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AN INTRICATE MULTIPLE-FACTOR APPROACH TO EVALUATE PERFORMANCE OF INDIAN MUTUAL FUND

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ABSTRACT

This research paper examines performance of top twelve Indian mutual funds by Asset Under Management (AUM). We use seven portfolio performance measurement parameters like Alpha, Beta, Standard Deviation, R Squared, Sharpe Ratio, Treynor Ratio and Jensen's Alpha. The study reveals which amongst these mutual fund is the best performer based on all these parameters and the benchmark taken for this is NIFTY Index. The mutual funds selected are HDFC Top 200 Fund, Franklin India Bluechip Fund, ICICI Prudential Focused Bluechip Equity Fund, DSPBR Top 100 Equity Fund, Birla Sun Life Equity Fund, DSPBR Top 100 Equity Fund, UTI Mastershare Fund, Reliance Equity Opportunity Fund, SBI Magnum Equity, Reliance Top 200 Fund, SBI Bluechip Fund, ICICI Prudential Top 200 Fund, Principal Large Cap Fund. This study is primarily done to evaluate performance of the select mutual funds over a period of five years.

JEL CLASSIFICATION & KEYWORDS

■ D92 ■ G11 ■ G12 ■ F21 ■ F36 ■ MUTUAL FUNDS ■ INVESTMENT PERFORMANCE ■ ALPHA ■ BETA ■ STANDARD DEVIATION ■ R SQUARED ■ SHARPE RATIO ■ TREYNOR RATIO ■ JENSEN'S ALPHA

INTRODUCTION

In India the mutual funds concept was started in 1963 by Unit Trust of India (UTI). This was the first time where investors were given an option to invest in scheme with variety of risk profile. In India the investors are risk averse and the only investment of avenue is bank deposits or postal deposit schemes like NSC (National Savings Certificates); KVP (Kisan Vikas Patra) etc. All these were favorite of investors as they carried no risk from investors perspective as it was back by Government of India. To break this ice sealing it took a while for UTI. It first came up with various debt oriented schemes and then launch the mega-scheme of Unit 64. This was a long-term equity investment with an minimum assured return. However on maturity there were issue with respect to giving committed return which led to huge erosion of trust.

Post liberalization in 1992 there where number of private mutual funds which were allowed to enter India market or start business of Mutual fund. We had seen companies like Alliance Mutual Fund, Kothari Pioneer Mutual Fund, Birla Mutual Fund etc trying to quench thirst of Indian Investors. They did fairly well till 1999 until a big stock market scam hit Indian Equity Market. This was multiplied with the Y2K scare followed by dot com burst. These events shattered investors hopes in Indian Equity Market.

In the new millennium the markets as well as the investor had insipid period from 2000 to 2004. Post 2004 when the elections gave a clear mandate to UPA (United Progressive Alliance) the markets began the journey of Indian Capital Markets "Big-Bull Run" of [BSE (Bombay Stock Exchange) Indices] SENSEX from 6000 to 21000. The AUM (Asset Under Management) of most Indian Mutual Funds reached its record high as the investor frenzy was at its peak. Almost everyone on Dalal Street forgot about the Risk – Return relationship and were in a delusion that markets would keep going up. In fact almost every mutual fund gave returns of 20% plus and NFO (New Fund Offer) was the flavor of the year. It all came down crashing in 2008 Januray post a IPO of a Power Company and sub-prime crisis the markets came down tumbling from 21000 to 14000. This is when wisdom prevailed and Indian Investors started their quests of learning about Alpha, Beta, Standard Deviation, R Squared, Sharpe Ratio, Treynor Ratio and Jensen's Alpha.

One way of analyzing performance of mutual fund is normally done on their past return. This is measured from its NAV (Net Asset Value) which is declared on the daily basis. We also have various quantitative techniques to measure performance of mutual fund using Treynor Ratio; Sharpe Ratio; R Square etc. A risk averse Indian investor will prefer the fund with low return low risk over the higher return with high risk. Thus we look for funds which give higher return with lower risk. Both these ratios i.e. Treynor as well as Sharpe ratio are assumed to be good if they are higher. A mutual fund will always help diversify unsystematic risk by means of diversification. However it cannot protect investor against systematic risk (Bharadwaj, 2012).

Literature review

Treynor Jack L (1965) recognised that the major problem in evaluating the performance of portfolio managers was in measuring the risk of portfolios. He emphasized that if the market is in equilibrium, the ratio of excess mean return to the assets beta will be the same for all assets and will equal the excess mean rate of return on the market portfolio. In such conditions all well diversified portfolios will move with market and portfolio yields high return when market provides high returns vice-versa.

Sharpe William F (1966) aimed at explaining the Portfolio selection, pricing of capital assets under conditions of risk, general behaviour of stock market prices and its impact on mutual fund performance. The model proposed to evaluate the performance of mutual funds was to determine the Reward (Excess Return than the risk-free) for a unit of risk. His research clearly exhibits that the relationship predicted by the theory of capital asset prices is clearly present and the funds have larger aggregate return attached to larger variability than those with smaller average return.

Treynor, Mazuy (1966) examined the claims made by the fund managers that they can anticipate major stock market movements. They devised a statistical test of mutual funds historical success in anticipating major turns in the stock market. They argued that the only way in which fund managers can translate ability to outguess the market into benefit to the investor is by varying the fund volatility systematically in such a manner that the resulting characteristic line is concave upwards. The study suggests that an investor in mutual funds is completely dependent on fluctuations in the general market and the improvement in the rate of return can only be due to the fund managers ability to identify the under priced securities, companies and industries rather than to any ability to outguess the turns in the level of the market as a whole.

Jensen M.C (1968) constructed a measure of absolute performance on a risk adjusted basis and evolved a definite

standard against which the performance of various funds could be measured. This standard provides a basis to measure the portfolio manager"s predictive ability, i.e. his ability to earn higher returns through prediction of security prices given the risk profile of the portfolio. The study led to the conclusion that mutual funds on average were not able to predict security prices well enough to outperform the market. Not even an individual fund was able to do significantly better than that expected from a mere random chance.

James Christopher, Karceski Jason (2006) examined the performance of retail mutual funds to mutual funds that cater to institutional investors and by examining cross sectional differences in the performance of institutional funds. They found evidence that the institutional investors do not run after returns as the retail investors and there is no relationship between fund inflows and past performance in the institutional segment of the market.

Lin Mei Chen (2006) examined three types of Taiwanese mutual funds over various investment horizons. The explanatory variables included in the regression were NAV, Current Yield, Turnover rate, Expenses ratio and Load charges. There is no statistically reliable relation between the performance with Current yield, turnover ratio and load charges. He concluded that aggressive funds appear to be more attractive for both short-term and long-term investments and performance of the fund was negatively correlated with expenses ratio and positively correlated with NAV.

Karoui Aymen, Meier Iwan (2009) had studied the performance and portfolio characteristics of 828 newly launched US equity mutual funds over the period of 1991 to 2005. They found that portfolios of new funds are typically less diversified in terms of number of stocks and industry concentration and are invested in smaller and less liquid stocks. They suggest that new funds perhaps earn high excess return in the beginning on account of current market conditions. They also provide empirical evidence for short-term persistence among top performing fund starts, however, a substantial fraction of funds drop from the top to bottom decide over two subsequent periods

Jeyachitra A, Selvam M and Gayathri J (2010) attempted to analyze the portfolio performance of Nifty stocks. The study found that there was a high positive correlation between portfolio returns and risk. It also revealed that the portfolio unsystematic risk declined due to diversification. The study was useful to understand the impact of systematic and unsystematic risk through portfolio construction.

Research methodology

We have collected data for top twelve Indian Mutual Funds by Asset Under Management. The mutual funds selected are HDFC Top 200 Fund, Franklin India Bluechip Fund, ICICI Prudential Focused Bluechip Equity Fund, DSPBR Top 100 Equity Fund, Birla Sun Life Equity Fund, DSPBR Top 100 Equity Fund, UTI Mastershare Fund, Reliance Equity Opportunity Fund, SBI Magnum Equity, Reliance Top 200 Fund, SBI Bluechip Fund, ICICI Prudential Top 200 Fund, Principal Large Cap Fund. We have collected NAV (Net Asset Value) of these mutual funds for last 5 years for the period of 2007 to 2013 from secondary sources like Association of Mutual Funds of India (AMFI). This data was collected in an excel sheet and then, based on this data we have calculated Alpha, Beta, Standard Deviation, R Squared, Sharpe Ratio, Treynor Ratio and Jensen's Alpha for each of the fund. This data is analyzed and compared amongst these twelve fund and inferences are drawn. The results were validated from secondary sources like valueresearchonline by individually selecting each mutual fund and then comparing our result with their result. This was a voluntary excercise purely done to ensure all inference drawn have minimum scope of error at least on data. However, these results would differ if we take daily NAV, monthly NAV or quarterly NAV for calculation.

Data collection and analysis

Table 1: Risk Analysis: HDFC Top 200 Fund	
Alpha	1.98
Beta	0.98
Standard Deviation	19.5
R-Squared	0.94
Sharpe	0.15
Treynor	2.7551
Jensen's Alpha	6.2574
Source: Author	

This Fund has an alpha value of 1.98 and beta of 0.98. Its benchmark index is Nifty. Thus the Fund was expected to return 0.98 times the Nifty returns in an up market but it has outperformed by nearly 2%. Standard Deviation is 19.5 and with Beta very close to 1, this is a highly volatile fund. With an R-Squared Value of 0.94 (94) indicates that the fund's performance pattern is quite in line with the index. The Sharpe Ratio is 0.15.This ratio is very low, thus the risk taken to generate the returns is very high. Treynor Ratio is 2.7551.Thus the fund has earned 2.7551% more than the risk free return. Jensen's alpha is 6.2574 which is a positive value. Thus, the fund is earning more than the expected returns.

Table 2: Risk Analysis: Franklin India Bluechip Fund	
Alpha	2.34
Beta	0.81
Standard Deviation	16.3
R-Squared	0.97
Sharpe	0.19
Treynor	2.2963
Jensen's Alpha	4.8003
Source: Author	

This Fund has an alpha value of 2.34 and beta of 0.81. Its benchmark index is Nifty. Thus the Fund was expected to return 0.81 times the Nifty returns in an up market but it has outperformed by 2.34%. Standard Deviation is 16.03 and with Beta at 0.81, this is not a very volatile fund. With an R-Squared Value of 0.97 (97) indicates that the fund's performance pattern is quite in line with the index. The Sharpe Ratio is 0.19. This ratio is very low, thus the risk taken to generate the returns is very high. Treynor Ratio is 2.2963. Thus the fund has earned 2.2963% more than the risk free return. Jensen's alpha is 4.8003 which is

Table 3: Risk Analysis: ICICI Prudential Focused Bluechip Equity Fund	
Alpha	4.75
Beta	0.87
Standard Deviation	17.11
R-Squared	0.97
Sharpe	0.33
Treynor	-0.2414
Jensen's Alpha	2.9481
Source: Author	

a positive value. Thus, the fund is earning more than the expected returns.

The Fund (Table 3) has an alpha value of 4.75 and beta of 0.87. Its benchmark index is Nifty. Thus the Fund was expected to return 0.87 times the Nifty returns in an up market but it has outperformed by 4.75%. Standard Deviation is 17.11 and with Beta at 0.87, this is not a very volatile fund. With an R-Squared Value of 0.97 (97) indicates that the fund's performance pattern is quite in line with the index. The Sharpe Ratio is 0.33. This ratio is neither very high nor very low, thus the risk taken to generate the returns is appropriate. Treynor Ratio is -0.2414. Thus the fund has earned about 0.2% less than the risk free return. Jensen's alpha is 2.9481 which is a positive value. Thus, the fund is earning more than the expected returns.

Table 4: Risk Analysis: DSPBR Top 100 Equity Fund	
Alpha	0.92
Beta	0.86
Standard Deviation	17.18
R-Squared	0.94
Sharpe	0.1
Treynor	0.25581
Jensen's Alpha	3.3418
Source: Author	

This Fund has an alpha value of 0.92 and beta of 0.86. Its benchmark index is Nifty. Thus the Fund was expected to return 0.86 times the Nifty returns in an up market but it has outperformed by 0.92%. Standard Deviation is 17.18 and with Beta at 0.86, this is quite a volatile fund. With an R-Squared Value of 0.94 (94) indicates that the fund's performance pattern is quite in line with the index. The Sharpe Ratio is 0.1. This ratio is very low, thus the risk taken to generate the returns is very high. Treynor Ratio is 0.25581. Thus the fund has earned 0.25581% more than the risk free return. Jensen's alpha is 3.3418 which is a positive value. Thus, the fund is earning more than the expected returns.

Table 5: Risk Analysis: Birla Sun Life Equity Fund	
Alpha	-2.18
Beta	0.93
Standard Deviation	18.92
R-Squared	0.91
Sharpe	-0.07
Treynor	-3.7097
Jensen's Alpha	-0.074
Source: Author	

This Fund has an alpha value of -2.18 and beta of 0.93. Its benchmark index is Nifty. Thus the Fund was expected to return 0.93 times the Nifty returns in an up market but it has earned 2.18% less than the market. Standard Deviation is 18.92 and with Beta at 0.93, this is quite a volatile fund. With an R-Squared Value of 0.91 (91) indicates that the fund's performance pattern is quite in line with the index. The Sharpe Ratio is -0.07.This ratio is very low, thus the risk taken to generate the returns is very high. Thus, a risk free instrument would have performed better. Treynor Ratio is -3.7097. Thus the fund has earned 3.7097% less than the risk free return. Jensen's alpha is -0.074 which is a negative value. Thus, the fund is earning less than the expected returns.

The Fund (Table 6) has an alpha value of 0.52 and beta of 0.83. Its benchmark index is Nifty. Thus the Fund was

Table 6: Risk Analysis: UTI Mastershare Fund	
Alpha	0.52
Beta	0.83
Standard Deviation	16.32
R-Squared	0.97
Sharpe	0.08
Treynor	-1.3494
Jensen's Alpha	1.8929
Source: Author	

expected to return 0.83 times the Nifty returns in an up market but it has outperformed by 0.52%. Standard Deviation is 16.32 and with Beta at 0.83, this is not a volatile fund. With an R-Squared Value of 0.97 (97) indicates that the fund's performance pattern is quite in line with the index. The Sharpe Ratio is 0.08. This ratio is very low, thus the risk taken to generate the returns is very high. Treynor Ratio is -1.3494. Thus the fund has earned 1.3494% less than the risk free return. Jensen's alpha is 1.8929 which is a positive value. Thus, the fund is earning more than the expected returns.

Table 7: Risk Analysis: Reliance Equity Opportunity Fund	
Alpha	7.77
Beta	0.93
Standard Deviation	19.12
R-Squared	0.88
Sharpe	0.45
Treynor	6.72043
Jensen's Alpha	9.6259
Source: Author	

This Fund has an alpha value of 7.77 and beta of 0.93. Its benchmark index is Nifty. Thus the Fund was expected to return 0.93 times the Nifty returns in an up market but it has outperformed by 7.77%. Standard Deviation is 19.12 and with Beta at 0.93, this is a very volatile fund. With an R-Squared Value of 0.93 (93) indicates that the fund's performance pattern is quite in line with the index. The Sharpe Ratio is 0.45. This ratio is quite high, thus the risk taken to generate the returns is quite low. Treynor Ratio is 6.72043. Thus the fund has earned 6.72043% more than the risk free return. Jensen's alpha is 9.6259 which is a positive value. Thus, the fund is earning more than the expected returns.

Table 8: Risk Analysis: SBI Magnum Equity	
Alpha	2.34
Beta	0.83
Standard Deviation	16.58
R-Squared	0.95
Sharpe	0.19
Treynor	0.27711
Jensen's Alpha	3.2429
Source: Author	

This Fund has an alpha value of 2.34 and beta of 0.83. Its benchmark index is Nifty. Thus the Fund was expected to return 0.83 times the Nifty returns in an up market but it has outperformed by 2.34%. Standard Deviation is 16.58 and with Beta at 0.83, this is not a volatile fund. With an R-Squared Value of 0.95 (95) indicates that the fund's performance pattern is quite in line with the index. The Sharpe Ratio is 0.19. This ratio is quite low, thus the risk taken to generate the returns is quite high. Treynor Ratio is 0.27711. Thus the fund has earned 0.27711% more than the risk free return. Jensen's alpha is 3.2429 which is

a positive value. Thus, the fund is earning more than the expected returns.

Table 9: Risk Analysis: Reliance Top 200 Fund	
Alpha	2.38
Beta	0.98
Standard Deviation	19.37
R-Squared	0.95
Sharpe	0.17
Treynor	-1.3163
Jensen's Alpha	2.2674
Source: Author	

This Fund has an alpha value of 2.38 and beta of 0.98. Its benchmark index is Nifty. Thus the Fund was expected to return 0.98 times the Nifty returns in an up market but it has outperformed by 2.38%. Standard Deviation is 19.37 and with Beta at 0.98, this is a very volatile fund. With an R-Squared Value of 0.95 (95) indicates that the fund's performance pattern is quite in line with the index. The Sharpe Ratio is 0.17. This ratio is very low, thus the risk taken to generate the returns is very high. Treynor Ratio is -1.3163. Thus the fund has earned 1.3163% less than the risk free return. Jensen's alpha is 2.2674 which is a positive value. Thus, the fund is earning more than the expected returns.

Table 10: Risk Analysis: SBI Bluechip Fund	
Alpha	1.27
Beta	0.84
Standard Deviation	16.83
R-Squared	0.94
Sharpe	0.12
Treynor	-1.881
Jensen's Alpha	1.4692
Source: Author	

This Fund has an alpha value of 1.27 and beta of 0.84. Its benchmark index is Nifty. Thus the Fund was expected to return 0.84 times the Nifty returns in an up market but it has outperformed by 1.27%. Standard Deviation is 16.83 and with Beta at 0.84, this is not a volatile fund. With an R-Squared Value of 0.94 (94) indicates that the fund's performance pattern is quite in line with the index. The Sharpe Ratio is 0.12. This ratio is very low, thus the risk taken to generate the returns is very high. Treynor Ratio is -1.881. Thus the fund has earned 1.881% less than the risk free return. Jensen's alpha is 1.4692 which is a positive value. Thus, the fund is earning more than the expected returns.

Table 11: Risk Analysis: ICICI Prudential Top 200 Fund	
Alpha	0.96
Beta	1.03
Standard Deviation	20.28
R-Squared	0.97
Sharpe	0.1
Treynor	-2.0485
Jensen's Alpha	1.6289
Source: Author	

This Fund has an alpha value of 0.96 and beta of 1.03. Its benchmark index is Nifty. Thus the Fund was expected to return 1.03 times the Nifty returns in an up market but it has outperformed the market by 0.96%. Standard Deviation is 20.28 and with Beta at 1.03, this is a very volatile fund. With an R-Squared Value of 0.97 (97) indicates that the fund's performance pattern is quite in line with the index. The Sharpe Ratio is 0.1. This ratio is very low, thus the risk taken to generate the returns is very high. Treynor Ratio is -2.0485. Thus the fund has earned 2.0485% less than the risk free return. Jensen's alpha is 1.6289 which is a positive value. Thus, the fund is earning more than the expected returns.

Table 12: Risk Analysis: Principal Large Cap Fund	
Alpha	-0.03
Beta	0.87
Standard Deviation	17.3
R-Squared	0.95
Sharpe	0.05
Treynor	-0.0345
Jensen's Alpha	3.1281
Source: Author	

This Fund has an alpha value of -0.03 and beta of 0.87. Its benchmark index is Nifty. Thus the Fund was expected to return 0.87 times the Nifty returns in an up market but it has earned 0.03% less than the market. Standard Deviation is 17.3 and with Beta at 0.87, this is a quite volatile fund. With an R-Squared Value of 0.95 (95) indicates that the fund's performance pattern is quite in line with the index. The Sharpe Ratio is 0.05.This ratio is very low, thus the risk taken to generate the returns is very high. Treynor Ratio is -0.0345.Thus the fund has earned 0.0345% less than the risk free return. Jensen's alpha is 3.1281 which is a positive value. Thus, the fund is earning more than the expected returns.

Conclusion

The study reviews performance HDFC Top 200 Fund, Franklin India Bluechip Fund, ICICI Prudential Focused Bluechip Equity Fund, DSPBR Top 100 Equity Fund, Birla Sun Life Equity Fund, DSPBR Top 100 Equity Fund, UTI Mastershare Fund, Reliance Equity Opportunity Fund, SBI Magnum Equity, Reliance Top 200 Fund, SBI Bluechip Fund, ICICI Prudential Top 200 Fund, Principal Large Cap Fund. The best fund, among these funds, to invest in is Reliance Equity Fund. This fund provides nearly double the returns as compared to the funds in its category. The fund returns are 14.19%, while its category returns are 7.16%. The Alpha value is also very high as compared to other funds. Even though its Standard Deviation is very high its high Sharpe Ratio justifies that the high returns are risk adjusted. It also states that the risk taken to generate such high returns is very low. Treynor Ratio is 6.72043. Thus the fund has earned 6.72043% more than the risk free return. Jensen's alpha is 9.6259 which is a positive value. This study is an academic research undertaken for validating performance evaluation models and does not in any way advocate or otherwise any fund or fund house.

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