Investment Portfolio, diversification, investor, Sharpe's Single Index Model*.**

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1.1 INTRODUCTION

A grouping of financial assets such as stocks, bonds and cash equivalents, as well as their mutual, exchange-traded and closed-fund counterparts. Portfolios are held directly by investors and/or managed by financial professionals. Portfolio is the combination of different securities such as stocks, bonds and money market instruments. The process of blending together the broad asset classes so as to obtain optimum portfolio return with minimum risk is called "portfolio construction" Diversification of investment helps to spread risks over many assets.

A diversification of securities gives the assurance of obtaining the anticipated return of portfolio. In a diversified portfolio, some securities may not perform as expected, but others may exceed the expectation and making the actual return of the portfolio. Keeping portfolio of single security may lead to greater likelihood of the actual return differs from expected. So, diversifying the securities are common in portfolio. Portfolios are held directly by investors and/or managed by financial professionals.

Portfolio management process:

Investment management is a complex activity which may be broken down into the following steps:

1. **Specification of investment objectives and constraints**
   The typical objectives sought by the investors are current income, capital appreciation and safety of principal, the relative importance of those objectives should be specified. Further, the constraints arising liquidity, time horizon, tax and special circumstances must be identified.

2. **Choice of asset mix**
   The most important decision of portfolio management is assets mix decision. The appropriate stock bond mix depends mainly on the risk tolerance and investment horizon of the investor.

3. **Formulation of portfolio strategy**
   Once the asset mix is chosen, an appropriate portfolio strategy has to be hammered out. Two broad choices are available an active portfolio strategy or a passive strategy. An active portfolio strategy strives to can superior risk adjusted returns by resorting to market timing, or some combination of this, a passive portfolio strategy, on the other hand involves holding a broadly diversified portfolio and maintain a predetermined level of risk exposure.
   1. **Selection of Portfolio**
      Generally, investors pursue an active stance with respect to security selection, for stock selection, investor commonly go buy fundamental analysis or technical analysis, the factors that are considered in selecting bonds are yield to maturity, credit rating, terms to maturity, tax shelter and liquidity
   2. **Portfolio Execution**
      This is the space of portfolio management which is considered with implementing portfolio plan by buying or selling specified securities in given amounts. Though often glossed over in portfolio management discussion, this is an important practical step that bearing on investment results.
   3. **Portfolio Revision**
      The value of a portfolio as well as its composition the relative proportion of stock an bond components may change as stocks and bonds fluctuates, of course the fluctuation in stock is often the dominate factor underlying this change. In response to such changes, periodic rebalancing of portfolio is required.
   4. **Performance Evaluation**
      The performance of a portfolio should be evaluated periodically, the dimensions of portfolio performance evaluation are risk and return and the key issues is whether the portfolio return is commensurate with risk exposure such as a review may provide useful feedback to improve the quality of portfolio management process on continuing basis.

3.2. Various methods of constructing an Optimal Portfolio

Some of the famous methods of constructing an optimal portfolio are:

1) Markowitz Model
2) Sharpe's Single Index Model

1. Harry Markowitz Model

Harry Markowitz put forward this model in 1952. It assists in the selection of the most efficient by analyzing various possible portfolios of the given securities. By choosing securities that do not 'move' exactly together, the HM model shows investors how to reduce their risk. The HM model is also called Mean-Variance Model due to the fact that it is based on expected returns (mean) and the standard deviation (variance) of the various portfolios. Harry Markowitz made the following assumptions while developing the HM model

1. Risk of a portfolio is based on the variability of returns from the said portfolio.
2. An investor is risk averse.
3. An investor prefers to increase consumption.
4. The investor's utility function is concave and increasing, due to his risk aversion and consumption preference.
5. Analysis is based on single period model of investment
6. An investor either maximizes his portfolio return for a *given* level of risk or maximizes his return for the minimum risk
7. An investor is rational in nature

2. Sharpe's Single Index Model

Casual observation of stock prices over a period of time reveals that most of the stock prices move with the

market index. When nifty increases stock prices also tend to increase and vice-versa. This indicates that some underlying factors affect the market index as well as stock prices. Stock prices are related to the market index and relationship could be used to estimate the return on stock. For this purpose, The following equation can be used.

$\mathbf{R_i=\alpha_i+\beta_i R_m+e_i}$

Where $R_i$vis expected return on security **i**

$\boldsymbol{\alpha_i}$ is intercept of the straight line or alpha coefficient. That is the amount by which a fund has outperformed its benchmark taking into account its exposure to market risk.

$\boldsymbol{\beta_i}$- slope of straight line or beta coefficient that is measure of funds sensitivity to market moments.

Rm-The rate of return on market index

$\mathbf{E_i}$ –error term

According to the equation, the stock return can be divided into components, the return due to the market and the return dependent of the market indicates the sensitiveness of the stock return to the changes in the market return. The single index model is based on the assumption that stocks vary together because of the common moment in the stock market and there are no effects beyond the market that account the stocks co-moment. The expected return standard deviation and covariance of the single index model represent the joint moment of the securities.

The covariance of returns between securities i and j is $\boldsymbol{\sigma^2=\beta_i\beta_j}$

The variance of securities returns is $\boldsymbol{\sigma^2\beta_i\ \sigma_m^2+\ \sigma_{ei}^2}$

The variance of the security has two components namely systematic risk or market risk and unique risk.

The variance explained by the index is referred to systematic risk. The unexplained variance is called residual variance or unsystematic risk.

Total risk = Systematic Risk +Un Systematic Risk

$\boldsymbol{\beta_i^2\sigma_m^2+\ \sigma\sigma^2}$

Systematic Risk

The impact of economics political and social changes is systematic wide and that portion of total variability in security return caused by such system wide factors is referred to as systematic risk. The systematic risk of a security is measured by beta.

$\mathbf{Systematic\ Risk=\beta_i^2*\ \sigma_m^2}$

Unsystematic Risk

When variabilit**y** of returns occurs because of the firm specific factors it is called as "Un systematic risk". They may arise of:

Business risk depends on the operative environment of the company.

Financial risk depends on the financial pattern adopted by the company

Un systematic risk=Total variance-Systematic Risk

$\boldsymbol{\sigma\sigma^2=\sigma^2-\beta_i^2\ \sigma_m^2}$

Sharpe's Optimal Portfolio

Sharpe had provided a model for the selection of an appropriate securities in a portfolio. The following steps have been followed in this analysis.

Step 1: A brief of each of theb 10 companies of nifty index is chosen

Step 2: For a period of 30 days data of each of the company have been replaced

Step 3: For applying Sharpe's Single index model **Ri, Rm**, $\boldsymbol{\sigma_{ei}^2}$ values are required so all these data are collected for preceding further.

Step 4: Ranking of the stocks are done on the basis of their excess of return to beta

Step 5: The cutoff point C* is calculated using the formula

Step 6: After C* = for all the equated the value got were put in the table and then interpretation is made

Step 7: The C* values go on increasing upto a certain point and then decreasing. The highest point is called Cut-off point(C*). The securities which are above C* chosen to the portfolio construction

Step 8: Once the securities for portfolio are chosen, the proportion in which they should be invested is to be determined. This can be done by using a formula where Xi denotes the proportion.
Step 9: Return on portfolio can be made known with the formula

$$R_p=\Sigma X_i R_i$$

Step 10 : Gives the risk associated with the portfolio

1.2 NEED FOR THE STUDY

Special consideration is given to understanding the aggregate risk exposures in the portfolio, to ensure that portfolio positioning is consistent with the defined top-down view. The investor always likes to purchase a combination of stocks that provides the highest return with lowest risk. Now a day's risk has received increased attention and analysis are providing risk as well as return. This study attempts to construct an optimal portfolio by using Sharpe's Single index model. For this purpose NSE-NIFTY and all the 10 stocks have been used as market index for preparing portfolio. The daily data for all the stocks and index for the period of 16th December 2014 to 30th January 2015 have been considered. The proposed method formulates a unique cut off point and selects stocks having excess of their expected return over risk free rate of return surpassing this cut-off point. Percentage of investment in each of selected stocks is then decided on the basis of respective weights assigned to each stock depending on respective beta value, stock movement variance unsystematic risk, return on stock and risk free return through the cut off rate of return.

1.3 OBJECTIVES OF THE STUDY

The objective of this study is to construct a well-diversified portfolio that minimizes common exposures between funds and takes into account the potential effects of an unfavorable or changing market environment using particular stress test assumptions at the fund and portfolio level.

1. To evaluate the performance of the portfolio of securities in the capital market
2. To construct an optimal portfolio empirically using Sharpe's single index model
3. To determine the risk and return of the optimal portfolio constructed by using Sharpe's single index model
4. To create an efficient portfolio of securities for investors to invest in the stock market

1.4 SCOPE OF THE STUDY

Portfolio management is a continuous process. It is a dynamic activity. The following are the basic scope of a portfolio management.

1. Monitoring the performance of portfolio by incorporating the latest market conditions.
2. Identification of the investor's objective, constraints and preferences.
3. Making an evaluation of portfolio income (comparison with targets and achievement).
4. Making revision in the portfolio of securities
5. Implementation of the strategies in tune with investment objectives.
6. Companies are chosen and analyzed based on their performance in the past months

1.5 METHODOLOGY ADOPTED

Primary Data:
The required primary data had been collected from the relationship manager of BMA Wealth Creators
Secondary Data:
The data have been mobilized from respective samples and secondary sources

- www.bseindia.com
- www.nseindia.com
- www.moneycontrol.com
- www.yahoofinance.com
- www.investopedia.com

For this NSE Nifty index is taken as the market. Market performance index daily indices along with daily prices

of sampled securities for the periods of 16th December 2014 to 30th January 2015 are taken into consideration for computing the daily return of each security as well as determining daily market return.

1.5.1 RESEARCH TOOLS:

The researcher had obtained data from 10 samples out of 50 stocks listed under nifty. In this project a total of 10 companies of Nifty50 have been chosen on the basis of their performance for the portfolio development and the following are done

- Historical closing index points are chosen
- Return for the securities and market are calculated
- Standard deviation for each security is calculated
- Beta value is calculated
- Calculation of excess return to beta ratio and assigning ranks
- Calculation of market variance
- Calculation of systematic and unsystematic risk for individual security
- Identifying the cutoff point (C*)
- Construction of an optimal portfolio(Z_i and $X_{i)}$
- Calculation of portfolio risk and return

1.6 LITERATURE REVIEW

Saugat Das And Ankit Agarwal (2014) highlighted in their study on Construction of Optimal Portfolio in Indian stock market. Indian stock market is experiencing a continuous growth over a year. It acts as a performance indicator of the economy. The Indian stock market is serving as an attractive investment avenue for the investors. Majority of the Indians still not investing in the stock market due to high level of risk associated with it. Indian risk averse investors wants to earn maximum return with the minimum possible risk. Thus this research paper focuses on 10 stocks of nifty index and concentrates on construction on optimal portfolio in nifty index

Prathiba Jennifer (2013) had done her study pertaining to Construction of Optimal Portfolio Using Sharpe's Single Index Model in Indian stock market. Portfolio is the combination of financial or real assets such as equity shares, debentures, bonds, treasury bills and property etc. Portfolio is the combination of assets or it consists of collection of securities. These holdings are the results of individual preferences, decisions of the holders regarding risk, return and other considerations. Portfolio n and management concerns the construction and maintenance of a collection of investment. It is investment of funds in different securities in which total risk of portfolio is minimized while expecting maximum return from it. It primarily involves in reducing the risk rather than increasing the return. Return is obviously important though, ultimate objective of portfolio manager is to achieve a chosen level of return by incurring least possible risk. This paper presents an approach to the portfolio selection problem based on Sharpe's single index model. To illustrate the model, a real portfolio selection problem is presented. The study is carried out to fulfill the objectives like i) To construct an optimal portfolio using sharpe's single index model ii) To know the proportion of each security in the portfolio.

According to Edwin J.Elton, Martin J.Gruber (2012) done their research on Simple Criteria For Optimal Portfolio Selection in the stock market. There have been two approaches in the literature to solve the first of these problems. One has been two to use a single index model to generate variance covariance structures. The second is to assume a simple structure for the variance covariance matrix. In particular the assumption that all pair wise correlation was the same has been shown to do of an excellent job of forecasting feature correlations structures. Furthermore, the techniques allows the definitions of cutoff rate define solely in terms of characteristics of individual security such that the impact on the optimal portfolio of the introduction of any new security into the managers decision set can quickly easily been seen. Finally the technique makes clear to the manager that characteristics of a security are desirable.

1.7 LIMITATIONS OF THE STUDY:

- The study was confined to the selected sectors
- The study was more confined with secondary data
- The study assumes that there is no change in the treasury bills rates
- Only Sharpe's single index model is used for constructing the portfolio

1.8 ANALYSIS AND INTERPRETTATION

The analysis and interpretation part of the study starts from the calculation of Return, standard deviation, beta, and alpha which are calculated as follows:

Calculation of Return and standard deviation of selected scripts for the period 16/12/2014 to 30/01/2015 are as follows:

a. Table 1 Calculation of return and standard deviation of nifty50

Date	Close	Rm	(Rm-Rm')	(Rm-Rm')^2
12/16/2014	8067.6			
12/17/2014	8029.8	-0.469	-0.768	0.589
12/18/2014	8159.3	1.613	1.314	1.726
12/19/2014	8225.2	0.808	0.509	0.259
12/22/2014	8324	1.201	0.902	0.814
12/23/2014	8267	-0.685	-0.984	0.968
12/24/2014	8174.1	-1.124	-1.423	2.024
12/26/2014	8200.7	0.325	0.026	0.001
12/29/2014	8246.3	0.556	0.257	0.066
12/30/2014	8248.25	0.024	-0.275	0.076
12/31/2014	8282.7	0.418	0.119	0.014
1/2/2015	8395.45	1.361	1.062	1.128
1/5/2015	8378.4	-0.203	-0.502	0.252
1/6/2015	8127.35	-2.996	-3.295	10.860
1/7/2015	8102.1	-0.311	-0.610	0.372
1/8/2015	8234.6	1.635	1.336	1.786
1/9/2015	8284.5	0.606	0.307	0.094
1/12/2015	8323	0.465	0.166	0.027
1/13/2015	8299.4	-0.284	-0.583	0.339
1/14/2015	8277.55	-0.263	-0.562	0.316
1/15/2015	8494.15	2.617	2.318	5.372
1/16/2015	8513.8	0.231	-0.068	0.005
1/19/2015	8550.7	0.433	0.134	0.018
1/20/2015	8695.6	1.695	1.396	1.948
1/21/2015	8729.5	0.390	0.091	0.008
1/22/2015	8761.4	0.365	0.066	0.004
1/23/2015	8835.6	0.847	0.548	0.300
1/27/2015	8910.5	0.848	0.549	0.301
1/28/2015	8914.3	0.043	-0.256	0.066
1/29/2015	8952.35	0.427	0.128	0.016

1/30/2015	8808.9	-1.602	-1.901	3.615
		0.299		33.365

Return= $(P1-P_0)*100/P_0$
Where, P1=Today's Price
P_0=Yesterday's Price
Rm=total Return/n
Rm'= Average return
Rm'=0.299 or 29.9%

S.D=$\sqrt{\Sigma(Rm-Rm')^2/N-1}$
S.D= √(33.365/31-1)
S.D= √1.1121
=1.0545
Hence, Market Return= 0.299
Market Risk= 1.0545

Graph 1: Return indication from 16/12/2014 to 30/1/2015:

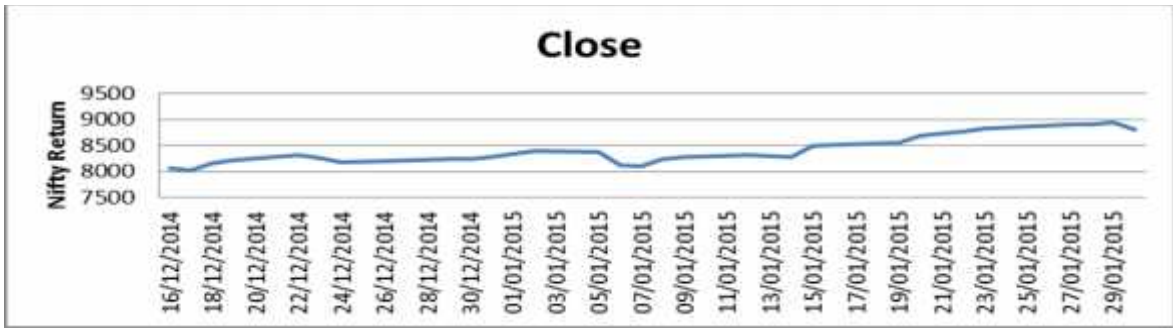
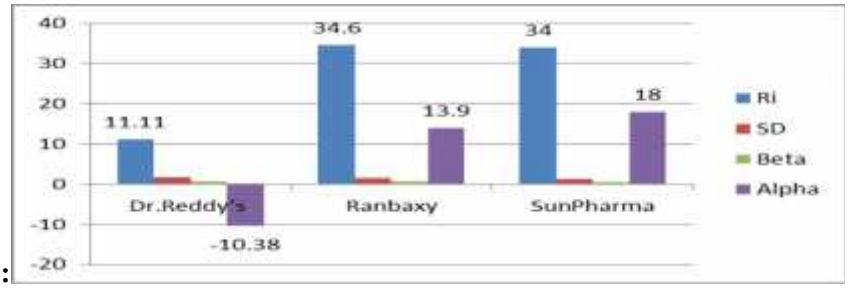


Table 02: Summary statement of Return, SD, Beta and Alpha of Pharmaceutical Sector

Company	Ri	SD	Beta	Alpha
Dr.Reddy's	11.11	1.784	0.7188	-10.38
Ranbaxy	34.6	1.422	0.6698	13.9
SunPharma	34	1.249	0.5346	18

Graph 02

:



Interface

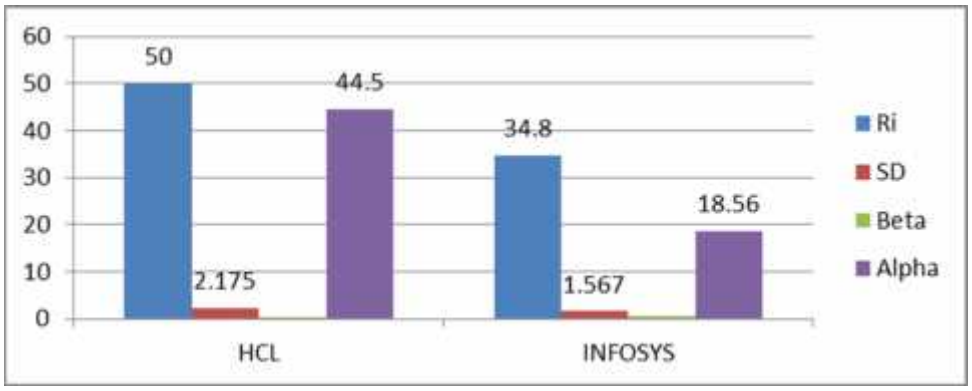
- Ranbaxy and Sunpharma return is more compared to Dr.Reddy's and risk is less for SunPharma
- Dr.Reddy's Laboratories return is yielding is very less compared to other two stocks
- If the investor is willing to take less risk it is preferable to invest in SunPharma

- It is found that Dr,Reddy's Laboratories carrying less return with more risk

Table 03: Summary statement of Return, SD, Beta and Alpha of IT Sector

Companies	Ri	SD	Beta	Alpha
HCL	50	2.175	0.184	44.5
INFOSYS	34.8	1.567	0.543	18.56

Graph 03:



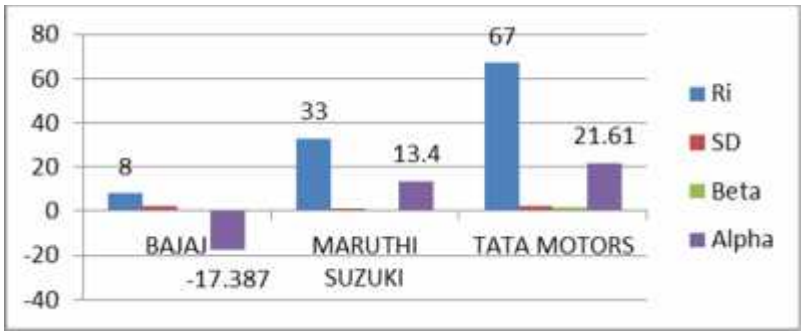
Interface

- HCL company return is more when compared to Infosys
- Risk in HCL is more than Infosys
- If the investor is willing to take more risk it is better to invest in HCL since it is giving more return than other stock

Table 04: Summary statement of Return, SD, Beta and Alpha of Automobile Sector

Companies	Ri	SD	Beta	Alpha
BAJAJ	8	2.51	0.849	-17.387
MARUTHI SUZUKI	33	1.3189	0.656	13.4
TATA MOTORS	67	2.073	1.518	21.61

Graph 04:



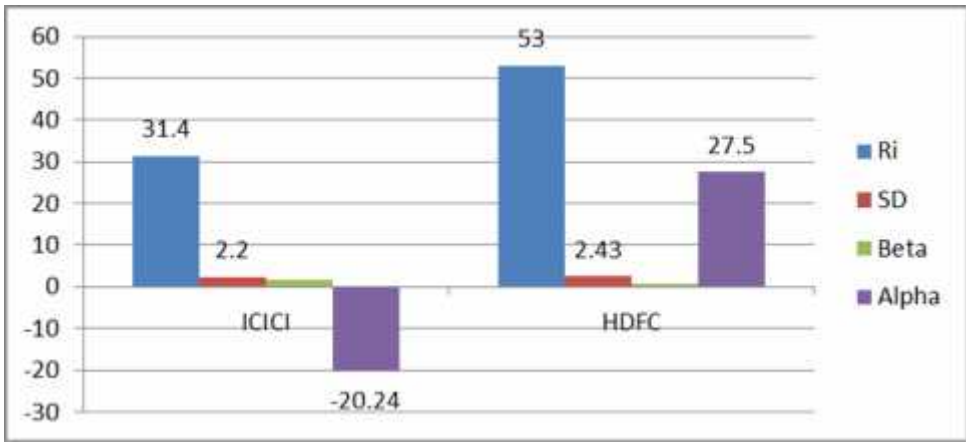
Interface:

- TATA MOTORS Return is high compared to other two stocks
- Risk is less compared to BAJAJ and TATA MOTORS and return is less than tata motors and greater than bajaj
- BAJAJ automobiles has high amount of risk with low retrn
- If the investor is willing to take high risk it is suggestible to invest in TATA MOTORS since it is giving maximum return than other two stocks

Table 05: Summary statement of Return, SD, Beta and Alpha of BANKING Sector

Companies	Ri	SD	Beta	Alpha
ICICI	31.4	2.2	1.727	-20.24
HDFC	53	2.43	0.8535	27.5

Graph 05:



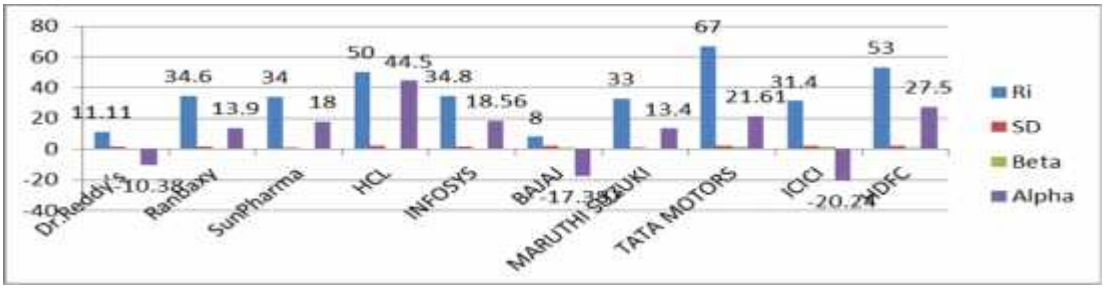
Interface:

- Return and risk of HDFC is more compared with ICICI
- An investor who is willing to take more risk it is preferable to invest in HDFC since it has more return

Table 06: Summary statement of Return, SD, Beta and Alpha of all the stocks

Company	Ri	SD	Beta	Alpha
Dr.Reddy's	11.11	1.784	0.7188	-10.38
Ranbaxy	34.6	1.422	0.6698	13.9
SunPharma	34	1.249	0.5346	18
HCL	50	2.175	0.184	44.5
INFOSYS	34.8	1.567	0.543	18.56
BAJAJ	8	2.51	0.849	-17.387
MARUTHI SUZUKI	33	1.3189	0.656	13.4
TATA MOTORS	67	2.073	1.518	21.61
ICICI	31.4	2.2	1.727	-20.24
HDFC	53	2.43	0.8535	27.5

Graph 06:



Interpretation:

- Compared to all the companies TATA MOTORS and HDFC bank are yielding more return
- BAJAJ is carrying a very less return of 8% and high amount of risk than all the companies
- Dr.Reddys Labs, BAJAJ and ICICI are having a negative alpha. Negative alpha is not a good sign. Alpha indicates that individual return is independent of market return
- TATA MOTORS, HCL and HDFC are carrying high return with the moderate risk than all other companies
- Hence, Tata Motors company in Automobile sector has the highest return among all the sectors

Table 07: Construction of an optimal portfolio:

Security	Ri	(Ri-Rf)	β	S.R=(β_i^2*σ_m^2)	U.S.R=(σ_i^{2-} (β_i^2*σ_m^2))	(Ri-Rf)/β	Rank
Dr.Reddy's Labs	11.11	4.11	0.72	0.574	2.608	5.708	9
Ranbaxy	34.6	27.6	0.67	0.498	1.524	41.194	5
Sunpharma	34	27	0.54	0.317	1.242	50.000	4
HCL	50	43	0.19	0.037	4.694	226.316	1
Infosys	34.8	27.8	0.55	0.327	2.131	50.545	3
Bajaj	8	1	0.85	0.801	5.5274	1.176	10
Maruthi Suzuki	33	26	0.66	0.478	1.261	39.394	6
Tata Motors	67	60	1.6	2.562	1.736	37.500	7
ICICI	31.4	24.4	1.7	3.3168	1.527	14.353	8
HDFC	53	46	0.86	0.81	5.098	53.488	2

Where $\mathbf{R_f=7.0}$

After calculating excess return to beta, arrange excess return to beta in descending order and then calculate the cutoff point using the following formula:

Table 08: Construction of Cut-off point to construct an Optimal Portfolio:

Rank	Security	(Ri-Rf)/β	(Ri-Rf)β/σ_{ei}^2	Cumuative (Ri-Rf)β/σ_{ei}^2	β_i^2/σ_{ei}^2	Σ(β_i^2/σ_{ei}^2)	N	D	C=(N/D)
1	HCL	226.316	1.741	1.741	0.008	0.008	1.936	1.009	1.919
2	HDFC	53.488	7.760	9.501	0.145	0.153	10.566	1.170	9.030
3	Infosys	50.545	7.175	16.676	0.142	0.295	18.545	1.328	13.964
4	Sun Pharma	50	11.739	28.415	0.235	0.53	31.600	1.589	19.882
5	Ranbaxy	41.194	12.134	40.549	0.295	0.825	45.095	1.917	23.518
6	Maruthi Suzuki	39.394	13.608	54.157	0.345	1.17	60.228	2.301	26.173
7	Tata Motors	37.5	55.300	109.457	1.475	2.645	121.727	3.942	30.883
8	ICICI	14.353	27.164	138.621	1.893	4.538	154.160	6.047	25.495
9	Dr.Reddy's labs	5.708	1.135	139.756	0.199	4.737	155.423	6.268	24.796
10	Bajaj	1.7369	0.154	139.9	0.131	4.868	155.583	6.414	24.258

The highest C^* value is taken as the cutoff point.
Here the cutoff rate is 30.883 Hence the first 7 stocks are selected.
After determining the securities to be selected, next step is to determine how much should be invested in each security. The percentage of funds to be invested in each security can be estimated by using following formula:

$\mathbf{X_i=Z_i/(\Sigma_{t=1}Z_i)}$

$\mathbf{Z_i= (\beta_i^2/ \sigma_{ei}^2)((Ri-Rf)/\beta_i-C^*)}$

The first expression indicates the weights on each security and their sum. The second expression shows the relative investments in each security. The unsystematic risk has a role in determining the amount to be invested in each security.

The relative investments in each security

$\mathbf{Z_i= (\beta_i^2/ \sigma_{ei}^2)((Ri-Rf)/\beta_i-C^*)}$

$\mathbf{Z_1}$=0.199(37.5-30.883) =1.316
$\mathbf{Z_2}$=0.145(53.488-30.883) =3.277
$\mathbf{Z_3}$=0.142(50.545-30.883) =2.792
$\mathbf{Z_4}$=0.235(50-30.883) =4.492
$\mathbf{Z_5}$=0.295(41.194-30.883) =3.041
$\mathbf{Z_6}$=0.345(39.394-30.883) =2.936
$\mathbf{Z_7}$=1.475(37.5-30.883) =9.76

Proportion of investments:

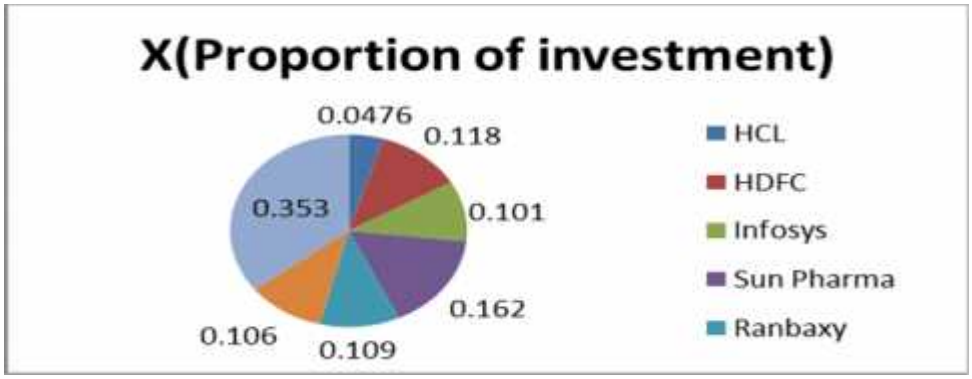
$\mathbf{X_i=Z_i/(\Sigma_{t=1}Z_i)}$

X_1=1.316/27.614 = 0.0476
X_2=3.277/27.614 = 0.118
X_3=2.792/27.614 = 0.101
X_4=4.492/27.614 = 0.162
X_5=3.041/27.614 = 0.109
X_6=2.936/27.614 = 0.106
X_7=9.76/27.614 = 0.353

Security	X(Proportion of investment)
HCL	0.0476
HDFC	0.118
Infosys	0.101
Sun Pharma	0.162
Ranbaxy	0.109
Maruthi Suzuki	0.106
Tata Motors	0.353

Table 09: Proportion of investments to be made in each company security

Graph 07:



1.9 FINDINGS AND SUGGESTIONS

Saving money is not enough. Each one of us also needs to invest one's savings intelligently in order to have enough money available for funding future needs

1.10 FINDINGS

- The optimal portfolio showed that in Pharmaceutical sector SunPharma is performing well
- The optimal portfolio showed that in IT sector HCL is performing well
- The optimal portfolio showed that in Automobile sector TATA MOTORS is performing well
- The optimal portfolio showed that in Banking sector HDFC Bank is performing well
- The investor can invest in TATA MOTORS, HDFC and HCL because they are yielding a high return with low risk
- It is advisable that not to invest in BAJAJ and Dr.Reddy's Laboratories since they are having less return with high risk

1.11 SUGGESTIONS

- It is recommended that the investment to be made by the investors should be on the basis of overall years returns
- Investors are advised not to invest in BAJAJ and Dr.Reddy's labs but it is advisable to concentrate on TATA MOTORS and HDFC since the return is high
- Even though INFOSYS,MARUTHI SUZUKI, ICICI is having moderate return if the investor is willing to invest in these stocks return can expect in the long period since IT, Automobile and Banking sectors are booming in India
- The companies that are performing well and good to invest are::
    - TATA MOTORS
    - HDFC
    - HCL
    - SUN PHARMA
    - INFOSYS
    - ICICI

1.12 CONCLUSION

The conclusion is drawn based on the study conducted. Conclusion is about the companies out of the sample for investment based on the priority

- The investor should choose IT sector and Automobile sector in his portfolio since these two sectors are performing well in the market. In Pharma sector he should not invest in Dr.Reddys labs and in Automobile sector he should not invest in BAJAJ since the yielding of return is less
- Investor should invest more proportion in TATA MOTORS and HDFC bank since the return ratio is very high
- Since IT and Automobile sector is ever booming sector investor should select securities of this sector in his portfolio so that he can earn more returns in the future period
- BAJAJ and Dr.Reddys laboratories are very risky to invest since they carry very less return with high risk. Hence investor should not include these two in his portfolio
- The variation of share price largely depends upon the company performance during the particular period. Hence the internal factor like market share, profit earnings ability etc will influence the share prices of that company. Quarterly results and budget estimations have largely influenced on share prices during this particular period.

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