

A Study on Risk - Adjusted Performance Evaluation of Selected Portfolios in India

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Abstract: *Portfolio performance evaluation plays a crucial role in investment analysis, particularly in assessing the trade-off between risk and return. Key measures such as Sharpe's Ratio, Treynor's Ratio, and Jensen's Ratio provide valuable insights into risk-adjusted performance. An examination of securities listed under the Nifty 50 index enables a comprehensive understanding of their return behaviour, market returns, and beta coefficients. For portfolio construction, the top ten performing securities were selected based on superior market returns, followed by a comparative assessment of their risk-adjusted performance. The analysis is based on secondary data obtained from annual reports, return data from the National Stock Exchange of India, and information from the Reserve Bank of India. Portfolio ratios were computed for the selected securities and benchmarked against the Nifty 50 index to evaluate relative performance. Additionally, statistical correlation technique was employed to analyze the relationship between variables such as market returns, excess returns and beta.*

Keywords: Portfolio performance evaluation, Risk and return trade off, Sharpe Treynor Jensen ratios, Nifty 50 securities analysis, Risk adjusted investment returns.

1. Introduction

Portfolio ratios are important for making gainful investment decisions and performance evaluation of securities for earning profitable rate of return. The important portfolio ratios majorly, Sharpe's ratio, Treynor's ratio and Jensen's ratio are used for the calculation of movement of returns associated with covariance of risk and it helps in estimation of beta and diversifiable risk and it helps in selecting the return potential securities for construction of optimal investment portfolio. The ratios are useful in estimating the realizable returns to volatility in risk accepted. The metrics of the portfolio ratios are useful in measuring the level of static risk and diversifiable risk to effectively reduce volatility and optimizing the returns. Portfolio ratios are vital for comparative analysis of performance of the diversified securities in specific to its returns generated at varying level of risk. And ratios, sets the benchmark for evaluating generated portfolio returns and the overall market return. The analysis of total risk can help investors to achieve their specific financial objectives and rate of returns gained for each level of assumed risk for the investors. The past market data of ratios helps investors to compare risk – reward trade off to turn investments into profitable gains.

In this research article the performance of the portfolio securities as a measure of market returns in comparison to Nifty 50 as the standard benchmark index of NSE was studied for the period from January 2025 to December 2025. Further the top ten securities listed in Nifty 50 which gained high returns than 40 other securities of different sectors such as finance, metal and mining, Aviation, banking, Diamond and Jewellery and Chemicals were examined. Two securities namely, Shriram Finance, Hindalco generated higher returns of 76.75 and 57.48 out of 50 securities. Further, Shriram Finance and Hindalco stated positive correlation between risk

and return tradeoff. But, one security i.e Bharath Electrical Limited generated Maximum returns of 53.71 at minimum level of risk of 0.98 out of 38 securities with positive returns. This states the outperformance of portfolio returns with the overall difference of 2.5468, obtained for the level of risk accepted at the beta of 1.164 by top ten performing securities, weighted against the parity of the established benchmark returns of Nifty 50 i.e 8.86 at the beta of 1. And the covariance of returns of the securities and risk as a measure of standard deviation and beta was calculated with the help of William F Sharpe, Jack L Treynor and Micheal C Jensen's Alpha as the implied portfolio ratios for profitable investment decisions.

The further analysis of the research provided significant scope to critically evaluate the performance of securities in order to compare the expected returns at varied level of higher risk to analyse the risk premium $E(R_m - R_f)$, generated by different list of portfolio for accepting certain level of uncertain risk. And focus of the study was to estimate the returns earned per unit at risk free rate (R_f) for making important investment decisions based on comparative analysis of different companies that are potential enough to earn returns at various levels of market risk and stock specific risk.

2. Review of Literature

- 1) **S. Sidhartha, Naga Boudha and Manjunath K R, (2024)** examined the comprehensive "Performance Analysis of Mutual Funds of selected large cap mutual funds in India. The research was focused evaluation of the financial performance through various metrics. The study attempts to educate investors in making investment decision by comparing the performance of large cap mutual funds based on key financial indicators.
- 2) **Rushita Panchal, Aneri Patel and Samir Thakkar, (2021)** in their research paper "A Study on Performance

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Evaluation of a Portfolio Created Using Sharpe Method” focused on the construction of portfolio using Sharp Index. And the time period for study was taken for tenure of a year and according to the calculation of Sharpe’s ratio of risk and return trade off, the securities of three companies namely, NestleInd, Cipla and Dr. Reddy’s will be included as asset comprising as an efficient Portfolio.

- 3) **Dr. M Sharmeen Farooq, (2020)** in the research paper “Evaluating Stock Performance with Jensen Alpha and Beta” the study focused on generating abnormal returns of the stock to verify how the performance indicators such as Jensen’s Alpha and Beta depict returns. Further the research paper examined that, the computation of the measure and its specific analytical approach used for the analysis of the stock. The sample of the study included 30 listed companies in Bombay Stock Exchange (BSE) and concluded that 20% of the over all stock generated negative beta, while the returns moved in the opposite direction of the stock indices and the other 80% of the stock performance generated positive alpha and stated the inferences that there was a positive covariance of returns and risk.
- 4) **Dr. M Sharmeen Farooq, (2018)** examined the Leverage risk and its effect on expected returns of the firms, in the research paper “The Beta, Leverage and Returns Association”. And proceeded in this direction, the study computed the beta of a comprehensive sample of listed companies from Bombay Stock Exchange using CAPM Model of previous five years period. And the study also, analysed the impact of increased systematic risk on the equity returns and the stock prices and obtaining a levered beta signifies more risk and higher scope for returns and the results of the study concluded a positive relationship between beta and returns.
- 5) **Lalith P. Samarakoon and Tanweer Hasan, (2014)** examined the importance of how a managed portfolio has performed relative to some comparison benchmark in the research paper titled “Portfolio Performance Evaluation. And further analyzed two kinds of performance evaluation methods, namely conventional and risk adjusted methods for benchmark comparison and adjusted returns against different level of risk and involved major methods such as Sharpe ratio, Treynor ratio, Jensen’s alpha, Modigliani and Miller and Treynor Squared and concluded that risk adjusted methods are preferred to the conventional methods.

Statement of the Problem

The previous studies examined the performance of funds based on portfolio ratios and in the year 2024 there was an increase of adoption of Systematic Investment Plan (SIP) and this inference is providing investors with an understanding of key indicators to make informed investment decisions and Sixty – two percent of the selected schemes than those of stock market represented by standard deviation and computation led to the analysis that investment in Mutual Funds provided less risk than stock market portfolio as the beta of the funds was below one but positive. And in the year 2021, on the basis of

Sharpe’s ratio of volatility investment in Nifty 50 provided better returns for the aligned risk. And in 2020, it was figured out that securities of recession resistant companies have little and no correlation, which states that the securities can perform well even during the period of economic depression. There is a limited scope for investment decision based on risk adjusted metrics for the comprehensive analysis of securities performance and lack of market information for efficient portfolio construction for varying level of risk under fluctuating market conditions is a drawback. The focus of the present study was to evaluate the financial performance of portfolio securities based on the nature of returns aligned with beta (systematic risk) and the research article further led to the computation of risk – adjusted performance of portfolio securities in comparison to Nifty 50 as market index. And to identify portfolio, that can generate higher returns at minimum risk, so that efficient portfolio can be constructed to value the performance of the securities. The present research article is focused on risk adjusted metrics to estimate the correlation between Alpha, Beta of the stock and Market Return, Beta of the Portfolio Securities. And further for the specific analysis of performance of individual securities with detailed projections of Risk, Reward, Excess Returns and Excess Returns to Beta (β) provides insights into scope for sector-wise comparison of securities for diversification of risk for profitable risk behaviour.

Objectives of the Study

- To examine the returns of selected securities based on Risk – Adjusted measures in comparison to the stock returns of Nifty 50 as benchmark market index.
- To analyse the Performance of selected securities for portfolio construction evaluated at the level of beta risk.
- To evaluate and compare the Alpha Returns of the selected Portfolio based on the risk assumed.

3. Methodology

The research design of the study is analytical and descriptive in nature. The data collection was based on Secondary data and the data was obtained from the annual reports and return profile of NSE. Portfolio were selected based on top ranked companies by higher market returns comprising of Nifty 50. The Period of study for the research work is from January to December 2025. The sampling technique used for the study was stratified sampling technique for the analysis purpose. A sample of top ten performing portfolio securities is the sample size of the research. Portfolio Ratios such as Sharpe’s Ratio, Treynor’s Ratio and Jensen’s Alpha Ratio were utilized for evaluation of the performance of securities and for the comparison of securities functioning in the same sector and different sector. And further Correlation statistical technique was employed to study the relationship of variables such as market returns and beta, excess market return and beta of portfolio securities.

4. Analysis and Interpretation

Table 1: Analysis of Market Returns for Selected Portfolio Securities of Nifty 50 from January to December 2025

S. No	Name of the Securities	Market Return (From January to December 2025)	Beta (β)
1.	Shriram Finance	76.75	1.57
2.	Hindalco	57.48	1.35
3.	Bharat Electrical Limited	53.71	0.98
4.	Tata Steel	48.26	1.44
5.	SBI	41.71	0.93
6.	SBI Life Insurance	35.61	0.84
7.	Eicher Motors Limited	33.94	1.02
8.	Adani Ports Limited	33.11	1.06
9.	JSW Steel	30.32	1.34
10.	Axis Bank	31.47	1.11
11.	Bharati Airtel	25.85	0.9
12.	Eternal	23.79	1.34
13.	Larsen and Toubro Ltd	21.26	1.17
14.	Titan Company Limited	6	0.68
15.	National Thermal Power Corporation Limited	16.27	0.99
16.	Nestle	16.1	0.75
17.	Bajaj Finance	15.4	1.16
18.	Maruti Suzuki	14.58	0.77
19.	Mahindra & Mahindra Ltd	14.01	1.25
20.	Reliance	13.22	1.21
21.	Grasim Industries Limited	13.83	1.06
22.	Coal India	13.8	0.94
23.	Tata Consumer Products	13.08	0.88
24.	Bajaj Finserv	13.02	1.22
25.	Interglobe Avi	11.52	1.11
26.	HDFC Life	11.32	0.8
27.	Ultra Tech Cement	10.94	0.84
28.	ICICI Bank	10.66	0.91
29.	Kotak Mahindra	10.22	0.88
30.	HDFC Bank	7.92	0.84
31.	Bajaj Auto	7.59	1.06
32.	Jio Financial Services Ltd	6.99	1.7
33.	Asian Paints	6.26	0.64
34.	ONGC	4.78	1.06
35.	Power Grid Corporation of India	4.13	1.13
36.	Hindustan Unilever Limited	2.17	0.42
37.	Apollo Hospital Enterprise Limited	3.7	0.85
38.	Dr. Reddy's Labs	0.08	0.86
39.	Adani Enterprise	-1.16	1.8
40.	Sun Pharmaceutical Industries Limited	-2.72	0.77
41.	Tech Mahindra	-3.21	1.04
42.	HCL Tech	-7.6	1.19
43.	Max Healthcare Institute Limited	-7.62	1
44.	Cipla	-9.88	0.82
45.	Infosys	-21.4	1.12
46.	Trent	-22.4	1.43
47.	ITC	-26.14	0.57
48.	Tata Consultancy Services	-27.98	0.87
49.	Wipro	-27.54	0.99
50.	Tata Motors Passengers Vehicle Limited	-48.02	1.26
Average		11.4068	
Standard Deviation		22.9716	

Source: NSE

Interpretation

It is examined that Securities such as Shriram Finance which generated highest market returns of 76.75 and beta of 1.57, market returns of 57.48 achieved by Hindalco for the beta risk of 1.35, indicates that these securities are more volatile compared to the market and there is a positive risk – return relationship. Where as Bharath Electrical Limited which achieved higher returns of 53.71 and beta of 0.98, SBI earned increased returns of 41.71 and beta of 0.84 by this analysis, it

is understood that the securities achieve returns at lesser volatility. The realized returns of three securities such as Nestle with market return of 16.1 for the beta of 0.75, market return of 14.58 for the beta of 0.77 attained by Maruti Suzuki and the yielded market return of 2.17 and beta of 0.42 by Hindustan Unilever clearly signifies, these securities are defensive with stable performance. On the other hand, companies such as Infosys, Tata Consultancy Services and Tata Motors states the negative performance of the stock.

Table 2: Calculation of Market Returns and Returns to Beta of Portfolio Securities from January to December 2025

No	Name of the Securities	Sector	Market Return	Excess Return	Beta (β)	Rf	Unsystematic Risk	Excess Return to Beta
1.	Shriram Finance	Finance	76.75	66.82	1.57	7	13.3584	72.2914
2.	Hindalco	Metals and Mining	57.48	47.96	1.35	7	13.5784	52.2948
3.	Bharat Electrical Limited	Aviation	53.71	44.88	0.98	7	13.9484	46.5671
4.	Tata Steel	Metals and Mining	48.26	38.58	1.44	7	13.4884	43.3988
5.	SBI	Bank	41.71	32.98	0.93	7	13.9984	34.1831
6.	SBI Life Insurance	Insurance	35.61	27.04	0.84	7	14.0884	27.2766
7.	Eicher Motors	Metals and Mining	33.94	25.04	1.02	7	13.9084	27.0772
8.	Adani Ports Limited	Trading	33.11	-35.47	1.06	7	13.8684	26.5062
9.	Axis Bank	Bank	31.47	-34.06	1.11	7	13.8184	25.1636
10.	JSW Steel	Chemicals	30.32	-33.17	1.34	7	13.5884	25.0961
Average Return		44.22						
Nifty 50 Benchmark		8.86						
Standard Deviation		14.9284						

Source: Author Compilation

Securities selected for the portfolio construction included ten companies based on the higher market returns such as, Shriram Finance, Hindalco, Bharat Electrical Limited, Tata Steel, SBI, SBI Life Insurance, Eicher Motors, Adani Ports Limited, JSW Steel, Axis Bank. Shriram Finance generated highest market return of 76.75 compared to other securities of the portfolio with excess return of 66.82, beta of 1.57, excess return to beta of 72.2914, stating the highest risk – adjusted performance of the company. And JSW Steel attained lowest market return, which is 30.32, excess return of 30.32, beta of 1.34, excess return to beta of 25.1636 stating the lowest risk – adjusted performance of the company.

Table 3: Calculation of Sharpe’s Ratio, Treynor’s Ratio and Jensen’s Alpha

Particulars	Sharpe’s Ratio	Treynor’s Ratio	Jensen’s Alpha
Selected Portfolio	43.7510	38.2062	35.0549
Benchmark – Nifty 50	8.5535	2.1188	35.2885

Source: Author Compilation

The selected portfolio demonstrates, superior performance in terms of Sharpe’s ratio of 43.7510 and Treynor’s ratio of 38.2062 is comparatively higher than Nifty – 50, benchmark value of 8.5535 and Treynor’s ratio of 2.1188 this indicates that the portfolio has generated significantly higher excess returns per unit of total risk compared to the benchmark. And the benchmark Nifty 50 shows Jensen’s Alpha of 35.2885, which is marginally higher than the portfolio of 35.0549 which states that benchmark slightly outperformed the portfolio in terms of generating excess returns.

Table 4: Correlation Analysis of Alpha Return and Beta (β) of Portfolio Securities

Variables	Alpha Return	Beta (β)
Alpha Return	1	0.2167
Beta (β)	0.2167	1
Result	r = 0.2167	

Source: Author Compilation

From the above table, it is interpreted that, calculated r value is 0.2167 and there is a low Positive correlation between Alpha Returns and Beta (β) of the portfolio. It states the inconsistent performance of the Portfolio Securities.

Table 5: Correlation Analysis of Market Return and Beta (β) of Portfolio Securities

Variables	Market Return	Beta (β)
Market Return	1	0.5892
Beta (β)	0.5892	1
Result	r = 0.5892	

Source: Author Compilation

From the above table, it is interpreted that, calculated r value is 0.5892 and there is a positive correlation between Market Return and Beta (β) of the portfolio. It clearly states the moderate performance of the individual Portfolio Securities compared to the risk assumed.

5. Findings of the Study

- The calculated r value is 0.5892 between Market Return and Beta (β) of top ten performing securities of Nifty 50. Securities that assume higher risk yields higher return.
- Though the securities with higher returns such as Shriram Finance generated higher return of 76.75 at beta (β) of 1.57, showed excess return of 72.2914 and market return of 57.48 by Hindalco at beta (β) of 1.35, also generated excess return of 52.2948, which clearly states the outperformance of portfolio securities compared to Nifty 50 market index.
- And there is a low positive correlation between Alpha (Excess Returns) and Beta (β), as the calculated value of r is 0.2167 which indicates the inconsistent performance of securities.
- The estimated Sharpe’s ratio of top ten individual Portfolio Securities is 43.7510 and Treynor’s ratio is 38.2062 which is comparatively greater than the benchmark Sharpe’s ratio of Nifty 50 that is 8.5535 and Treynor’s ratio of 2.1188 which states, that the portfolio securities are performing better on a risk – adjusted basis compared against the benchmark index.
- There is a slight difference in Jensen’s alpha ratio of Portfolio Securities, computed at 35.0549 which is lesser than the Nifty 50 index of 35.2885, which signifies that, there is fluctuation in obtaining returns of the top ten selected portfolio of securities for the total risk accepted as analysed against Nifty 50.

6. Suggestion

- Efficient diversification of securities can generate profitable and stable returns even for the higher beta (β) risk, adopted for portfolio of securities.
- Investors can focus on the performance of the securities, so that underperforming securities can be eradicated for portfolio construction.
- Examining and monitoring the securities continuously could help investors draw significant and useful market information, so that investment objectives can be achieved.

[14] <https://www.nseindia.com/index-tracker/NIFTY%2050>

[15] <https://www.moneycontrol.com/indian-indices/nifty-50-9.html>

[16] www.ijrsred.com

7. Conclusion

The research article, comprehends the performance of Nifty 50 securities listed in NSE according to the recent data of one year, based on different risk – return scenarios of the market. And out of 50 securities, 38 portfolio securities achieved positive returns for the risk accepted. Securities such as Bharath Electrical Limited, Tata Steel and SBI does well by obtaining higher returns at minimum risk compared to aggressive Portfolio of Securities. Investors can arrive at gainful investment decisions based on investment objectives.

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