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A STUDY ON OPTIMAL PORTFOLIO CONSTRUCTION OF FMCG AND PHARMACEUTICAL SECTOR STOCK WITH REFERENCE TO BSE

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ABSTRACT

In the current fluctuating market, it is very essential to select an optimal portfolio for an investor to minimize the risk and rather reap maximum benefits, from the available set of assets. A comparison between the various available assets is prima facie. A most commonly used modus operandi is the expected return-to-risk trade off as measured by the Sharpe Index Model. This study illustrates an analysis of four years' asset value, from 2010 to 2015, of companies picked from FMCG & Pharmaceutical sectors. In this regard, Sharpe Index Model is used, which is regularly employed to assess the performance of mutual funds and portfolio strategies. This study aims at evaluating the portfolio performance, thereby bringing out the optimal combination of assets to be invested in afore said two sectors. It is done basically by ranking the picked assets based on excess return to beta ratio and then finding out the cut off point (Ci), thereby the optimal combination of the assets.

Keywords: Portfolio, Sharpe index, Risk & Return

INTRODUCTION:

The Indian capital Market has witnessed a tremendous growth. There was an explosion of investor interest during the nineties and an Equity Guilt emerged in statutory legislation has helped the capital market. Foreign Exchange regulation act is one such legislation in this direction.

In India most of the industries require huge amount of investments. Funds are raised mostly through the issue of share. An investor is satisfied from the reasonable return from investment in shares. Speculation involves higher risks to get return on the other hand investment involves no such risks and returns will be fair. An investor can succeed in his investment only when he is able to select the right shares. The investors should keenly watch the situations like market price, economy, company progress, returns, and the risk involved in a share before taking decision on a particular share. This study will help the investors know the behavior of share prices and thus can succeed. The security analysis and portfolio management has emerged as the most concerned aspect for rational investment and decision making. Portfolio is a combination of securities such as stocks, bonds and money market instruments. The process of blending together the broad

assets classes so as to obtain optimum return with minimum risk is called portfolio construction. A portfolio tries to trade off the risk return preferences of an investor by not putting all eggs in single basket and thus allows for sufficient diversification. Markowitz was the first who laid foundation of "Modern portfolio theory" to quantify risk. He provided analytical tools for analysis and selection of optimal portfolio. This portfolio approach won him Nobel Prize in 1990. The work done by Markowitz was extended by William Sharpe. He simplified the amount and type of input data required to perform portfolio analysis. He made the numerous and complex computations easy which were essential to attain optimal portfolio. This simplification is achieved through single index model. This model proposed by Sharpe is the simplest and the most widely used one.

STATEMENT OF THE PROBLEM

The performance of the stock market in any country is a strong indicator of general economic performance and is an integral part of the economy of any country. With the introduction of free and open economic policies and advanced technologies, investors are finding easy access to stock markets around the world. The fact that stock markets in dices have become an indication of the health of the economy of a country indicates the importance of stock markets. This increasing importance of the stock market has motivated the formulation of many theories to describe the working of the stock markets.

The performance of the stock market depends upon the performance of the shares of various sectors. It also allows the investors to understand about the trend of market and risk of the prices before they invest. Investors generally hold a portfolio of securities to take advantage of diversification, while individual risk and return are important, what matters finally is risk and returns of portfolio. This helps them to get knowledge about the financial market and to avoid facing a high risk. Hence, the present study entitled "A study on optimal portfolio construction and comparison of FMCG and Pharmaceutical sector stocks with reference to BSE".

OBJECTIVES OF THE STUDY

- To construct a optimal portfolio of FMCG and Pharmaceutical sector stocks
- To calculate the proportion of investment to be made into each of the stock that is included in the optimal stock portfolio.
- To recapitulate the key findings and offer suggestions to investors.

SCOPE OF THE STUDY

The present study aims at assessing the performance of shares of FMCG and Pharmaceutical sector and optimal portfolio construction. The study could help the investors to understand its

efficiency. It aims to help the investor to find the factors affecting the price movement of the stocks.

RESEARCH METHODOLOGY

The study aims at analyzing the performance of shares and optimal portfolio construction of selected company's scrip. As the study describes the existing facts and figures given in the financial statement and the price movements of the selected companies, the research design purposed to be followed is descriptive and analytical in nature.

SAMPLING FRAMEWORK

The total population for the study consists of 80 FMCG companies and 161 pharmaceutical companies listed in Bombay Stock Exchange (BSE).

SAMPLING SIZE

The study will consider 08 FMCG companies which comprises 10% (8 out of 80) and 16 pharmaceutical companies, which comprises 10% (16 out of 161) of the total listed companies with BSE under FMCG and pharmaceutical sector.

SAMPLING TECHNIQUES

In order to have adequate representation, systematic Sampling Technique will be used for selection of sampling units.

SOURCES OF DATA

- **Primary Data**
  Primary data will be generated through personal investigation on the companies.
- **Secondary Data**
  The secondary data will be collected from the records and published annual reports of the company, web sites, Journals etc.
  1. Data collected will be from various books and websites.
  2. Secondary data will be collected from newspapers & magazines, Publication.
  3. Information provided by stock broking centers is also proposed to be taken.

PERIOD OF THE STUDY

The study intended to cover a period of five years from the financial year 2010-2011 to 2014-2015.

STATISTICAL TOOLS AND TECHNIQUES OF ANALYSIS

The various tools used in the study are discussed below:

• **Beta Coefficient** – It is a measure of a security's or portfolio's volatility, compared with rates of return on the market as a whole

Return – It is defined as the total gain or loss over a stipulated period of time. It is calculated by: Return= ((Today's market price – Yesterday's Market price) / Yesterday's Market price)*100

• **Correlation** – It is a statistical tool that in simple terms defines how two securities move in relation to each other.

• **Risk Free rate of return –** It is the rate of return that is free from any risk and is sure to give a promised rate of return. Here, we have taken the government bond rate taken from the RBI website as the risk free rate of return.

• **Excess Return to Beta Ratio** – It measures the additional return on a security per unit of systematic risk or non-diversifiable ris

Cut-off point - The highest value of is taken as the cut-off point that is C*

Proportion of allotment in each security –It is done by evaluating the cut off point then estimating the proportion to be invested

LIMITATIONS OF THE STUDY

The following are the limitations of the study,

- The study is purely based on secondary data.
- This study is based on monthly data, not on yearly data.
- The study shows the market prices but the causes of performance are not analyzed.
- The results of the study may not be universally applicable.
- Due to time limit only three years data have been taken.

ANALYSIS & INTERPRETATION

Table No. 1: Pharmaceutical And Fmcg Sector Return, Beta And Variance Of Stock

Company name	Ri	Rf	Beta	**σ 2ei**
ADVIKLA	132.5262	1.005078	2.292923	575.3146
AREYDRG	277.1391	1.005078	0.226441	2572.928
BIBCL	172.9852	1.005078	0.218212	1062.799
COMBDRG	172.9852	1.005078	3.187445	466.1795
FDC	88.02407	1.005078	1.387923	128.0752
GUJTERC	83.17371	1.005078	0.343398	555.6868
JAGSMPHARM	210.8853	1.005078	3.204188	584.742
KREBSBIO	292.1226	1.005078	0.200549	2580.498
MEDICAMEQ	612.9395	1.005078	0.018914	9518.18
NOVARTIND	36.67535	1.005078	0.987922	70.40438
PIRPHYTO	196.4036	1.005078	3.421428	586.857
SANOFI	57.87001	1.005078	0.951461	64.87247
SPANSIAQ	110.5664	1.005078	0.335337	309.4221
THEMISMED	308.502	1.005078	4.55087	1102.6
UNJHAFOR	267.3054	1.005078	4.136398	1121.618
VIVIMED LAB	76.78378	1.005078	0.085253	618.012

Agro Tech Foods Ltd.	**-3.6979469**	1.000049	0.025433	34.12713
Britannia Ind ltd	173.9438	1.000049	2.727939	228.5731
Eveready ind ltd	335.5992	1.000049	5.512907	698.5764
Heritage foods ltd	129.1158	1.000049	-51.1383	-153502
Jyothy lab	73.5330894	1.000049	1.295608	101.75
Mirza int ltd	247.2653	1.000049	4.043604	697.5309
Relaxo footwears ltd	84.59057	1.000049	1.25715	366.9779
Titagarh wagons ltd	157.5705	1.000049	0.178139	1229.43

INTERPRETATION

Table.1 depicts the return, Beta and Variance of Individual stock, which forms the first step in the portfolio evaluation. It clearly shows that Pharma companies like THEMISMED(308.502), KREBSBIO(292.1226), AREYDRG(277.1391), UNJHAFOR(267.3054), have produced higher returns. GMR is the only FMCG company that shows a pretty high return.

Table No. 2 Showing Pharmaceutical And FMCG Sector Ranking Of The Stocks Based On Excess Return To Beta Retio.

Company name	**Ri**	Ri-Rf	**Beta**	**Ri-Rf**	**RANK**
				b	
ADVIKLA	132.5262	132.4635	2.292923	57.77058	15
AREYDRG	277.1391	277.0764	5.418028	51.13971	13
BIBCL	172.9852	172.9225	0.218212	792.4518	21
COMBDRG	172.9852	172.9225	3.187445	54.25113	5
FDC	88.02407	87.96137	1.387923	63.37626	9
GUJTERC	83.17371	83.11101	0.343398	242.0253	19
JAGSMPHARM	210.8853	210.8226	3.204188	65.79595	6
KREBSBIO	292.1226	292.0599	4.751079	61.47233	14
MEDICAMEQ	612.9395	612.8768	10.21593	59.99224	12
NOVARTIND	36.67535	36.61265	0.987922	37.06026	16
PIRPHYTO	196.4036	196.3409	3.421428	57.38566	7
SANOFI	57.87001	57.80731	0.951461	60.75636	11
SPANSIAQ	110.5664	110.5037	0.335337	329.5302	18
THEMISMED	308.502	308.4393	4.55087	67.7759	4
UNJHAFOR	267.3054	267.2427	4.136398	64.60759	8
VIVIMED LAB	76.78378	76.72108	0.085253	899.9223	23
Agro Tech Foods Ltd.	**-3.69795**	-3.76065	0.025433	-147.864	24
Britannia Ind ltd	173.9438	173.8811	2.727939	63.74083	2
Eveready ind ltd	335.5992	335.5365	5.512907	60.86381	1
Heritage foods ltd	129.1158	129.0531	-51.1383	-2.52361	20
Jyothy lab	73.53309	73.47039	1.295608	56.70727	10
Mirza int ltd	247.2653	247.2026	4.043604	61.13423	3
Relaxo footwears ltd	84.59057	84.52787	1.25715	67.2377	17
Titagarh wagons ltd	157.5705	157.5078	0.178139	884.1848	22

INTERPRETATION

Table No.2 Shows The Excess To Beta Ratio Calculation Which Measures The Additional Return On A Security Per Unit Of Systematic Risk Or Non-Diversifiable Risk. As Per Sharpe Model, Based On This Calculation The Ranking Of The Assets Is Arrived At. The New Order Column In The Table Shows This Newly Sorted Out Order.

TABLE NO .3 SHOWING PHARMACEUTICAL AND FMCG SECTOR

CUT-OFF VALUES (Ci) OF SAMPLE COMPANIES STOCK

Company name	Rank	(Ri-Rf)□ □	B	∑(Ri-Rf)□ □	∑□	**Ci**
		σ 2ei	**σ 2ei**	**σ 2ei**	**σ 2ei**	
Eveready ind ltd	1	2.64793	0.007892	2.64793016	0.007892	180.0937
Britannia Ind ltd	2	2.075209	0.011935	4.72313951	0.019826	321.6248
Mirza int ltd	3	1.43304	0.005797	6.15617914	0.025623	419.1936
THEMISMED	4	1.273052	0.004127	7.42923116	0.029751	505.8003
COMBDRG	5	1.182336	0.006837	8.61156749	0.036588	586.4392
JAGSMPHARM	6	1.155236	0.00548	9.76680389	0.042068	665.1484
PIRPHYTO	7	1.144685	0.00583	10.9114886	0.047898	743.1659
UNJHAFOR	8	0.98556	0.003688	11.8970489	0.051586	810.2477
FDC	9	0.953218	0.010837	12.8502671	0.062422	875.6211
Jyothy lab	10	0.935517	0.012733	13.7857838	0.075156	939.9228
SANOFI	11	0.847839	0.014667	14.6336227	0.089822	998.4101
MEDICAMEQ	12	0.651164	0.001073	15.2847871	0.090896	1042.639
AREYDRG	13	0.583463	0.002106	15.8682498	0.093001	1082.347
KREBSBIO	14	0.537726	0.001841	16.4059754	0.094843	1118.935
ADVIKLA	15	0.527935	0.003986	16.9339102	0.098828	1155.005
NOVARTIND	16	0.513753	0.014032	17.4476629	0.11286	1190.795
Relaxo footwears ltd	17	0.289566	0.003426	17.7372286	0.116286	1210.663
SPANSIAQ	18	0.119759	0.001084	17.8569873	0.11737	1218.857
GUJTERC	19	0.05136	0.000618	17.9083474	0.117988	1222.382
Heritage foods ltd	20	0.042993	0.000333	17.9513407	0.118321	1225.32
BIBCL	21	0.035504	0.000205	17.9868449	0.118526	1227.741
Titagarh wagons ltd	22	0.022822	0.000145	18.009667	0.118671	1229.299
VIVIMED LAB	23	0.010583	0.000138	18.0202505	0.118809	1230.026
Agro Tech Foods Ltd.	24	-0.0028	0.000745	18.0174479	0.119554	1229.886

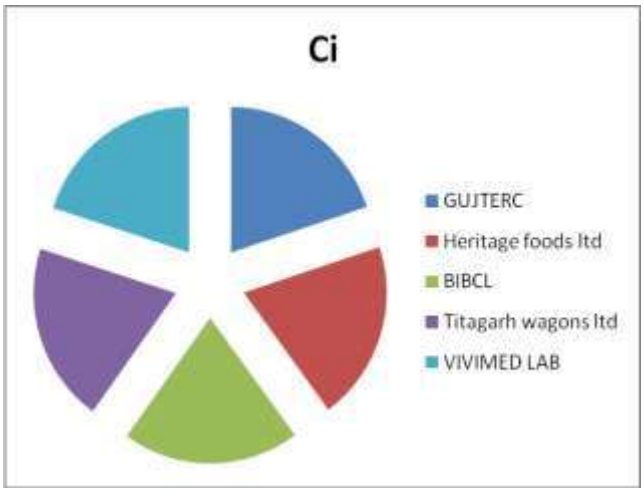
INTERPRETATION

Table showing the cut-off point calculations for the newly ranked companies. The cut off point for this portfolio is at 1229.886 of Agro Tech Foods Ltd. Stocks greater than the cut-off point are included in the portfolio. Here the top five companies according to excess return to beta ratio is taken for calculating the proportion of investment.

Table 4 Showing Selection Of Stock Among 24 Scrip

Scrip	Ci
GUJTERC	1222.382005
Heritage foods ltd	1225.320009
BIBCL	1227.7415
Titagarh wagons ltd	1229.298918
VIVIMED LAB	1230.025946

Chart Showing The Selection Of Stock Among 24 Scrip



INTERPRETATION

Table 4.2.4 shows the proportion of investment that can be pooled in each stock amongst the 24 different stocks selected. The Ci of portfolio allotment would be VIVIMED LAB with 1230.025946, Titagarh wagons ltd with 1229.298918, BIBCL with 1227.7415, Heritage foods ltd With 1225.320009, and GUJTERC with 1222.382005 of the total investment.

SUGGESTIONS

In a sample of twenty four companies five companies have been selected for the Optimal Portfolio Construction applying Sharpe's Single Index Model. Once the companies on which

investment is to be made are known it is essential to know the Proportion of Investment to be made in each company's security.

Table No:4 represents the Proportion of Investment to be made by the investor to earn maximum returns. The figure shows that **Ci** (1230.025946) of investment is made in VIVIMED LAB e.i., (which means majority of the funds is to be invested on this company's stock

CONCLUSION

Risk and return assumes a significant part in settling on any financing choices. An investor should continuously monitor the market and constantly update his portfolio by selecting right stocks for investment at that time. Sharpe Index model aids investor as a tool to make his portfolio choices and take informed decisions. This method of constructing a portfolio is more convenient and easy. Use of cut off rate played a vital role in constructing the optimal portfolio. Through portfolio evaluation the investor tries to find out how well the portfolio has performed. He/she should evaluate the portfolio from time to time to earn more returns, because of its volatile nature of market and economy.

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