

Performance Analysis of Selected Open-ended Equity Funds – An Empirical Study

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Abstract:

The article aims to analyze the performance of open-ended equity Mutual funds. It uses three parameters to analyse the performance viz., returns generated by the fund, the premium that is earned due to stock selection capabilities based on the fundamentals and the market timing ability of the fund manager to capture the higher returns periods. The study uses 4 measures to carry the analysis viz., Annualized returns, Jensen Alpha, Treynor & Mazuy (T-M) Model and Henricksson & Merton (H-M) Model. The study considers a period of 6 years (2013-2018) and includes 21 open-ended equity mutual funds across all sizes. It is observed that only 1/3 of the funds exhibit stock selection capabilities and none of the funds display market timing abilities during the study period. This is attributed to the structure of mutual funds that is highly regulated by SEBI, the need to disclose fund objective, investment strategy & portfolio mix and lack of encouragement to take up risky decisions like timing the market. It is seen that fund managers do not expend high effort on stock selection but attempt to track the market gaining average returns.

Key Words: *Annualized returns, Jensen Alpha, Market Beta, Market Timing, Stock selection, CAPM, Capital Protection*

Introduction:

Mutual funds offer different types of funds to its investors. These funds include debt funds, money market funds, equity funds, balanced funds, sector specific funds, and index funds. These funds have characteristics like load, no load, open ended, close ended, active and passive funds. Among all these funds equity funds are vastly preferred by investors as they generate maximum returns but also have high risk associated. Majority of the open ended equity funds are actively traded and are considered as active funds. In contrast, index funds are treated as passive funds. Earlier research paid much attention in understanding and analyzing the performance of these funds. An extensive research has been done in the areas of mutual fund performance, appropriate benchmarks, effect of expenditure on fund

performance, optimal portfolio size, style of investment and management structure. This article aims to study the premium generated due to stock selection and market timing abilities.

Scope of Research:

Investors prefer mutual funds in expectation that mutual fund managers time the market and enhance their wealth. As per this expectation, they are willing to pay high fee (Maximum of 7%) towards expenses. Mutual funds charge approximately 2.50% of the daily average of net assets towards expenses. This includes investment management & advisory fee, custodial fee, marketing and selling expenses, audit fee, communication fee, and other expenses. In addition, mutual funds impose 1% load on exit. In all, the difference between redemption price and sale price will be up to 7% of net assets. Furthermore, active mutual funds are prone to pay higher charges towards brokerage, transaction costs and turnover tax. These three costs directly affect the Net Asset Value (NAV) of the scheme. In this context it is worth to study the performance of actively managed mutual funds and also to evaluate the market timing abilities of the fund managers. There is a need to understand the relationship between fund managers ability and fund performance. This current study intends to fill this gap by performing an empirical assessment of select Indian mutual funds.

Literature Review

During last decade, Indian mutual fund industry has grown phenomenally. With more than 40 mutual fund trusts in operation and around 27.28 lakh crores of assets under management (AUM) mutual funds have become the preferred investment option for small investors. This growth can be attributed to many advantages that mutual funds offer to their investors such as mobilize money in small amounts from large number of investors and in turn invest those funds in diversified asset groups and employment of professional managers to manage these funds for which a fee is charged. Mutual fund managers very closely monitor the markets and make decisions that increase investor wealth. Market timing is the ability to forecast future market conditions which may be based on rigorous fundamental and technical analysis. Market timing theory contradicts Efficient Market Hypotheses (EMH). So, here is the literature review on performance of mutual funds.

1. Friend and Vickers (1965) evaluated performance of mutual funds against randomly constructed portfolios & concluded that mutual funds on the whole have not shown superior performance.
2. Jack Treynor (1965) developed a methodology for performance evaluation of a mutual, reward to volatility measure, which is defined as average excess return on the portfolio.

3. Treynor & Mazuy (1966) developed a methodology for testing mutual funds' historical success in anticipating major turns in the stock market and found no evidence that the funds had successfully outguessed the market.
4. Jensen's (1968) classic study developed an absolute measure of performance based upon the Capital Asset Pricing Model and reported that mutual funds did not appear to achieve abnormal performance when transaction costs were taken into account.
5. Fama (1972) developed a methodology for evaluating investment performance of managed portfolios and suggested that overall performance could be broken down into several components such as market returns, company market cap and its book value.
6. Henriksson & Merton (1981) reported that mutual fund managers were not able to follow an investment strategy that successfully times the return on the market portfolio.
7. Henriksson (1984) concludes there is strong evidence that funds' market risk exposures change in response to the market movements, but fund managers were not successful in market timing.
8. Ajay Shah and Susan Thomas (1994) studied the performance evaluation of 11 mutual fund schemes and conclude that except one scheme all others earned inferior returns than the market.
9. Kaura and Jayadev (1995) evaluated the performance of growth-oriented schemes by using Jensen, Treynor and Sharp measures and found that the schemes have not performed well.
10. Gupta (2000) has examined the market timing abilities of India fund managers using weekly NAV data for 73 mutual fund schemes from 1994 to 1999. He found that the results do not support the hypothesis that managers of closed ended schemes can time the market easily.
11. Baks, Metrick, and Wachter (2001) used a novel approach to study the ability of the fund manager i.e. Bayesian analysis of the beliefs and returns and concluded that the impact of the managerial skill on the returns is skeptical and cannot be positively confirmed.
12. Kundu (2009) studied the mutual funds in the recent bull growth and observed that there was no evidence of superior stock selection ability by the managers. This questioned the structure of the funds and its' impact on the returns.

13. Selvam et.al (2011) analysed 35 mutual fund schemes for their performance and the risk return ratio. It was observed that based on the t values checked for the level of significance, 24 schemes showed insignificant t values i.e. they are no better than the market returns that is., they are in line with the market returns and the rest were slightly different from the market index.

Objectives of the study

The objectives of the research would yield a comprehensive analysis of the performance of the mutual funds. The measures will identify the risk-adjusted returns and compare the same to the benchmark funds to identify if the funds will outperform the market i.e. if there are more than the market returns. Also with the market timing models, the study would analyse if the movement of returns is in line with that of the markets, that would say that if the manger has timed the market. In addition, we would be able to infer if the schemes have stock selectivity to gain better returns.

1. Analyze the performance of select mutual funds using risk adjusted performance measure & compare them with benchmark funds
2. Investigate the stock selectivity and market timing ability of the fund managers against the benchmark index

Research Methodology

- Data Source & Collection: Daily Net Asset Values data is collected from Association of Mutual Funds of India (AMFI) website.
- Period of Study: Monthly NAV of 21 schemes for a period of six year beginning from 01-01-2013 to 31-12-2018 is collected for the purpose of analyses.
- Variables: Benchmark Index: NIFTY 50, Risk Free rate : 10 Year Govt. Bond rate
- Data Analysis: Data will be analyzed using MS-Excel and SPSS software packages to implement the regression models and various measures. The following models are used for the analysis.
 1. Jensen's Model (Expected Return)
 2. Treynor and Mazuy (T-M) (Market timing ability measure & Stock selectivity)
 3. Henriksson and Merton (H-M) Market timing ability measure & Stock selectivity)

Jensen Measure: It is the excess return calculated after deducting the risk free return and also deducting the certain return that will be gained due to the beta of the firm. This is as per the Capital Asset Pricing model that explains the additional return to be again that is purely due to the skill of the fund manager. It is the true additional premium gained by the fund manager by the excellent research and use of stock selection capabilities. This is the portfolio premium that a manger generates over the market and is independent of the market returns.

Alpha = $R(i) - (R(f) + B x (R(m) - R(f)))$, where

R(i) = the realized return of the portfolio or investment

R(m) = the realized return of the appropriate market index

R(f) = the risk-free rate of return for the time period

B = the beta of the portfolio of investment with respect to the chosen market index

Treynor – Mazuy Model : It is an absolute measure of performance. It is given by the annualized return of the fund, deducted the yield of an investment without risk, minus the sum of returns multiplied by the estimated fund's sensitivities to risk factors during the same period. The Treynor-Mazuy Measure gives the excess return obtained by the manager which is not explained by his/her current risk positions. The magnitude of the Treynor-Mazuy Measure depends on two variables: the return of the fund and risk sensitivities variability. The Treynor-Mazuy model is essentially a quadratic extension of the basic CAPM. It is estimated using a multiple regression. The second term in the regression is the value of excess return squared.

$$(R_p - R_f) = \alpha + \beta (R_m - R_f) + \gamma (R_m - R_f)^2 + \epsilon$$

R_p = Portfolio Return, R_f = Risk Free rate, R_m = Market Return/ Benchmark return

α = Stock Selection Ability, β = Beta, γ = Market Timing Ability, ε = Error term

Henriksson-Merton Model: It is given by the annualized return of the fund, deducted the yield of an investment without risk, minus the sum of returns on the market portfolio and on a portfolio containing index derivatives. It is the excess return obtained by the manager that cannot be replicated by a mix of options and market portfolio. It is the excess return that has been economized by the manager because of market timing ability. Accuracy & reliability of the measure is based on quality of market proxy.

$$(R_p - R_f) = \alpha + \beta (R_m - R_f) + \gamma Z_m + \text{error}$$

R_p = Portfolio Return, R_f = Risk Free rate, R_m = Market Return/ Benchmark return

$Z_m = \text{Max}(0, R_m - R_f)$, α = stock selection ability, β = market return, γ = market timing ability

Hypothesis: The study states the following null hypothesis (i.e. H01 and H02) and corresponding alternative hypothesis (i.e.H1and H2) for assessing the stock selectivity and market timing abilities of the mutual fund managers in India:

H01: Mutual Fund managers of the selected schemes in India lack stock selection abilities.

H1: Mutual Fund managers of the selected schemes in India have superior stock selection abilities.

H02: Mutual Fund managers of the selected schemes in India lack market timing abilities.

H2: Mutual Fund managers of the selected schemes in India display distant market timing abilities.

Results & Interpretation:

Jensen Alpha: The positive return gained is the additional premium generated by the manager. Axis bank has managed to create the highest Jensen Alpha at 0.396% followed by Edelweiss at 0.29%. Only 7/21 mutual funds have managed to generate a positive alpha, that is their skills are good enough to get that premium. This implies 2/3 of the mutual fund managers have not applied the skill to capture premium but in return have managed to lose returns worse than the market average by their portfolio management or that the mangers have not taken any action required for countering the fall. This does not reflect well on the stock selection capabilities of the managers. 14 funds (2/3) have managed to gain more than 100% in the 6 Year research period showing that the funds have doubled. On average all the funds have shown annualized returns of 13% with highest being Axis Bank with 20% returns and the lowest being TATA with 6% annualized return that is lower than the risk free rate.

Fund	Jensen Alpha	Average Monthly Return	6 Year Total Return	Annualized Return
ADITYA BIRLA	0.119%	1.039%	154%	17%
AXIS BANK	0.396%	1.279%	192%	20%
BARODA	-0.255%	0.590%	76%	10%
BNP PARIBAS	-0.013%	0.878%	110%	13%
BOI	-0.359%	0.550%	80%	10%
CANARA	-0.064%	0.790%	110%	13%
DSP	-0.214%	0.410%	107%	13%
EDELWEISS	0.295%	1.170%	108%	13%
FRANKLIN TEMPLETON	0.041%	0.935%	124%	14%
HDFC	-0.082%	0.889%	110%	13%
HSBC	-0.118%	0.810%	117%	14%
IDBI	-0.355%	0.628%	124%	14%
IDFC	-0.192%	0.704%	76%	10%
INVESCO	0.030%	0.801%	97%	12%
JM FINANCIAL	-0.190%	0.160%	86%	11%
KOTAK MAHINDRA	-0.065%	0.836%	120%	14%
L&T	-0.110%	0.796%	110%	13%
SUNDARAM	-0.197%	0.622%	73%	10%
TATA	0.044%	0.882%	46%	6%
TAURUS	-0.355%	0.628%	124%	14%
UTI	0.033%	0.851%	113%	13%

T-M Model: Based on the analysis, we see that Edelweiss (95% confidence level) has the impact of market timing to be negative despite being significant which implies that even though they have timed the market they haven't been able to reduce their losses. 19/21 funds have negative Gamma i.e. their market timing has not helped in reducing the losses. The Beta explains the impact of the market returns on the fund portfolio and we can see that for 9/21 funds, Beta is greater than 0.9 which states that these funds are mainly driven by the moments in the benchmark index NIFTY 50. In case of Alpha, 11 funds have Alpha to be zero, i.e. no stock selection displayed, out of which 4 funds have negative alpha i.e. they have chosen stocks that resulted in negative returns. The top two funds are Edelweiss and Axis Bank that show significant and high values of Alpha displaying their stock selection capabilities.

TM Model Results	Alpha	Beta	Gamma
ADITYA BIRLA	0.001 [0.71]	0.974[0.00**]	0.000[1.00]
AXIS BANK	0.007 [0.02**]	0.859[0.00**]	-1.638[0.14]
BARODA	-0.002 [0.40]	0.733[0.00**]	-0.534[0.51]

BNP PARIBAS	-0.001 [0.80]	0.956[0.00**]	-1.810[0.12]
BOI	0.001 [0.62]	0.885[0.00**]	-1.022[0.38]
CANARA	0.000 [0.85]	0.767[0.00**]	-0.677[0.44]
DSP	0.000 [0.96]	1.082[0.00**]	-1.259[0.35]
EDELWEISS	0.008 [0.00**]	0.858[0.00**]	-3.043[0.00**]
FRANKLIN TEMPLETON	0.002 [0.40]	0.892[0.00**]	-0.804[0.30]
HDFC	-0.002 [0.57]	1.138[0.00**]	0.607[0.62]
HSBC	0.000 [0.90]	1.029[0.00**]	-0.537[0.61]
IDBI	0.000 [0.96]	1.197[0.00**]	-2.547[0.45]
IDFC	0.000 [0.88]	0.901[0.00**]	-1.075[0.08*]
INVESCO	0.001 [0.69]	0.687[0.00**]	-0.815[0.39]
JM FINANCIAL	-0.002 [0.45]	0.730[0.00**]	-0.019[0.99]
KOTAK MAHINDRA	0.001 [0.65]	0.917[0.00**]	-1.068[0.24]
L&T	0.000 [0.90]	0.933[0.00**]	-0.531[0.53]
SUNDARAM	0.000 [0.95]	0.649[0.00**]	-1.185[0.10*]
TATA	0.002 [0.38]	0.708[0.00**]	-0.903[0.28]
TAURUS	0.002 [0.40]	0.892[0.00**]	-0.804[0.30]
UTI	0.002 [0.32]	0.645[0.00**]	-1.033[0.19]

*- Significant with 90% confidence, ** - Significant with 95% confidence

H-M Model Results: Similar to T-M Model Edelweiss and Axis Bank are the only mutual funds that have exhibited significant stock selection capabilities. 8/21 have zero alpha and out of them 3 funds have negative alpha i.e. stocks selection resulted in lower returns. Beta is significant for all funds as expected as Market returns is the primary driver. 18/21 funds show negative market timing abilities that is they have not been able to overcome their losses by churning their portfolio. Only 3 funds show positive Gamma but they are not significant. Edelweiss is significant but has negative Gamma, showing its inability to gain returns using market timing. T-M Model and H-M model give out the same results even though they study different measures. H-M Model looks at the return generated when the market is in the upswing only. Even then we see that managers have not been able to capture the premium by selecting the stock that drives the upswing. This shows that the managers only look to keep away from falling stocks as opposed to aggressive maximization of the returns.

HM Model Results	Alpha	Beta	Gamma
ADITYA BIRLA	0.000 [0.92]	0.95 [0.00**]	0.046 [0.83]
AXIS BANK	0.007 [0.07*]	0.956 [0.00**]	-0.204 [0.30]
BARODA	-0.001 [0.74]	0.782 [0.00**]	-0.101 [0.47]
BNP PARIBAS	0.000 [0.90]	1.077 [0.00**]	-0.252 [0.21]
BOI	0.002 [0.55]	0.960 [0.00**]	-0.156 [0.45]

CANARA	0.001 [0.63]	0.831 [0.00**]	-0.130 [0.40]
DSP	0.001 [0.82]	1.177 [0.00**]	-0.196 [0.40]
EDELWEISS	0.011 [0.00**]	1.087 [0.00**]	-0.473 [0.01**]
FRANKLIN TEMPLETON	0.002 [0.37]	0.951 [0.00**]	-0.122 [0.37]
HDFC	-0.003 [0.53]	1.083 [0.00**]	0.113 [0.60]
HSBC	0.000 [0.92]	1.053 [0.00**]	-0.050 [0.79]
IDBI	0.004 [0.73]	1.427 [0.00**]	-0.469 [0.42]
IDFC	0.001 [0.71]	0.982 [0.00**]	-0.167 [0.12]
INVESCO	0.001 [0.76]	0.724 [0.00**]	-0.081 [0.63]
JM FINANCIAL	-0.003 [0.42]	0.701 [0.00**]	0.054 [0.76]
KOTAK MAHINDRA	0.002 [0.53]	0.995 [0.00**]	-0.162 [0.31]
L&T	0.000 [0.95]	0.958 [0.00**]	-0.056 [0.70]
SUNDARAM	0.000 [0.91]	0.714 [0.00**]	-0.138 [0.27]
TATA	0.003 [0.38]	0.770 [0.00**]	-0.129 [0.38]
TAURUS	0.002 [0.37]	0.951 [0.00**]	-0.122 [0.37]
UTI	0.004 [0.18]	0.746 [0.00**]	-0.205 [0.13]

*- Significant with 90% confidence, ** - Significant with 95% confidence

Findings:

Mutual funds are usually invested for the long run, as a result it is difficult to change the stock portfolio at a small time interval. As a result, when the market falls, they are unable to change the ownership in firms as swiftly. Hence, in times when the market falls we see that the firms lose more as well as gain more as they are not burdened by the firms which provide average returns. Managers look to trail market returns than risk taking a contrarian view. So, mutual funds work towards gaining a reasonable market average returns rather than aim to get high returns. Let's look at the snapshot of the results.

	Jensen Alpha	T-M Alpha	H-M Alpha	T-M Gamma	H-M Gamma
Positive	7	17	18	2	3
Negative	14	4	3	19	18
Significant	NA	2 (both +ve)	2 (both +ve)	1 (-ve)	1 (-ve)

We observe that out of 21 funds Axis Bank, Edelweiss, Aditya Birla and UTI have consistently performed well with high Jensen Alpha, have doubled their investments in 6 years with Axis almost tripling its investment (192% absolute growth) and has significant stock selection capabilities as per the T-M & H-M models. One interesting fund is TATA, that has shown lower returns but high alpha showing that it is focusing on fundamentals but has chosen few good stocks overall. The result of negative market timing ability is expected as managers churn their portfolio in times of losses and they

have not been able to cover their losses by just stock movement as overall market has negative returns. The models show low significant variables apart from Beta and this shows that overall mutual fund managers do not exhibit stock selection and marketing abilities on a monthly basis. This is in line with the literature review and due to the fundamental structure of mutual funds.

Conclusion:

The mutual fund industry is highly regulated and fund managers are liable for capital losses. The asset management houses do not encourage risky investment decisions. The results do not in any sense imply that the managers are incapable or do not have the technical competence. The results have to be interpreted that the fund manager has chosen not to time the market or that the manager was not in a position to utilize the opportunity due to external factors. Mutual fund market in India is highly regulated by Securities & Exchange Board of India, as this market provided basic capital protection to the investors. In contrast to hedge fund managers & private wealth management teams, Mutual fund managers are not offered incentives for higher returns. As a result, mutual fund managers only aim to maintain a low expense ratio with a large fund size and ensure average market returns without risky individual decisions. Mutual funds are measured on peer performance, which means everyone would ideally gain returns on the same benchmark index. Since the benchmark returns have to be gained by the fund managers, they usually index their portfolio to the benchmark market index (Nifty 50 or Sensex) with the preferred Beta based on the investors risk profile. Managers have to disclose the investment objective, composition of the fund and risk profile of scheme beforehand which needs to be held constant. Hence, the mutual fund structure explains the result of lack of market timing abilities.

Further Scope of the Research

The research can be extended to study the impact of several other variables on market return in addition to the market timing skills. Yearly returns could be considered to get a more macro picture. This would ensure that sudden marker falls do not mislead the results. In addition, different benchmark can also be utilized. Here in this research we have utilized Nifty 50 but Sensex or may be sector benchmark indexes could also be used to study each sector based mutual funds. Use of factor models would further enhance the depth of the study. The report has resulted in several in several funds not resulting in significant results. This could possibly differ if the market index used would be changed. So, another extension of the research could be use of Sensex as the benchmark index as opposed to the Nifty used in this report. Another change that could be implemented is the use of annual returns or the annualized monthly returns to run the same analysis using the T-M & H-M models. I predict that the results would not significantly vary, but it is a hygiene exercise that can be carried out.

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