Performance Evaluation of Stocks: A Comparative Study of PSU's Stock Performance and Private Sector Company's Stock Performance

Dr. C. K. Tewari[1], Vinay Shukla[2], Ankit Yadav[2]

[1]Associate Professor, [2]Student,

[1,2]STEP-HBTI, Kanpur, Uttar Pradesh, India

ABSTRACT

A stock (Popularly known as shares or equity) is a type of security that signifies proportionate ownership in the issuing organization. Shares are bought and sold predominantly on stock exchange, though there can be private sales as well, and is the foundation of nearly every portfolio. These transactions have to conform to government regulations organization like SEBI, which are meant to protect investors from fraudulent practices. In this research paper an attempt is made to analyze the investment tendency in stock of public sector companies and private sector companies. The study also consist a comparative evaluation of the stock performance of public as well as private companies. For the evaluation, last three year data of stock performance has been used. This study also finds out the factors effecting the investment in stocks and measures the performance of stocks through the some models which are used worldwide to evaluate the performance of stock through portfolio (Risk/Return) Sharpe Measure, Treynor Measure, and jensens measure of performance. The performance review must generate and provide information that will help the investor to assess any need for rebalancing of his investments and sell and buy decision. The purpose of choosing this topic is to know how the stock portfolio evaluated and which sector stock is performing well and risk and return relationship.

KEYWORDS: Portfolio evaluation, Performance evaluation, Standard deviation, Benchmark comparision, Sharpe measure, Treynor measure, Jensen measure

INTRODUCTION

The study will focus on stock investment, evaluation and comparison between public sector companies and private sector companies. Investment is the sacrifice of certain present value for some uncertain future reward. In other words an investment can be defined as commitment of funds to one or more assets that will be held over some future time period. Broadly, an investment decision is a tradeoff between risk and return. Stock performance is the measurement of a stock's ability to increase or decrease the wealth of its shareholders. Performance is typically measured by its fluctuation in price. When the stock price increases, the stock shows good performance. Conversely, a decrease in price is a poor performance. . Just as every person has different appetites for risk, plans for diversification and investing strategies, so too does every investor have different standards for evaluating stock performance. One investor may expect an average annual return of 12% or more, while another may look to add to his portfolio with a stock that is not correlated with the stock market as a whole.

The evaluation of stock performance is important for several reasons. First, the investor, whose funds have been invested in the portfolio, needs to know the relative performance of the portfolio. The performance review must generate and provide information that will help the investor to assess any need for rebalancing of his investments. Second the investor needs to know the how his stocks are performing, whether to buy more stock or sell them. Performance evaluation methods are generally two types, namely conventional and risk-adjusted methods.

The most commonly used conventional methods include benchmark comparison and style comparison. The risk-adjusted methods adjust returns in order to take account of differences in risk levels between the managed portfolio and the benchmark portfolio. The major such methods are the Sharpe ratio, Treynor ratio, and Jensen's alpha. The risk-adjusted methods are more suitable than conventional.

LITRETAURE REVIEW

We argue that investors use simple decision heuristics when selecting stocks to purchase or sell. When purchasing funds, we predicate that investors use a representativeness heuristic, where recent performance is deemed overly representative of a fund manager's true ability. When selling funds, this representativeness heuristic is more than offset by investors' reluctance to realize losses (the disposition

effect). In the early 1960s the investment community talked about risk, but there was no specific measure for that risk. How investors quantify their risk about investment, the basic portfolio model was developed by Harry Markowitz (1952-1959). Markowitz showed the importance of portfolio management and to calculate the risk of portfolio (Systematic or Un-systematic). Ross (1976-1977) to develop the Arbitrage Pricing Theory, which is most beneficiaries to achieve the maximum return with lowest risk. Carpenter, Michal D. & David E. (1981) discussed the trading volume and beta stability. Beta is the principle of risk in single investment as well as portfolio investment in mutual fund. H. Mendelson (1987) active performance of trading mechanism accomplishes the highest return of stocks, this is how the stock risk and all started. There are two most common methods to evaluate the performance of stock or portfolio. Conventional method and risk-adjusted method.

Conventional Method:
Benchmark Comparison
The most straightforward conventional method involves comparison of the performance of an investment portfolio against a broader market index and the most widely used market index in the United States is the S&P 500 index, which measures the price movements of 500 U.S. stocks compiled by the Standard & Poor's Corporation. According this method if the return on the portfolio exceeds that of the benchmark index, measured during identical time periods, then the portfolio is said to have beaten the benchmark index. While this type of comparison with a passive index is very common in the investment world, this creates a meny problem. The level of risk of the investment portfolio may not be the same as that of the benchmark index portfolio. Higher risk should leads to Commensurately higher returns, in the long-term. This means if the investment portfolio has performed better than the benchmark portfolio it may be due to the investment portfolio being more risky than the benchmark portfolio. Therefore, a simple comparison of the return on an investment portfolio with that of a benchmark portfolio may not produce valid results. (Springer, 2005, pp. 617-622 Lalith P. Samarakoon, Dr. Tanweer Hasan).

Style Comparison
A second conventional method of performance evaluation called "style- comparison" involves comparison of return of a portfolio with that having a similar investment style. While there are many investment styles, one commonly used approach classifies investment styles as value versus growth. The "value style" portfolios invest in companies that are considered undervalued on the basis of yardsticks such as price-to-earnings and price-to- topic value multiples. The "growth style" portfolios invest in companies whose revenue and earnings are expected to grow faster than those of the average company. (Springer, 2005, pp. 617-622 Lalith P. Samarakoon, Dr. Tanweer Hasan).

Risk Adjustment Methods
The risk-adjusted methods make adjustments to returns in order to take account of the differences in risk levels between the managed portfolio and the benchmark portfolio. While there are many such methods, the most notables are the Sharpe index (S), Treynor's index (T), and Jensen's alpha (α).

Now, the main aim of this research paper is to evaluate the performance of stock of public sector companies and private sector companies. For evaluation Risk-adjusted performance is evaluated using three evaluation techniques, i.e., Sharpe measure, Treynor's measure and Jensen's Alfa. For the return calculation, last three year data of stock performance are used.

OBJECTIVE OF THE RESEARCH
➢ To evaluate the performance of the selected stock.

➢ To do a comparative study between public sector companies stock performance and private sector companies stock performance

➢ To give the best point to investor for investment decision (sell or buy)

RESEARCH METHODOLOGY
A. Scope of the study:
For evaluation, last three year data of stock performance has been used (2016-2019)

B. Sample:
The study uses a sample of five public sector companies and five private sector companies.

C. Sources of data:
For the evaluation, Secondary data have been used and collected from the journals, books and periodicals. The data were also collected from various websites of companies, moneycontrol.com, Yahoo finance, NSE etc. Government Treasury bill has been used as a surrogate for risk free rate.

D. Tools:
To analyze the stock performance, he following statistical methods and techniques has been used: Standard Deviation for total risk, Beta for systematic risk.

Methodology for data Analysis
For the evaluation and data analysis, Sharpe performance index (S), Treynor's performance index(T), and Jensen's alpha (α) are used.

Sharpe's Performance index
Sharpe's performance index gives a single value to be used for the performance ranking of various funds or portfolios. Sharpe index measures the risk premimume of the portfolio relative to the total amount of risk in the portfolio. The risk premium is the difference between the portfolios average rate of return and the risk free rate of return. The standard deviation of the portfolio indicates the risk. The index assigns the highest value to assets that have best risk adjusted rate of return.

$$S \frac{Rp - Rf}{\sigma p}$$

Where:-
S = Sharpe ratio
Rp = return of the portfolio
Rf = risk-free rate
σp = standard deviation of returns of the portfolio

A. Private Company

Company Name	Avg. Return (Weekly)	Risk Free rate	SD
Adani Power	4.8%	6.3%	7.0168%
Bajaj Finance	8.3%	6.3%	5.6030%
Tata Steel	12.39%	6.3%	5.4291%
RIL	11.32%	6.3%	11.9218%
ICICI Bank	7.8%	6.3%	4.9732%

B. Public Company

Company Name	Avg. Return(Daily)	Risk Free Rate	SD
NTPC	7.69%	6.3%	4.9892%
ONGC	16.33%	6.3%	7.4839%
SAIL	2.39%	6.3%	5.5547%
SBI	6.25%	6.3%	5.4421%
LIC Housing Finance	7.8%	6.3%	5.0331%

The larger the S better the fund has performed

If we assume that private company is one portfolio name A, and Public company is Portfolio B, then..

For Portfolio A
Portfolio Average Return: 8.9%
Average Risk Free rate: 6.3%
Average S.D of portfolio: 6.98%
Sharp Index: 0.37

For Portfolio B
Portfolio Average return: 8.092%
Average risk free rate: 6.3%
Average standard deviation of portfolio : 5.7%
Sharp index: 0.31

Thus the larger the S, better the fund has performed. Thus Portfolio A ranked as better fund because, its index 0.37>0.31

Treynor's Performance index
The Treynor performance index (Treynor, 1965) computes the risk premium per unit of systematic risk. The risk premium is defined as in the Sharpe measure. The difference in this method is in that it uses the systematic risk of the portfolio as the risk parameter. The systematic risk is that part of the total risk of an asset which cannot be eliminated through diversification. It is measured by the parameter known as 'beta' that represents the slope of the regression of the returns of the managed portfolio on the returns to the market portfolio. (Springer, 2005, pp. 617-622 Lalith P. Samarakoon, Dr. Tanweer Hasan).

The Treynor performance is given by equation

$$T = \frac{Rp - Rf}{\beta p}$$

Where:-
T = Treynor ratio
Rp = return of the portfolio
Rf = risk-free rate
βp = beta of the portfolio

A. Private company

Company Name	Avg. Return (Daily)	Risk Free rate	Beta
Adani Power	4.8%	6.3%	6.98%
Bajaj Finance	8.3%	6.3%	6.98%
Tata Steel	12.39%	6.3%	6.98%
RIL	11.32%	6.3%	6.98%
ICICI Bank	7.8%	6.3%	6.98%

B. Public Company

Company Name	Avg. Return (Daily)	Risk Free Rate	Beta
NTPC	7.69%	6.3%	5.7%
ONGC	16.33%	6.3%	5.7%
SAIL	2.39%	6.3%	5.7%
SBI	6.25%	6.3%	5.7%
LIC Housing Finance	7.8%	6.3%	5.7%

If we take the same assumption...

For Portfolio A
Portfolio Average Return: 8.9%
Risk free rate: 6.3%
Beta of Portfolio: 6.98%
Treynor's (T): 0.372

For Portfolio B
Portfolio Average Return: 8.092%
Risk free rate: 6.3%
Beta of Portfolio: 5.7%
Treynor's (T): 0.314

We can see that portfolio A performance is better than Portfolio B, Because the Treynor's ratio of portfolio A is higher than Portfolio B. Treynor ratio measures the relationship between fund's additional return over risk-free return and market risk is measured by beta. The higher the value of Treynor ratio, the better, the performance of portfolio.

Jensen's Performance index
The absolute risk adjusted return measure was developed by Michael Jensen and commonly known as Jensen's measure. It is mentioned as a measure of absolute performance because a definite standard is set and against that the performance is measured. The standard is based on the manager's productive ability. Successful prediction of security price would enable the manager to earn higher returns that the ordinary investor expects to earn in a given level of risk. The basic model of Jensen is given below.

$$\propto = Rp - [Rf + \beta p(Rm - Rf)]$$

Where
α = Jensen's alpha
Rp = return of the portfolio
Rm = return of the market portfolio
Rf = risk-free rate
βp = beta of the portfolio

Jensen's alpha (Jensen, 1968) is based on the Capital Asset Pricing Model (CAPM) of Sharpe (1964), Lintner (1965), and Mossin 1966). The alpha represents the amount by which the average return of the portfolio deviates from the

expected return given by the Capital Asset Pricing Model. The CAPM specifies the expected return in terms of the risk-free rate, systematic risk and themarket risk premium. The alpha can be greater than, less than or equal to zero. An alpha greater than zero suggests that the portfolio earned a rate of return in excess of the expected return of the portfolio. . (Springer, 2005, pp. 617-622 Lalith P. Samarakoon, Dr. Tanweer Hasan).

A. Private company

Company Name	Avg. Return (Daily)	Risk Free rate	Beta	Rm
Adani Power	4.8%	6.3%	6.98%	7.6%
Bajaj Finance	8.3%	6.3%	6.98%	10.6%
Tata Steel	12.39%	6.3%	6.98%	8.7%
RIL	11.32%	6.3%	6.98%	19.5%
ICICI Bank	7.8%	6.3%	6.98%	11.2%

B. Public Company

Company Name	Avg. Return (Daily)	Risk Free Rate	SD	Rm
NTPC	7.69%	6.3%	5.7%	7.6%
ONGC	16.33%	6.3%	5.7%	19.5%
SAIL	2.39%	6.3%	5.7%	8.7%
SBI	6.25%	6.3%	5.7%	11.2%
LIC Housing Finance	7.8%	6.3%	5.7%	10.6%

* In this study, Rm is based on nominal research, Rm might be different from actual Market return.

If we take the same assumption..

For Portfolio A
Portfolio Average Return: 8.9%
Average Market Return of the portfolio: 11.52%
Risk free rate: 6.3%
Beta of Portfolio: 6.98%
Jensen's (α): -27.211

For Portfolio B
Portfolio Average Return: 8.092%
Risk free rate: 6.3%
Average Market Return of the portfolio: 11.52%
Beta of Portfolio: 5.7%
Jensen's (α): -27.962

If the portfolio has a positive Alfa which means performance is better.

In both Portfolio, Portfolio A is performing better because he has higher positive Alfa.

CONCLUSION
This research paper provides an overview of stock performance of public and private sector. Overall results suggest that the private sector stock is performing better than the public sector, but yes there is ONGC who is performing well. Whereas results also show public companies shares are under performing. If we assume that the private company is Portfolio A and Public company is portfolio B then Portfolio A is performing better than Portfolio B, In India private companies are rapidly growing after globalization, where the public sector companies are facing issue like policy paralysis, government interference, competition from the private players or lack of aggression from the management, overhang of bad debt etc. The success of public sector depends upon the performance of company and the role of regulatory bodies. Excellent management and stringent regulations will increase performance of public sector companies.

The study has compared the various companies shares of public sector and private sector. Summary of results is presented in different tables. The performance of sample stocks has been evaluated in terms of return and risk analysis, and risk adjusted performance measures such as Sharpe ratio and Treynor ratio and Jensen's Alfa.

Recommendations
By conducting this research, we felt some things, which will help the investors to choose the portfolio.

1st of all this study has been conducted on a small scale and it covers only selected stock performance of last three year. The same study could be conducted on a large scale considering all stocks of private and public sector.

With the help of this limited tool and limited sample research paper I would recommend the private companies stocks, because all three measurement tool showing that the private sector stock is performing well than the public sector. If investor has public company stock then they should think to sell them and buy private companies stock.

REFERENCE
[1] Performance Evaluation of Mutual Funds: A Study of Selected Diversified Equity Mutual Funds in India (Dr Vikas Choudhary, and Preeti Sehgal Chawla ICBLCSR'14 Oct 1-2, 2014 Phuket) (Thailand)

[2] Performance evaluation of mutual fund (Article in SSRN Electronic Journal · May 2011) by Rizwan Ali, Mohammad Akram Naseem and Ramiz Ur Rehman.

[3] Portfolio analysis based on Markowitz model by Anton Abdulbasah Kamil,Chin Yew Fei Lee Kin Kok (Journal of Statistics and Management Systems, 10 October 2014)

[4] Portfolio Performance Evaluation (Springer, 2005, pp. 617-622, Lalith P. Samarakoon and Dr. Tanweer Hasan)

[5] Markowitz, Harry. 1952. Portfolio Selection. Journal of Finance 7, no. 1 (March):77-91.

[6] Sharpe, William F. (1966) Mutual Fund Performance. Journal of Business 39 (January), Supplement on Security Prices, 119–38.

[7] Jenson & Michael C, 1968. "The Performance of Mutual Fund" Journal of Finance 23, n 2 (May): 389-416 H. Mendelson & Amihad, 1987 "trading Mechanisms and stock return". An empirical investigation journal of finance 42, no.3 (July): 533-553

[8] Michael D & David E, 1981. "Trading volume and Beta stability" Journal of Portfolio Management 7, no.2 (Winter): 60-64

[9] Keith C & W.V. Harlow, 1989. "How Rational Investor Deal With Uncertainty" Journal of Applied Corporate Finance 2, no. 3 (Fall): 45-58

[10] Thomas M. Richards & David E, 1990 "benchmark portfolio and the management sponsor relationship" in current topic in investment management.

[11] Bailey, Warren & Joseph Lim, 1992 "Evaluation the Diversification Benefits of the new country funds." Journal of portfolio management 18, no. 3 (spring): 7480

[12] Baker & H. Kent, 1992. "Improving the investment decision process" Better use of Economics inputs in security Analysis and Portfolio Management.

[13] Capon, Fitzsimons & R. Prince, 1996. "An Individual Level Analysis of the Mutual Funds Investment decision" Journal of Financial Services Research 10: 59-82

[14] Tahir Hijazi S. M. Aamir Shah , 2005 "Performance Evaluation of Mutual Funds in Pakistan" The Pakistan Development Review 44 : 4 Part II : 863–876

[15] Gupta, O. P., and Amitabh Gupta (2001) Research Methodology for Performance Evaluation of Mutual Funds. Chandigarh: University Business School, Panjab University,

[16] "Investment Analysis & Portfolio Management" (8th Edition) by Frank K Reilly & Keith C Brown

[17] Investments Concepts & Application (2nd Edition) by Richard Heaney, Chris Billion & Tim Brailsford.

[18] Security Analysis And PortfolioManagement ByPunithavathyPandian ; Vikas Publishing house Pvt Ltd. 2011 edition

[19] Chen, Son-Nan and C. F. Lee, 1981, The sampling relationship between Sharpe's performance measure and its risk proxy: Sample size, investment horizon and market conditions, Management Science, 27, pp. 607-618.

[20] Chen, Son-Nan and C. F. Lee, 1986, The effects of the sample size, the investment horizon and market conditions on the validity of composite performance measures: A generalization, Management Science, 32, pp. 1410-1421.

[21] Christopherson, Jon A., 1995, Equity style classifications, Journal of Portfolio Management, pp. 32-43.

[22] Cumby, R. E., and J. D. Glen, 1990, Evaluating the performance of international mutual funds, Journal of Finance, 45, pp. 497-521.

[23] Grinblatt, M., and S. Titman, 1994, A study of monthly mutual fund returns and performance evaluation techniques, Journal of Financial & Quantitative Analysis, 29, pp. 419-444.

[24] Jensen, M. C., 1968, The performance of mutual funds in the period 1945-1964, Journal of Finance, 23, pp. 389-416.

[25] Kallaberg, J. G., C. L. Lin & C. Trzcinka, 2000, The value added from investment managers: an examination of funds of REITs, Journal of Financial & Quantitative Analysis, 35, pp. 387-408.

[26] Lintner, J, 1965, The valuation of risk assets and the selection of risky investments in stock portfolios and capital budgets, Review of Economics and Statistics, 47, pp. 13-47.

[27] Reilly F. K., and E. A. Norton, 1993, Investments, 6th Ed., Thompson-Southwestern.

[28] Sharpe, W. F., 1998, Morningstar's risk-adjusted ratings, Financial Analysts Journal, 54, pp. 2133.

[29] Sharpe, W. F., 1966, Mutual fund performance, Journal of Business, 39, no. 1, pp. 119-138.

[30] Sharpe, W. F., 1992, Asset allocation: Management style and performance measurement, Journal of Portfolio Management, pp. 7-19.

[31] Sharpe, W. F., 1964, Capital asset prices: A theory of market equilibrium under conditions of risk, Journal of Finance, 19, pp. 425-442.

[32] Treynor, J. L., 1965, How to rate management of investment funds, Harvard Business Review, 43, pp. 63-75.

[33] https://www.slideshare.net

[34] www.investopedia.com

[35] https://en.wikipedia.org/wiki/Stock

[36] https://www.sapling.com/7346046/stock-performance