

A Study on Portfolio Construction for the Selected Companies Listed in NSE

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Abstract:

The security analysis and portfolio management is the most concerned aspect for rational investment and decision making. A portfolio is a set of securities such as stocks, bonds and money market instruments. The process of blending together these assets classes, so as to obtain maximum return with minimum risk is called portfolio construction. It is a very difficult task to find out good investment among various types of investments. In an optimal portfolio every investor needs maximum return with a minimum return. This process is done through the construction of an optimal portfolio.

A portfolio is a grouping of financial assets such as stocks, bonds, commodities, currencies and cash equivalents, as well as their fund counter parts, including mutual, exchange traded and closed funds. A portfolio can also consist of non-publicly tradable securities, like real estate, art and private investments. Portfolios are held directly by investors and managed by financial professionals and money managers. Investors should construct an investment portfolio in accordance with their risk tolerance and their investing objectives. Investors can also have multiple portfolios for various purposes. It all depends on one's objectives as an investor. Prudence suggests that investors should construct an investment portfolio in accordance with risk tolerance and investing objectives. Think of an investment portfolio as a pie that is divided into pieces of varying sizes representing a variety of asset classes or types of Investments to accomplish an appropriate risk return portfolio allocation.

Introduction:

Portfolio construction is all about investing in a range of funds that work together to create an investment solution for investors. Building a portfolio involves understanding the way various types of investment work, and combining them to address your personal investment objectives and factors such as attitude to risk the investment and the expected life of the investment. Diversification is the process of allocating capital in a way that reduces the exposure to any one particular asset or risk. A common path towards diversification is to reduce risk or volatility by investing in a variety of assets. If asset prices do not change in perfect synchrony, a diversified portfolio will have less variance than the weighted average variance of its constituent assets, and often less volatility than the least volatile of its constituents. If the prior expectations of the returns on all assets in the portfolio are identical, the expected return on a diversified portfolio will be identical to that on an undiversified portfolio. Some assets will do better than others but since one does not know in advance which assets will perform better, this fact cannot be exploited in advance.

Keywords: Portfolio, BSE, Risk, Frontier, Volatility, Assets

Objectives of the Study

- 1.To construct the portfolio for shares of selected companies listed in BSE
- 2.To construct the optimal portfolio with the objective of maximizing Sharpe ratio
- 3.To construct the optimal portfolio with the objective of maximising portfolio return
- 4.To construct the optimal portfolio with the objective of minimizing risk
5. To build efficient frontier for the portfolio.

Scope of the study

The scope of the study is to indicate the importance of return and risk before making any kind of investment decision. The study is confined to six-month data from October 2021 – Mar 2021. AXIS BANK, ICICI BANK, HCL, INFOSYS, HUL, COLGATE, PFIZER and MERCK are selected for the study. These companies are listed in the Bombay Stock Exchange. They are selected on the basis of the highest net profit in each sector namely Banking, IT, FMCG, Pharmaceutical. Mean-Variance technique is used to construct the portfolio. Sharpe ratio is used to find out the best portfolio combination.

The rational investors never ignore the risk factor while taking investment decisions. The investors prefer to invest in a group of securities which is known as a portfolio in order to diversify the risk. There are different investment avenues for investors to invest. While some investment avenues involve huge risk others may be either less risky or risk less avenues. Therefore, it is essential to educate the investor about the investment alternatives and the risk and return from those investments. As the scope of investment avenues with varying degrees of risk is vast, the scope of the present study is relating to equity portfolio construction with selected stocks from the BSE.

Review of Literature

Francis mary and G.Rathika (2017) in their study examined the portfolio construction by using the monthly closing prices of ten companies listed in NSE and CNX pharma. The period of study was from Sep 2010 to Sep 2014, based up on the cut-off value out of the ten companies only one company is selected for the optimal portfolio construction.

Mokta Rani Sarker (2016) analysed the optimal portfolio using Single Index Model considering no short sales. The objectives of this study area. Risk-return analysis of individual securities listed in DSE. Allocate investment in different stocks considering risk return criteria. Construct optimal portfolio using single index model. Assist Investors in portfolio selection process to make the right choice. This paper aims at constructing an optimal portfolio by using Sharpe's Single Index model. The collected data were consolidated as per study requirements Various statistical tools have been used to analyse data through Microsoft Excel Software.

Nalini.R. (2014) in her study constructed the optimal portfolio by using Sharpe's single index model for that, fifteen companies from the S&P BSE Sensex Index were selected for the study. Only secondary data had been used for conducting the study. The main objective of the study is to calculate the proportion of investment to be made into each of the stock that is included in the optimal portfolio. Among the fifteen sample companies, only four were selected for optimal portfolio using SIM.

Research Methodology:

Descriptive research study is taken for the study. This study is purely based on secondary data obtained from the money control website, www.bseindia.com. Only eight companies from four sectors i.e. Banking sector, FMCG sector, pharmaceutical sector, and IT sector listed in the BSE Sensex Index were selected for the study. The study period has been chosen for six months of the period from Oct 2021 to March 2025. Mean, Standard deviation, expected return, Sharpe ratio, Efficiency frontier is used for analysis.

Analysis and Interpretation

Company Trend Analysis:

The Trend of each company's return calculated with 6-month daily data

TABLE 1: Returns of Selected Companies

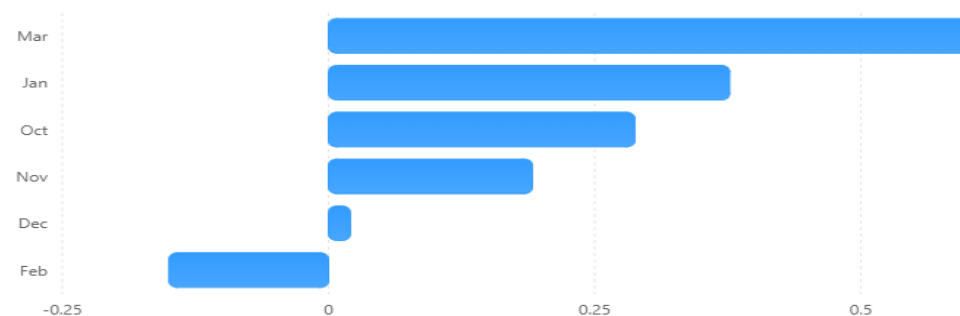
	AXIS	ICICI	HUL	COLGATE	HCL	INFOSYS	MERCK	PFIZER
Oct	-0.0605	0.6359	-0.0597	0.1085	-0.1743	-0.3637	0.6968	0.0014
Nov	0.3775	0.0055	0.4133	0.4400	-0.1560	-0.1304	-0.4454	-0.3393
Dec	-0.0371	0.0781	0.1915	0.5078	-0.2435	-0.0368	0.4571	0.2373
Jan	0.6881	0.0653	-0.1322	-0.1999	0.1963	0.5642	0.3232	0.2743
Feb	-0.0908	-0.2088	-0.0845	-0.0917	0.2420	-0.0978	-0.2316	0.3438
Mar	0.4854	0.7189	-0.0685	0.0208	0.1838	0.0656	0.8549	0.1498

The return of Axis was -0.0605 in oct 2021, it has increased to 0.4854 in march 2025. ICICI had a low return of -0.2088 in Feb 2021 and has increased to 0.7189. HUL had a high return of 0.4133 in Nov 2022, but it is very low at -0.0685. The return of COLGATE was 0.1085 in oct and it stays at 0.0208 in March. HCL had a return of -0.1743 in Oct and has increased over the months 0.1838 in 2025. INFOSYS had a low return of -0.3637 in oct and it has increased to 0.0656 in March. In Oct, MERCK had a return of 0.6968 in Oct and it has increased with ups and down to 0.8549 in March. PFIZER had a return of 0.0014 in Oct which is increased to 0.1498 in March.

Chart 1: Banking Sector Monthly Performance

Banking Sector Monthly Performance

Average monthly returns of AXIS Bank and ICICI Bank.



Portfolio construction

Combinations of Portfolio selectin with maximum share ratio, maximising portfolio return and minimizing portfolio risk.

The companies in the combination consist of (AXIS, ICICI, HUL, HCL and MERCK) and the returns are

Table: 1 The Portfolio Combination

	Return	Risk	Maximising Sharpe Ratio	Portfolio Weight Maximising Return	Portfolio weight Minimizing Risk
AXIS	0.2271	0.3043	0.017803	0	0
ICICI	0.2158	0.3405	0	0	0
HUL	0.0433	0.1954	0.489787	0	0.19022
HCL	0.0081	0.2018	0.329517	0	0.387825
MERCK	0.2758	0.4700	0.162894	1	0.121955
	Weight		1	1	1
	Port.Return		0.0728	0.2758	0.0580
	Port.Risk		0.0555	0.4700	0.0483
	Share Ratio		1.3116	0.5869	1.1999

In this table the maximum Share ratio, maximising return and minimizing risk of the portfolio values are shown.

Interpretation:

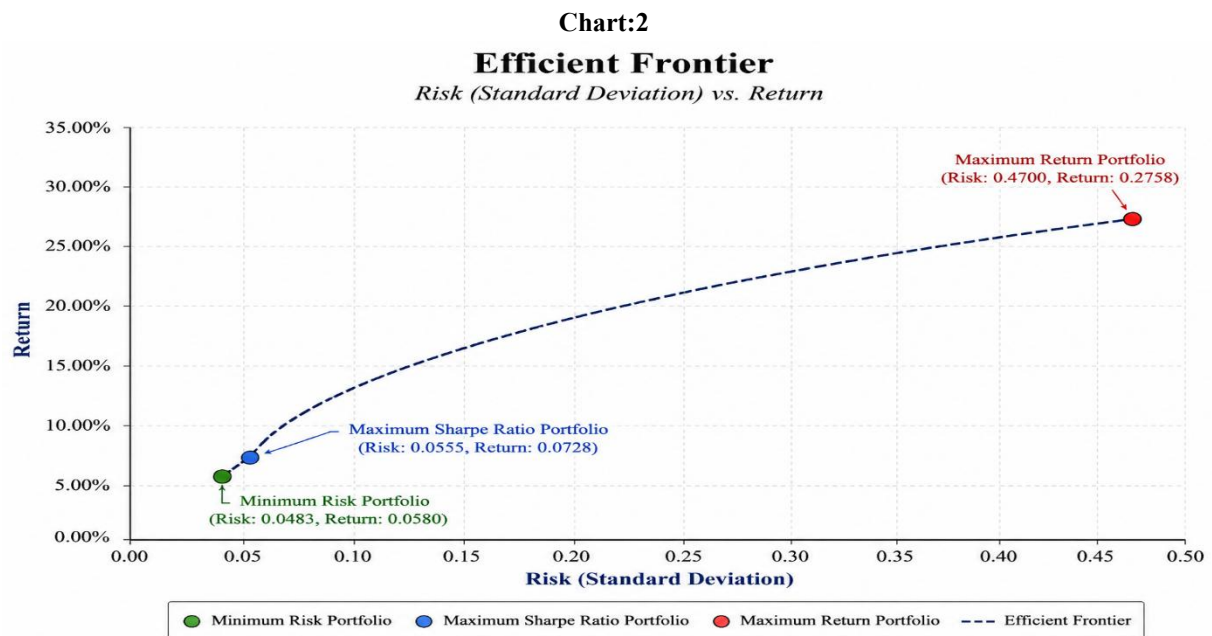
- ✓ When the Sharpe ratio is maximized then the portfolio return and risk of the combination are 0.0728 & 0.0555 with the share ratio of 1.3116
- ✓ When the portfolio return is maximised then the portfolio return and risk of the combinations are 0.2758 & 0.4700 with the share ratio of 0.5869
- ✓ When the portfolio risk is minimized then the portfolio return and risk of the combination are 0.0580 & 0.0483 with the sharp ratio of 1.1999

Inference:

It can be inferred that Axis, HUL, HCL and MERCK are the companies that have the maximum shares by maximising the Sharpe ratio for this combination of portfolio. Investing in the above combinations gives a Sharpe ratio of 1.3116.

Efficient Frontier

The Efficiency Frontier is drawn to identify the optimized portfolio from the selected companies and the risk and return of companies from the combination are plotted in the efficient frontier. The chart below displays the efficiency frontier for the chosen portfolio. The X axis is the standard deviation and the y axis is the return. The square dots that are closest to the efficient frontier line are the portfolios that are expected to show the best performance with smaller risk.



Inference:

From this efficient frontier of combination ICICI lies near the efficient frontier, AXIS and MERCK are nearer to the efficient frontier

Recommendation:

The risk averse can invest in Axis and ICICI Banking sectors. The risk neutral investors can combination of banking, technology, consumer durables and pharmaceutical sectors like Axis, HCL, HUL, ICICI, MERCK and PFIZER. The Investors must do portfolio revision periodically or according to the market return for the maximum benefit.

Conclusion:

Analysing the return of each and every company, it can be said that almost all the companies had variable return over the months, where Merck gave the best return among the selected companies in March considering every month's performance. HCL is the best company to invest in, as it shows the majority of weightage in most of the combination that were set and the Efficiency Frontier denotes the same. Among the various combinations that were tried, Combination of Axis, ICICI, Colgate, Infosys and PFIZER is the best to invest as it has the highest Sharpe ratio. It must be noted that the risk and return play an important role in making any investment decisions.

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