ANANLYSIS OF SELECTED SECURITIES WITH REFERENCE TO PHARMACEUTICAL INDUSTRIES LISTED IN NATIONAL STOCK EXCHANGE – A GUIDE FOR INVESTOR

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Abstract

Investment is commitment of fund to one or more assets that is held over some future time period. Investing may be very conservative as well as aggressively speculative. Whatever be the perspective, investment is important to improve future welfare.

In the present market wide variety of investment avenues are open to all type of investors to suit their needs and knowledge regarding the different investment avenues. Investors can invest money in stock market. He can buy shares of different company from Indian stock market. It includes return and risk. Portfolio is one of the way to get optimum return.

Key words

Stock market, Investment, Efficient frontier, Sharpe's optimal portfolio, CAPM.

Introduction

Investments refers to the study of the investment process, generally in financial assets like marketable securities to maximize investor's wealth, which is the sum of investor's current income and present value of future income. It has two primary functions: analysis and management.
As the investors are investing huge amount of money in stock market, the analysis must be done because it involves risk. However making money from stock market is not an easy task. It requires time and patience. He should do research and put efforts to understand the market.

Here a practical analysis has been done by considering 15 pharmaceutical companies securities from Indian Stock Market with the help of their present performance for last 5 years on quarterly basis.

The Pharmaceutical Industry in India is one of the largest in the world .It ranks 4th in the world, pertaining to the volume of sales .The estimated worth of the Indian Pharmaceutical Industry is US$ 6 billion. The growth rate of the industry is 13% per year .Almost most 70% of the domestic demand for bulk drugs is catered by the Indian Pharmaceutical Industry .The Pharmaceutical Industry in India produces around20% to 24% of the global generic drugs .The Indian Pharmaceutical Industry is one of the biggest producers of the active pharmaceutical ingredients (API) in the international arena.

Aim of the study

This paper is aimed at reducing the level of risk of an investor by providing below guidelines.

- The knowledge about basic financial concepts
- Understand the nature of change in the stock market
- Guide the investor to determine the risk and return expected from an investment
- Selection criteria of the securities
- Find out the attractive combination of securities for investment.

Methodology

Sources of data:

Primary data:

This study is based on primary data. Data collected from the share price of 15 selected pharmaceutical companies and their capital market performance for last 5 years is recorded on the basis of each quarter end market price.

Secondary data:

Secondary data utilized for conceptual frame work. Information is collected from various sources like published books, research works, articles and websites.

Tools for analysis:

Basically this paper guides the investors to frame the proper and attractive investment plan. Different financial tools have been highlighted to guide the investor in selection of securities. This paper involves several concepts for the evaluation of securities. They are

- Expected return
- Standard deviation
- Beta
- Efficient frontier
- Optimal portfolio
- Capital asset pricing model
- Sharpe's model
- Treynor's model

- Jenson's model

  All the calculation required for the study is done with the help of MS-Excel. Final conclusion and interpretation has been drawn from the results of the study.

Finding of the study

This paper helps to an investor to analyze the securities by applying various tools & also select right kind of investment in order to get proper return for his investment in pharmaceutical company's share market. Paper includes various kind tools to analyze the securities.

For the purpose of study following market information is used and Treasury bill rate of return is taken 0.2387 Beta of the market is considered as 1

Table No.1 Market Information.

Particular	**Market**
Average Return	2.0924
Standard Deviation	6.5528
Variance of Market	42.9394

The above information about the market is taken from the NSE NIFTY on the basis of five year quarter end prices. With the help of market information these study is made.

Table 2: Evaluation criteria for selection of securities.

SL.NO	Company Name	Mean	S.D	Beta
1	SANOFI INDIA	4.3968	699454	-0.5987
2	ABOTT INDIA	9.7427	15.6438	0.6242
3	NATCO PHARMA	14.418	18.1809	1.8754
4	INDALO REMEDIES	12.3543	29.7401	2.0226
5	TORRENT	9.5242	12.1987	1.2951
6	DIVISLAP	7.2400	11.3719	0.2679
7	PEL	5.2160	11.3719	0.6509
8	AUROBINDO	15.8590	28.6396	3.5882
9	GLENMARK	1.5930	19.2612	-0.0009
10	GLAXO	3.9880	11.8421	0.4726
11	RANBAXY	4.8450	18.6999	1.3827
12	DR.REDDY	5.4610	11.4471	-0.1175
13	SUN PHARMA	9.1210	13.1458	0. 5323
14	PFIZER	6.0440	16.4427	0.4025
15	SUN PHARMA ADVANCE RESEARCH	11.7073	40.9090	1.4405

(Source: Author's primary data)

Interpretation:

Evaluation on the basis of Average Return (Ri):

Return is the actual income received plus any change in market price of an investment. Investor always wants to good rate of return from his investment. The average rate of return can be calculated as follows.

Return= (((closing price – opening price)/opening price)*100)

Average Return = ($\sum$ Return / N)

Where N = number of observations.

In the previous table 2 given average expected return (mean) of selected companies. From the above observation, on the basis of average rate of return investor can choose AUROBINDO (15.859%) ,ABBOTT INDIA (14.4183%) And INDALO REMEDIES (12.3543%) as its return is more.

Evaluation on the basis of Standard Deviation (S D):

Investment decision will be more accurate if an investor consider return along with risk. Risk means any deviation from expected returns. Proper measurement of risk helps to an investor to minimize the risk and increase the return from the investment. Standard deviation represents variation in the expected return. Higher standard deviation represents more variation in the expected return and vice-versa. The security having less standard deviation will be suggestible for the investment. The standard deviation will be calculated as follows.

Standard Deviation (S D) = $\sqrt{\sum}$ (Return – Average Return) ^{2}/N

In the above table 2, Standard deviation represents variation in the expected return. From the above observation, securities which are having less variation i.e.SANOFI INDIA (6.945%) ,DIVISLAB (11.372%) And PEL(11.372%) companies' securities are suggestible for an investment.

Evaluation on the basis of beta:

Beta describes the relationship between the stock's return and the market returns. It indicates that one percentage changes in the market index return would cause to some percent of change in stock return. Beta 1 indicates that security price will move with market. A beta of less than one means that the security will be less volatile than the market and vice-versa. The beta of securities can be calculated as follows.

Beta (β) = $\{\sum(R_m$ – Mean return of Market) (R_i – Mean return of Security)$\}/\{\sum(R_m$– Mean return of the Market)^2 $\}$

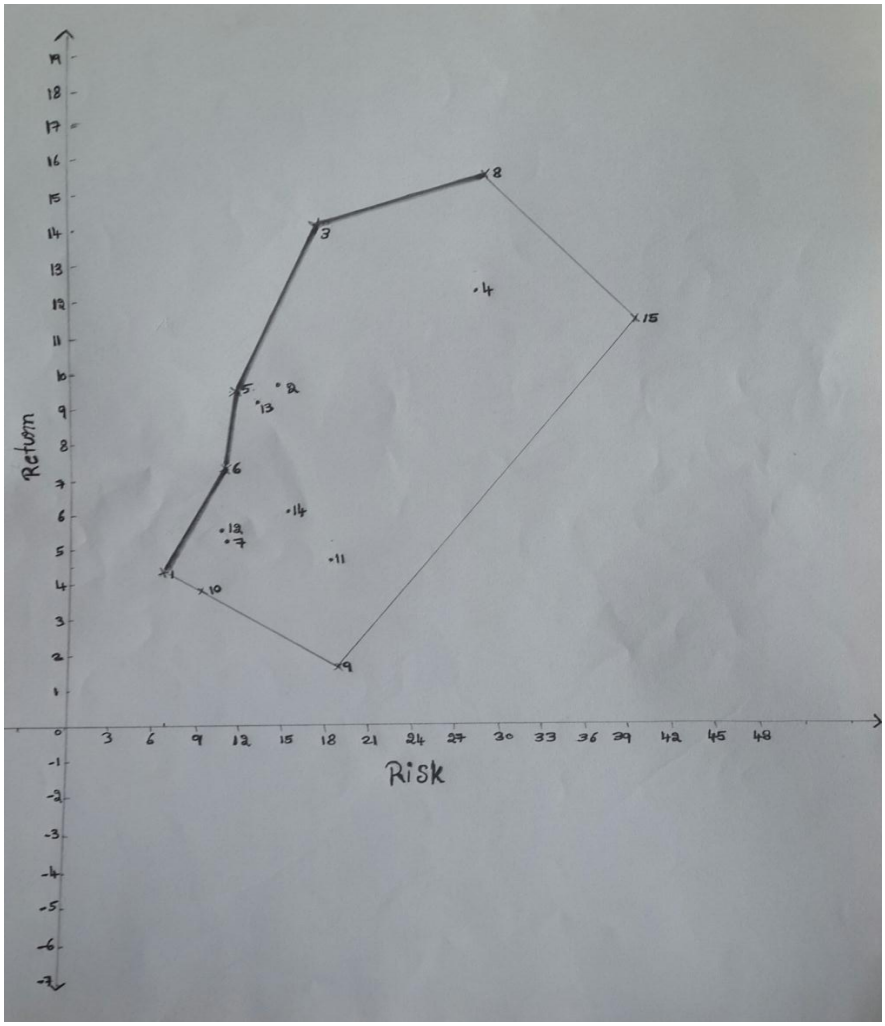
The investor who is interested to avoid risk to maximum extent, security with less beta (SANOFI INDIA, β= - -0.5987) is suggestible for investment.

Efficient Frontier:

Efficient frontier is the technical aspect of optimal portfolio selection to determine the risk-return opportunities available to an investor. This is also referred to as the determination of feasible set of portfolios or the portfolio opportunity set or the minimum variance portfolio opportunity set. Graphically these are summarized by the minimum variance frontier of risky assets. The point on the minimum variance frontier represents the global minimum variance portfolio. The highest point represents the global maximum return portfolio. The line segment

between the global minimum variance portfolio and global maximum return portfolio constitutes the efficient frontier. It is shown in the graph.

Efficient Frontier Graph



(Source: Author's primary source)

In the previous graphical representation OX axis denotes Standard deviation and OY axis denotes Percentage of return. Risk and returns space formed in the graph shows possible selection of stocks with their relative risk and return. Point 1 to 15 indicates name of the different companies which is shown in table No. 2.

There are three type of investors are available namely risk taker, risk neutral and risk avoider. Risk takers always expect that high rate of return with higher amount of risk since above space which created by risk-return factor, point 8 i.e AUROBINDO advance research to be selected to reach expectation.

Risk neutral investors are not more conscious about risk and return. They look medium coverage securities on both sides. To achieve the expectation point 6 i.e. DIVISLAP is selected for investment which gives medium coverage.Finally risk avoiders always try to avoid the risk to make minimum return. Point 1 i.e SANOFI INDIA has less risk and minimum return is suggestible for an investment. By these ways efficient frontier gives clear picture about the selection of security on the basis of their dominance over others.

Performance evaluation of securities

Portfolios are evaluated by portfolio managers, who can help identify a portfolio's strength and weakness and based on its performance, develop a better management strategy. For the purpose of evaluation different models are available. They are as follows.

Table 3:Performance evaluation model

SL.NO	Company	Sharpe's	Rank	Treynor's	Rank	Jenson's	Rank
1	SANOFI INDIA	0.5987	6	-10.4412	0	-12.2948	0
2	ABOTT INDIA	0.6228	4	15.6078	3	13.3717	3
3	NATCO PHARMA	0.7930	1	14.4183	8	5.7072	8
4	INDALO REMEDIES	0.4154	10	5.9902	10	4.1366	10
5	TORRENT	0.7808	2	7.3541	9	5.3161	9
6	DIVISLAP	0.6158	5	26.1373	1	24.5310	1
7	PEL	0.4377	9	7.6469	7	6.0405	7
8	AUROBINDO	0.5454	7	4.3533	11	2.7469	12
9	GLENMARK	0.0703	15	-1577.9829	0	-1579.585	0
10	GLAXO	0.3166	12	7.9337	6	6.3274	6
11	RANBAXY	0.2463	14	3.3315	12	1.7251	13
12	DR.REDDY	0.4562	8	-44.4425	0	-46.0491	0
13	SUN PHARMA	0.6757	3	16.6887	2	15.0824	2
14	PFIZER	0.3531	11	14.4251	4	12.8186	4
15	SUN PHARMA ADVANCE RESEARCH	0.2803	13	7.9617	5	6.3554	5

(Source: Author's primary data)

Sharpe's performance index:

Sharpe's performance index offers a single value to be used for the performance ranking of different funds or portfolios.Under this performance is measured as follows

Sharpe performance index =[$(R_I - R_f)/\sigma$]

Treynor's performance index:

An investor should know the concept of characteristic line to understand treynor's index model. The fund's performance is measured in relation to the market performance. Following formula is used under this index to evaluate the portfolios.

Treynor's performance index = $[(R_I - R_f)/\beta]$

Jensen's performance index:

According to this model performance of portfolio is to be compared with the CAPM return. It's because any professional fund manager would be expected to earn at least average portfolio return of CAPM. Following formula is used for the calculation.

Jensen's performance index = $[Rp-(R_f + \beta(R_m - R_f))]$

In the table.3 performance of all the securities are evaluated and ranked on the basis of their performance.

Capital Asset Pricing Model:

It is the model of linear general equilibrium return in CAPM model. The required rate of an asset is having linear application with assets beta value. With the help of this model investor can take decision of either to sell or purchase security by comparing with equilibrium return. For the purpose of calculation following formula is used.

CAPM return = $[R_f + \beta (R_m - R_f)]$

Table 4: Capital Asset Pricing Model

SL.NO	Company Name	% of return	CAPM return	VALUATION	SELL/BUY
1	SANOFI INDIA	4.3968	-0.4996	Under valued	buy
2	ABOTT INDIA	9.7427	1.3958	Under valued	buy
3	NATCO PHARMA	14.4183	3.7151	Under valued	buy
4	INDALO REMEDIES	12.3543	3.9880	Under valued	buy
5	TORRENT	9.5242	2.6394	Under valued	buy
6	DIVISLAP	7.2400	0.6690	Under valued	buy
7	PEL	5.2160	1.2844	Under valued	buy
8	AUROBINDO	15.8590	6.0028	Under valued	buy
9	GLENMARK	1.5930	0.2373	Under valued	buy
10	GLAXO	3.9880	0.9979	Under valued	buy
11	RANBAXY	4.8450	2.4599	Under valued	buy
12	DR.REDDY	5.4610	0.0499	Under valued	buy
13	SUN PHARMA	9.1210	1.0937	Under valued	buy
14	PFIZER	6.0440	0.8852	Under valued	buy
15	SUN PHARMA ADVANCE RESEARCH	11.7073	2.5527	Under valued	buy

(Source: Author's primary data)

In the above table 4 as all the securities are undervalued i.e CAPM required rate of return is less than the expected return, it is suggestible to buy all the shares.

Optimal Portfolio Construction:

Sharpe provided model for the selection of appropriate securities in a portfolio. The selection of any stock is directly related to its excess return-beta ratio. The excess return is the difference between the expected return on the stock and the risk free rate of interest such as the rate offered on a government security or Treasury bill. the ratio provides relationship between potential risk and reward.

The ranking of stocks is done on the basis of their excess return to beta. Portfolio manager would like to include stocks with higher ratios. The selection of stocks depends on a unique cut off rate such as all stocks with higher ratio are included, and stocks with lower ratios are left out.

The excess return-beta ratio is calculated as follows.

Excess return-beta = $[(R_i - R_f)/\beta]$

Table 5: Ranking the securities on the basis of "excess return to beta"

NO.SL	Company	Average Return	Ri-Rf	Beta	Unsystematic Risk	Excess Return to Beta	Ranking
1	sanofi india	4.3968	4.1581	-0.3982	41.4288	-10.4411	13
2	abott india	9.7427	9.5040	0.6242	227.9972	15.2254	3
3	natco pharma	14.4183	14.1796	1.8754	179.5201	7.5608	8
4	indalo remedies	12.3543	12.1156	2.0226	708.8184	5.9902	10
5	Torrent	9.5242	9.2855	1.2951	76.7878	7.1698	9
6	Divislap	7.2400	7.0013	0.2700	126.2317	25.9307	1
7	PEL	5.2160	4.9773	0.6500	111.0826	7.6574	7
8	AUROBINDO	15.8590	15.6203	3.5882	266.0256	4.3532	11
9	GLENMARK	1.5930	1.3543	-0.0009	370.9923	-1577.9535	15
0	GLAXO	3.9880	3.7493	0.4726	130.6205	7.9331	6
11	Ranbaxy	4.8450	4.6063	1.3827	267.3896	3.3313	12
12	DR.REDDY	5.4610	5.2223	-0.1175	130.4411	-44.4457	14
13	SUN PHARMA	9.1210	8.8823	0.5323	160.6176	16.6878	2
14	PFIZER	6.0440	5.8053	0.4025	263.3905	14.4242	4
15	SUN PHARMA ADVANCE RESEARCH	11.7073	11.4686	1.4405	1584.233	7.9617	5

(Source: Author's primary data)

In the above table all the securities are ranked on the basis of their excess return-beta ratio.

After ranking the securities the portfolio manager should decide cut of rate. This helps to an investor to decide which the securities are should be involved in the portfolio. The cut off rate is calculated as follows.

$$C = \frac{\{\sigma_m^2 [\sum (R_i - R_f)\beta / \text{unsystematic Risk})]\}}{\{1 + \sigma_m^2 [\sum \beta_i^2 / \text{unsystematic Risk}]\}}$$

Portion of the investment is calculated as follows.

$X_i = \{ z_i / \sum^{N}_{i=1} z_i \}$

Where $Z_i = (\beta_i$ /unsystematic risk) $\{ (R_i - R_f / \beta_i) - C^* \}$

Table 6: Deciding about securities which to be involved in portfolio by using Sharpe's optimal portfolio

SLNo	Company	RI	Beta	USR	(Ri-Rf)	(Ri-Rf)*β	(Ri-Rf)*β/USR	C total	(Beta2/USR)	C total	Cut of point*
1	Divislap	7..2400	0.2700	126.2317	7.0013	1.8904	0.0150	0.0150	0.0006	0.0006	0.6289
2	SUN PHARMA	9.1210	0.5323	160.6176	8.8823	4.7277	0.0294	0.0444	0.0018	0.0023	1.1775* (c)
3	abott india	9.7427	0.6242	227.9972	9.7427	5.9326	0.0260	0.0704	0.0017	0.0041	1.0432
4	PFIZER	6.0440	0.4025	263.3905	5.8053	2.3365	0.0089	0.0793	0.0006	0.0047	0.3719
5	SUN PHARMA ADVANCE RESEARCH	11.7073	1.4405	1584.233	11.4686	16.5202	0.0104	0.0897	0.0013	0.0060	0.4249
6	GLAXO	3.9880	0.4726	130.6205	3.7493	1.7720	0.0136	0.1033	0.0017	0.0077	0.5438
7	PEL	5.2160	0.6500	111.0826	4.9773	3.2352	0.0291	0.1324	0.0038	0.0115	1.0772
8	natco pharma	14.4183	1.8754	179.5201	14.1796	26.5925	0.1481	0.2806	0.0196	0.0311	3.4589
9	torrent	9.5242	1.2951	76.7878	9.2855	12.0255	0.1566	0.4372	0.0218	0.0529	3.4742
10	indalo remedies	12.3543	2.0226	708.8184	12.1156	1.7720	0.0025	0.4397	0.0058	0.0587	0.0862
11	AUROBINDO	15.8590	3.5882	266.0256	15.6203	24.5046	0.0921	0.5318	0.0484	0.1071	1.2859
12	ranbaxy	4.8450	1.3827	267.3896	4.6063	6.3693	0.0238	0.5556	0.0072	0.1142	0.7840
13	sanofi india	4.3968	-0.3982	41.4288	4.1581	-1.6559	-0.0400	0.5156	0.0038	0.1181	-1.4770
14	DR.REDDY	5.4610	-0.1175	130.4411	5.2223	-0.6136	-0.0047	0.5109	0.0001	0.1182	-0.2015
15	GLENMARK	1.5930	-0.0009	370.9923	1.3543	-0.0012	0.0000	0.5109	0.0000	0.1182	0.0001

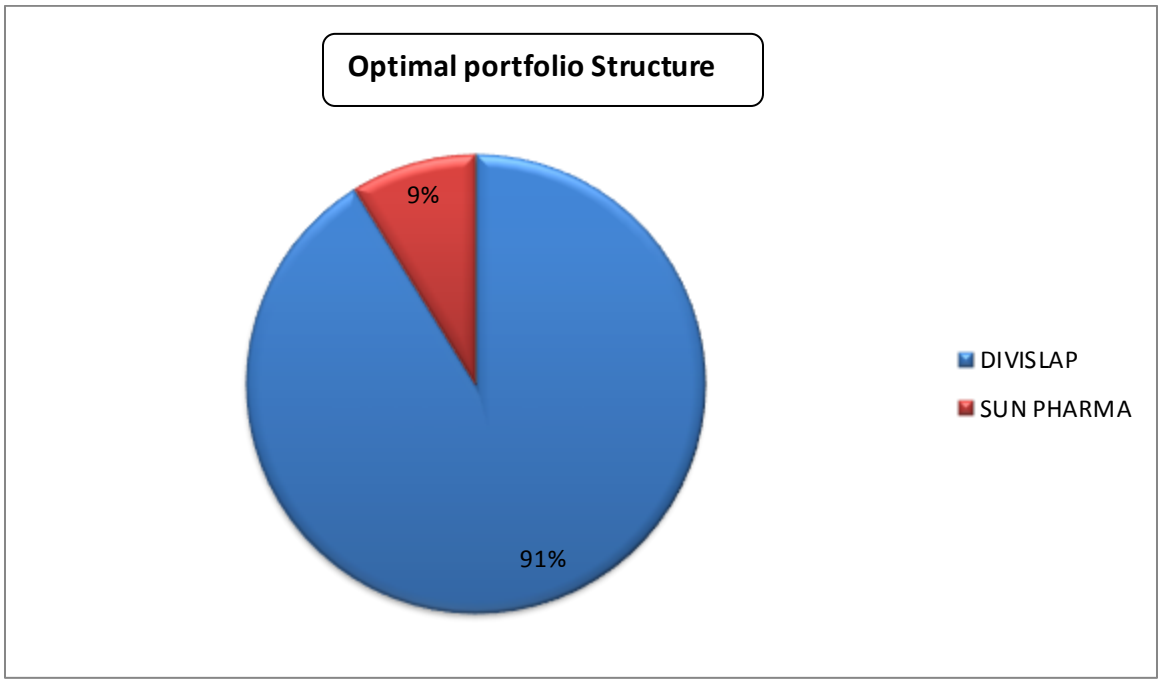
(Source: Author's primary data)

From the previous calculation portfolio manager can decide to have investment in 2 different companies. The portion of investment in the portfolio is shown in following table.

Table no. 7 Portion of the investment in selected securities.

Company	Portion of investment. (%)
DIVISLAP	91.1469
SUN PHARMA	8.8486

(Source: Author's primary data)



(Source: Author's primary data)

The allocation of investible fund between the securities is shown in pie diagram.

Portfolio Risk and Return

Company	Proportion of Investment	Return	Risk
DIVISLAP	91.1469	7.2400	11.3719
SUN PHARMA	8.8486	9.1210	13.1458

Portfolio Return	**7.4056%**
Portfolio Risk	**10.54%**

After making a optimal portfolio, the portfolio risk and return is shown above. Here these two companies are suggested for the investment among the fifteen selected companies.

Limitation of the study:

- Study conducted on the basis of last five years quarter end market price.
- Study is based only on past performance of shares.
- It limits only randomly selected fifteen companies.

Conclusion:

To get optimum return on our investment is not easy task. It requires immense knowledge, patience, and research to increase his understanding ability of the markets. This study is helps for investor make a study about the securities in the stock market and select the right kind of investment in order to get optimum return.

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