Market Timing Strategies and Mutual Fund Performance

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Abstract

The purpose of this study is to analyse the stock selection and the market timing ability of mutual funds managers. The data consisted of 25 mutual funds which were studied for a period of 15 years i.e. from Dec 2002 to Nov 2017. These 25 funds were selected from 17 AMCs. The study revealed that all the funds performed better than the market even with systematic risk being less than unity. Also 10 funds had risk lower than that of the market. This indicated that the returns generated could be due to the abilities of the fund manager either through stock selection or through market timing or through both. The analysis showed that all the fund managers of this 25 funds showcased stock selection ability while preparing their portfolio but had weaker market timing ability.

Introduction

Performance evaluation of mutual funds has been always a challenging task for Investors and more so for the retail investors. With the benefits of mutual funds being now visible considering the availability of 20 plus year track record and rigorous marketing of mutual funds to the investors by the fund houses, "Mutual fund sahi hai" campaign by AMFI and other initiatives, the mutual fund industry has been seeing huge inflows. Mutual funds are generally treated as a safer and easier way of investing in equities as compared to direct equity investing for the naïve investors. The industry asset under management (AUM) in equity mutual funds has grown from Rs 5.43 trillion in March 2017 to 7.5 trillion as on March 2018, a growth of 38 per cent[1].

Mutual fund is a trust that collects money from a large number of investors who share a common objective, the fund here so formed is managed by a professional fund manager. The money collected in the fund is then invested across stocks, bonds, money market instruments and other securities based on the objective of the fund. Based on the asset class it invests and the portfolio held the fund categories are defined for ex equity mutual fund, hybrid mutual fund, debt mutual fund, liquid mutual fund etc. For our study we will restrict ourselves with understanding of equity mutual funds. The main reason to analyse equity mutual funds is due to the fact that equity as an asset class has generated high returns of 16.36 per cent and 13.75 per cent in last 15.5 years and 27.5 years respectively. A

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study conducted by Morgan Stanley few years back also showed that equity as an asset class generated better returns than most other asset classes[2], for details refer Table 1.

Equity mutual fund is a mutual fund scheme that predominantly in Shares/Stocks of companies listed on the exchange. Equity mutual funds are then further classified based on the management style, based on market capitalization, based on investment objective, based on maturity. Investing in equity mutual fund is considered a better option as compared to direct equity for a first-time investor investing into equity as an asset class due to various benefits it brings along with it like diversification, professional management, flexibility of investing small sum, tax saving schemes on offer, better taxation than debt investment and many more. One of the main UVP which is bringing many investors into the mutual fund market is the management of the fund by highly qualified professional fund managers and the research teams that are associated with them. As most of the individuals/ investors don't have the time to analyse the stocks and buy themselves, they invest in Mutual funds due to this proposition of the mutual funds in addition to other benefits It is perceived that the fund managers have the requisite skills and knowledge to buy the right stocks through their stock selection skills and invest during the right market cycle through their market timing skills. In this study we try to analyse these attributes of the fund manager while managing the funds he/she is assigned to.

It will be unfair to say that we are the first to do such a study, there have been many studies in the past in these lines. Most of them that we have reviewed showcase poor market timing ability. We derived our basis for the study through the work of Rakesh Kumar (2012) which analyses 28 diversified equity funds for a period of approx. 4.5 years. In his study he found out that close to 58 per cent funds could beat the market through positive stock selection but not a single fund could depict any market timing ability. Another similar study was conducted by Parag Rijwani (2014), but this time the study analysed 185 equity diversified mutual funds for a period of close to 10 years (9 years 10 months). The study revealed that mutual fund schemes were not able to outperform the market through the fund managers stock selection skills, although during bull run many schemes delivered returns better than the market index. But as far as timing the market is concerned, the fund managers failed to beat the market. Our study also works towards analysing the performance of well diversified equity mutual funds with respect to the market timing abilities of their fund managers for a time period of 15 years. The outcome of this study will not only be useful to investors, but also will be important to mutual fund managers, mutual fund AMC's and academicians.

The remainder of the study is arranged in the following fashion. Section 2 discusses the literature review followed by section 3 which describes the methodology of the study which includes the details of the sample and the basis for its selection which is succeeded by the source of data for the analysis to be carried out. Section 4 outlines the details of the analysis along with the findings. The findings are summarized by Section 5 which is the conclusion.

Literature Review

Mutual fund managers ability to time the market and their ability to select the right stocks has been an area of research since long. Market timing involves positioning the portfolios based on the correct assessment of bull and bear phase of the market and stock selection involves micro forecasting,

this mainly involves forecasting the price movements of the respective stocks and identification if the stocks are overvalued or undervalued. The literatures studied for this study are classified based on overseas and Indian markets.

Studies on Overseas Market

Ferri (2014) talks about how difficult it is to time the market. It mentions that there are two types of market timing, first being Intentional which talks about use of technical and fundamental analysis in picking stocks whereas unintentional refers to selecting stocks based on behaviour, emotions and greed. Ferri (2014) further mentions that most of the portfolio managers use the intentional timing as they want to prove their smartness which will help them fill their pockets. These managers boast their timing skills when they hit the bulls eye but they fail to repeat the same. On the other hand unintentional investing by investors means investing on emotions, which can lead to serious problems. Being wrong means selling in bear market and staying away during the growth stage. A study conducted by Ferri (2014) to check the % of household assets in equities, the results show that the per cent drops post the bear market but it fails to pick up to the pre-bear market for generations. Ferri (2014) finally mentions that market timing is difficult and individual investors needs to be educated on the way of investing.

Shen (2003) talks about the market timing strategies using the E/P ratio of the S & P 500 and the interest rates. Most of the investors are made to understand that timing the market is very difficult owing to the market being efficient, but Shen (2003) puts across some simple market timing strategies that would have given good results using real-time data over the past 30 years. The strategies that are focussed here are related to the spreads between the E/P ratio of the S & P 500 index and the interest rates. Shen (2003) further mentions that when the spread is low the stock prices are very high to be supportedby their fundamentals, and instead of holding the stocks it is the time to exit the market. This study evaluates the profitability on trading on the spreads, a benchmark strategy of buy and hold that invests in the stock market at all times is compared to another strategy that invest in stock market most of the time where it switches to cash investments when the spreads are running at low levels. Shen (2003) works around understanding the signalling quality of the spreads, so when the spreads are below certain thresholds which is developed from historical data, they are interpreted as giving signals of market downturn in the immediate next month. Three portfolios are considered, the benchmark portfolio which follows the buy and hold strategy and the two alternate portfolios which switch the investments between the stock market index and cash using the signals from the spreads between E/P ratio and the short-term & long-term interest rates. The study shows that switching strategy outperforms the benchmark portfolio. The sample used in the study is from January 1962 to December 2000. The data from January 1962 to December 1969 is used to arrive at the initial value of the tenth percentile threshold at the beginning of 1970. Every month new observations are added, and the threshold is updated. Hence effectively data from January 1970 to December 2000 is used for the study. This 10th Percentile is used for determining the threshold for extremely low range and thus enabling the prediction of market downturn. The paper concludes by saying that all strategies suggest for investing in the stock market index unless some threshold is crossed. All strategies but one (based on short spreads) outperform the market index in terms of higher mean returns and lower variances.

Henriksson (1983) in this paper evaluates the market timing performance of 116 open ended mutual funds using parametric and non-parametric techniques suggested by Henriksson and Merton. As mentioned by Henriksson (1983), the parametric test requires the assumption of either the CAPM or a multifactor return structure, this test permits the identification of contribution made independently from market timing ability and micro-forecasting. The non-parametric tests do not warrant for any particular structure of returns, but require knowledge of the actual forecasts and a good substitute for them. Henriksson (1983) mentions that earning superior returns through superior forecasting ability will be a violation to the theory of efficient market hypothesis. Micro-forecasting focusses on individual securities seeking to determine whether the securities are overvalued or undervalued relative to other securities, whereas macro-forecasting attempts to determine when the stock market as a whole outperforms the riskless securities. Henriksson (1983) concludes by mentioning that the empirical model developed by Henriksson & Merton (1981) does not support the proposition that the mutual fund managers are able to follow an investment strategy that successfully times the return on market portfolio which is observed in both the parametric and non-parametric tests. Strong evidence of non-stationarity was found in the performance parameters of both parametric and non-parametric tests. Also, no evidence was found that the forecasters were more successful in timing the market with respect to anticipating large changes in the value of market portfolio relative to smaller changes. The absolute magnitude of the returns in the market portfolio did not seem to have an impact on the performance evaluation measures.

Butler et all (1995) determines that market timers who do not possess timing skills suffer with penalty in the form of high portfolio risk and lower expected returns relative to buy-and-hold investors. Butler et all (1995) works to determine the penalty for a market timer randomly switching funds between two or more risky assets. The high returns and the lower risk induces many individual investors and portfolio managers into deviating from passive international diversification and then actively shifting funds across assets in the foreign and domestic area Butler et all (1995) extends the work done by Sharpe (1975) and Grant (1977, 1978) which has identified the additional risk borne by market timers when randomly shifting between a risky and riskless asset. Butler et all (1995) derives the risk penalty faced by a market timer for randomly switching among an unreasonable number of risky (or riskless) assets. The study empirically estimates the market timer's penalty for random switches between (1) international stock index funds, and (2) national and international equity indices and U.S. Treasury bills. The data used for the study is from 1971 to 1993. Butler et all (1995) concludes that market timers from U.S who are randomly switching between U.S. and Japanese national stock funds can expect to face a 26.2 per cent higher risk (standard deviation) as compared to a buy-and-hold investor for the same level of expected return, hence the market timer's return/risk performance is 20.8 per cent lower than the buy-and-hold investor's return/risk performance according to Sharpe's performance index. Secondly, a market timer randomly switching between a globally diversified equity portfolio and U.S. T-bills faces a 50.3 per cent higher risk (standard deviation) than a comparable buy-and-hold investor, here the market timer's return/risk performance is 33.5 per cent lower as compared to a buy-and hold investor as per Sharpe's performance index.

Pfeifer (1985) in his paper covers both, first the best way to incorporate forecasts of future excess market returns into a market-timing strategy and what additional return can be expected as a result.

Market timing, adjusting the systematic risk level of a portfolio in anticipation of broad market price movements, is one strategy by which portfolio managers might attempt to obtain returns more than those expected of an unmanaged portfolio. There have been considerable evidence that the market timing is being practised by mutual fund managers but there is no conclusive evidence to prove that such timing have led to superior returns. Pfiefer (1985) uses constant absolute risk aversion utility model to evaluate the attractiveness of market timed portfolio. The value of an optimal market-timing strategy is expressed as a function of the mean and variance of excess market returns, the quality of the forecasts available, and the degree of investor risk aversion. The following assumptions are made while carrying out the study, (1) it assumes the investor has funds to invest in some combination of riskless cash equivalent and the market portfolio in the coming period, and can buy on margin and sell short. Thus, the percentage of funds invested in the market is unbounded. (2) The decision maker knows the parameters of the bivariate normal distribution of available forecasts and excess market returns. This means that the investor knows exactly how much risk is faced both with and without the forecast. Based on the assumptions made, Pfiefer (1985) concludes that the attractiveness of market timing depends on function of risk attitude and ability to forecast, but not of market conditions.

Grant (1978) in his paper explains the impact of market timing on the performance of the portfolio. Grant (1978) in his study employed general expressions for portfolios managed for market timing, the expected return and variance values . Grant (1978) analysed how timing the market affects the one-parameter performance measures developed by Sharpe, Treynor and Jensen. Sharpe in his research work has also provided a specific analysis of timing the market. Sharpe studyemploys the historical sequence of New York stock exchange market returns. The study simulated the results of a specific timing strategy. Grant (1978) in his study examines the ex-ante levels of performance and efficiency which can be achieved by employing various forms of the "bivariate normal market timing strategy." While theoretically it is possible, this strategy carries flaw when put to practice. Grant (1978) finally concludes that Monte Carlo simulation could be used to examine more complex expressions and the implications of the impractical aspects of the bivariate normal timing strategy.

Sharpe (1975) explores the potential gains from market timing and shows how they relate to the manager's capability to make correct predictions. The following three periods are considered for analysing the data i.e. 1929-1972, 1934-1972 & 1946-1972. Sharpe (1975) works towards comparing two strategies, first involves simply buying and holding the average; the second, buying at the low for a year, selling at the next annual high, buying at the next annual low, etc. The conclusion of the study was that any attempts made to time the market would not give an additional returns of greater than 4 per cent in the long run. The study finally concluded mentioning that the fund managers should avoid timing the market unless they can predict the market movements each year with min 70% accuracy.

Graham & Harvey (1994), analyse the market timing ability of the newsletters. They analyse the information contained in the newsletters with reference to the investment strategy adopted, and tests whether the investment recommendations add anything beyond the common expected returns. Graham & Harvey (1994) also brought about an analysis on the consistency, If the investment letter

of two consecutive years had generated positive abnormal performance, then the study showed that there was less than 50 per cent chance that the positive performance would persist for the next year. However, the same was not the case with poor performance. The study showed a formidable evidence of consistency in poor performance. If the investment letter produced negative abnormal performance for two consecutive years, there was a 70 per cent chance that the following year's performance will also be poor.

Lee and Rahman (1990) empirically examine market timing and selectivity performance of a sample of mutual funds. Lee and Rahman (1990) mention that the earlier investigations failed to separate the aggressiveness of a fund manager from the quality of the information he possesses. It is apparent that the fund managers give superior performance either due to their ability to time the market and/or their ability to select the right stocks based on their forecasting ability of individual assets. Lee and Rahman (1990) show a substantial improvement over previous attempts to evaluate fund managers.

Jenter (2005) through his study shows that top managers have an opposite view on firms value, fund managers' perceptions of fundamental value deviate systematically from market valuations, and the perception of mispricing by the fund managers seems to be an important factor used for decision making by fund. The trading patterns of insiders show that firms with low valuation are considered as undervalued by their own managers in comparison to firms with high valuation. Further evidence shows a link between managers' decisions in their private portfolio vis-a-vis changes in the capital structure of corporate, thus putting forth that managers try to actively time the market in both their private trades and in decisions at firm-level. Jenter (2005) explains that when stock prices are at high, mergers, seasoned equity issues, and initial public offerings tend to occur, while when the prices are low equity repurchases tend to occur. To test the hypothesis of managers perception of the stocks as mis-valued when making corporate decisions, the author uses managers own portfolio trades as a window to the belief. Trading in the personal port-folio is a strong and direct indicator of whether managers view their company stock as mispriced. Jenter (2005) then further examines whether managers' perceptions of mispricing are cross-sectionally correlated with the valuation ratios and with the determination of firm-wide corporate decisions. Jenter (2005) findings confirmed the view that, insider trading is supportive of the perceived mispricing and suggest that managers' views on valuations diverge in a systematic fashion from market valuations.

Umanaheswar Rao (2000) analyses the market timing and stock selection ability of mutual funds. The mutual fund companies boast about the three major benefits of investing in mutual funds, (1) Diversification through investments across various assets (2) Professional management where fund companies mention the expertise of their fund managers with respect to market timing and stock selection and (3) Liquidity. Umanaheswar Rao (2000) analyses the performance of 570 open ended mutual fund schemes between a period of 1987-1996. The data for the study has been obtained from Morning star mutual funds database. Umanaheswar Rao (2000) uses Henriksson and Merton (1981) model to check the market timing and stock selection ability of mutual funds. Findings reveal that positive market timing was shown by on 4 out of 570 mutual funds at 1 per cent level of significance and 37 mutual funds at 5 per cent level of significance. Whereas security selection was shown by on 4 out of 570 mutual funds at 1 per cent level of significance and 29 mutual funds at 5 per cent level of

significance. This signifies that managers of mutual funds did not possess market timing abilities during the 10year bull run. There is a negative correlation between the managers selection ability and market timing ability.

Studies on Indian Market

Deb et all (2007), works around investigating the use of market and stock selection ability by fund managers with respect to mutual funds. Deb et all (2007) uses two models, the traditional/unconditional model and the conditional model. The paper analysed a sample of 96 Indian mutual funds from January 2000 to June 2005 using the unconditional and the conditional approaches. Weekly and monthly data frequency were used to analyse the results and also check on the impact of the frequency on the results. The results show a poor market timing ability, but a presence of stock selection ability in both the conditional and unconditional approaches . The conclusion was more concrete in the unconditional approach then the conditional approach.

Debasish & Das (2008) have tried to analyse the use of spread between E/P ratio and the interest rate to forecast the movement of stock index. The study uses many statistical and econometric tools (viz., correlation analysis, regression analysis, Granger's causality test and measures of out-of-sample forecast performance) for assessing in detail the usability of spread in explaining stock market return in India. The database considered for the study includes weekly and monthly closing values of NSE Nifty index over the period of close to 11 years i.e. from January 5, 1997 to December 31, 2007. The two measures of interest rate which are considered in the study are bank rate and call money rate. Empirical results show that spread seems to have fairly a strong causal influence on return and the causal model helps achieving forecasts slightly better than the random walk model.

Kumar (2012) works on measuring the risk adjusted performance of mutual funds and checking whether there is any market timing and stock selection being done by the fund managers. The period of study considered was January 2007 to June 2011. The sample include 28 equity diversified mutual funds schemes. The study in the paper is devoted to measure the risk adjusted performance of the equity diversified scheme in India. Kumar (2012) found that 60 per cent identified schemes had better performance than market. Moreover, it was also found that better performing funds had high risk exposure, but on the other hand the study showed that less performing funds also had exposure to high risks. This results indicates that the lower performance of these funds were due to some other reasons and not as a result of risk. Better performing funds were less afflicted by market risks, and all the schemes under study were relatively exposed to less risk than the market, however with a high degree of volatility. The study also revealed that about 58 per cent fundswere able to beat the market through the fund managers stock selection skills. But as far as timing the market is concerned, the fund managers depicted poor market timing ability. Both the models used to analyse the market timing ability of the fund managers showed poor market timing ability.

Rijwani (2014) evaluates the market timing and stock selection ability of mutual fund managers. Rijwani (2014) analyses 185 equity diversified mutual funds for a ten-year period from September

2004 till June 2014. The Stock selection ability is measured by Fama's Selectivity measure and timing ability is measured by Treynor-Mazuy model (1966) and Henriksson-Merton model (1981). The empirical results reveal that mutual fund managers have not been able to demonstrate superior stock selection ability consistently over the ten years period. Examining market timing ability, results show that the fund managers have not been able to time the market to generate superior returns for their investors. This implied that there are other factors which influence fund performance.

We through our study wanted to build on the work carried out previously by various literatures. We restricted our study to the Indian market, various studies conducted above especially in India have restricted the period to 10 years. It has been seen that mutual funds generate higher returns for the investor when held for a long period of 15 to 20 year, considering this point of view our study considers a longer period of study which is 15 years.

Methodology

the present study aims to analyse the market timing and stock selection abilities of mutual fund managers. The methodology will be similar to the study presented by Rakesh Kumar (2012) on the market timing, selectivity and mutual Fund Performance. In this study we will be analysing the following

Market Timing

The superior performance of the mutual funds depends on the ability of the fund managers to select the right stocks for the portfolio and secondly to decide when to enter and exit the market through market timing. In this study we will be using the two models which will help us understand the market timing and stock selection ability of mutual fund managers to generate better returns than the benchmark portfolio.

Treynor and Mazuy Model

Treynor and Mazuy (1966) developed the following model to estimate the stock selection and market timing ability of mutual fund managers.

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

R_p – Return of Portfolio

R_f – Risk free return

R_m – Return of Market

α - Factor representing the stock selection ability

γ - Factor representing the market timing ability

β - Systematic Risk of the portfolio

A positive value of ã indicates market timing ability of the fund managers. If there is no market timing, then the value of ã will be no different than zero.

Henriksson and Merton

The second model that will be used in the study to analyse the stock selection and market timing abilities of Mutual Fund managers.

$$R_p - R_f = \alpha + \beta\,(R_m - R_f) + \gamma * D *(R_m - R_f) + \mathring{a}_p$$

R_p – Return of Portfolio

R_f – Risk free return

R_m – Return of Market

α - Factor representing the stock selection ability

γ - Factor representing the market timing ability

β - Systematic Risk of the portfolio

D- Dummy variable

This model again uses the regression analysis to identify the market timing abilities. This model includes a dummy variable D which moves between 0 and -1, when the market is in a bull phase i.e. $R_m > R_f$ then the value is 0 and -1 when $R_m < R_f$. Thus, when the market is in rising trend the portfolio beta is β and in down market condition the portfolio beta is $(\beta - \gamma)$. Both the values of beta are differentiated by the value of γ which when positive represents market timing ability of the mutual fund managers.

Risk Adjusted Performance

Sharpe Ratio

William Sharpe (1966) developed a ratio to measure the returns of the portfolio in excess of the risk-free rate per unit risk of the portfolio.

$$S_p = (R_p - R_f) / \sigma_p$$

R_p – Return of Portfolio

R_f – Risk free return

σ_p - Standard deviation of the portfolio

This measure is used widely by mutual funds to compare their performance.

Treynor Ratio

Treynor (1965) introduced a measure which showcases the portfolio returns above the risk-free rate per unit of systematic risk and is given by the following equation

$$T_p = (R_p - R_f)/ \beta_p$$

R_p – Return of Portfolio

R_f – Risk free return

β_p- Systematic risk of the portfolio

This measure helps to understand the portfolio returns of the funds per unit the volatility assigned to it. Checking the returns purely without considering the volatility can be deterrent, highly volatile schemes can outperform peers during market uptrend but can be disastrous during market downtrend.

Stock Selection

Jensen's Measure

Jensen (1968) developed a measure which helps in evaluation of the additional returns the portfolio has generated over and above the returns expected from it considering the level of volatility. The measure is given by the following equation

$$\alpha_P = R_p - [R_f + \beta_p (R_m - R_f)]$$

α_P – Jensen's Alpha

R_p – Return of Portfolio

R_f – Risk free return

R_m- Market Return

β_p- Systematic risk of the portfolio

Fama's Selectivity

Eugene Fama (1972) developed a measure which evaluates the stock selection ability of the fund managers. This model compares the fund portfolio with the basic return corresponding with the total risk linked with it. The difference among these two is used to understand the performance of the fund and is known as selectivity. The Net selectivity represents the extra returns the fund manager has generated for the risk the portfolio is exposed.

Net Selectivity = $(R_p - R_f) - \sigma_p / \sigma_m (R_m - R_f)$

R_p – Return of Portfolio

R_f – Risk free return

R_m - Market Return

σ_p - Standard deviation of the portfolio

σ_m - Standard deviation of the market

A positive net selectivity indicates that the fund manager has generated extra returns for the risk taken by him.

Sampling

For this study we decided to analyse equity mutual funds which are in existence for a period of 15 years and above. The period under study was from Dec 2002 till Nov 2017. The funds pertaining to 17 Mutual fund AMCs were considered for the study, names of which are mentioned below,

1) Reliance Mutual Fund
2) ICICI Prudential Mutual Fund
3) HDFC Mutual Fund
4) Sundaram Mutual
5) Franklin Templeton Investments
6) SBI Mutual Fund
7) UTI Mutual Fund
8) Aditya Birla Sun life Mutual Fund
9) Canara Robeco Mutual Fund
10) L & T Financial Services Mutual Fund
11) Kotak Mutual Fund
12) Axis Mutual Fund
13) Tata Mutual Fund
14) DSP Blackrock Mutual Fund
15) IDFC Mutual Fund
16) BNP Paribas Mutual Fund
17) IDBI Mutual

Each of the fund houses have a whopping list of funds under their kitty like market cap based, theme/ sector based, index based, hybrid, diversified equity etc. While selecting the mutual funds certain criterions were used which allowed us to narrow this list and filter a healthy number of mutual funds. The criterions used are mentioned below

1) Only equity mutual funds to be considered

2) Index funds to be excluded

3) Hybrid funds to be excluded

4) Sector based funds/theme-based funds to be excluded

Based on the above criteria a total of forty nine funds were shortlisted but considering the availability of data for all 15 years the number came down to thirty nine funds. In order to restrict our sample size of funds additional selection criteria were introduced.

a) Maximum 3 funds from an AMC

b) Wherever possible a tax saving scheme should be present

Considering these additional criteria, twenty five funds were shortlisted for the study which are mentioned in Table-2.

Source of Data

To analyse the stock selection ability and market timing data the following data is required.

Mutual fund Performance

The net asset value data were downloaded from Invest well online (https://www.investwellonline.com/ new-data.htm#iwd27).

Risk free Rate

10-year treasury bond yield will be used as risk free rate

Market Return

The benchmark considered for our study is Nifty 50, market return data for which will be sourced from NSE database.

Data Analysis & Findings

Fund performance

Analysis of the funds in Table-3 reveal that all the funds have outperformed the market. Out of the twenty five funds Sundaram select mid cap has generated the highest monthly returns of 2.53 per cent followed Reliance growth fund at 2.34 per cent and Franklin India prima fund at 2.25 per cent.

Risk Adjusted Performance

Risk adjusted performance is an important measure when considering the performance of mutual funds. Two measures are used to understand the risk adjusted performance of funds, the Sharpe ratio and Treynor ratio. Table-4 shows the results for both the measures.

There exists a healthy positive correlation of 0.5 between the returns of the portfolio and beta of the portfolio and a slightly lower correlation of 0.3 between the returns and the risk of the portfolio. We can see from the results that except for one fund, all the other funds have beta of less than 1. This is a clear indication that the incremental alpha generated by the funds is not due to the systematic risk but due to other factors. The only fund having beta slightly above 1 is Sundaram select mid cap, here we can see that risk of the fund is the highest at 8.09 per cent but there are funds like ABSL opportunities fund, SBI contra fund, SBI magnum tax gain fund, Sundaram diversified equity fund and Sundaram select focus fund which have generated lower returns for given risk and beta which has been depicted by their lower Sharpe Ratio and lower Treynor ratio respectively. This indicates that there are other reasons for this low performance.

Stock Selection

From the above analysis we have seen that the incremental alpha generated by the mutual funds is not due to systematic risk but due to other factors. Stock selection ability is one of the important factors which can result in higher returns. Stock selection ability of the fund managers is one of the important factor because of which most of the investors route their money to the equity markets through the mutual fund route and also one of the important UVP of the fund houses when they market the funds. In order to understand the stock selection ability of mutual fund managers, two measures namely Jensen's measure and Fama's selectivity are used. From the results in Table-5 we can see that all the funds have showcased that fund managers have stock selection ability while selecting their portfolio. This can be seen more prominently in Sundaram select midcap, Reliance growth fund and Franklin India prima fund which have high values of Jensen's measure and Fama's selectivity. The funds which have depicted weakest stock selection ability are ABSL opportunities fund, SBI contra fund, SBI magnum tax gain fund, Sundaram diversified equity fund and Sundaram select focus fund, these funds are the same ones which have generated lowest returns per unit systematic and unsystematic risk.

Market Timing

One more factor that plays a very important role while selection of mutual funds as a mode for channelling money in to the equity is due to the perceived market timing ability of the fund managers. This along with stock selection is marketed as one of the most important factor for bringing retail investors to invest into mutual funds. In this study we analyse all the twenty five mutual funds for market timing ability. For analysing the market timing ability two models have been used which are (1) Treynor and Mazuy and (2) Henriksson and Merton. The analysis reveals weak market timing ability of mutual funds. The analysis results can be viewed in the Tables 6 & 7.

From the analysis of Treynor and Mazuy model we find that twelve funds depict market timing ability in mutual funds. These funds are ABSL frontline equity fund, ABSL advantage fund, Franklin India prima plus fund, Franklin India tax shield, HDFC top 200, HDFC tax saver, Reliance vision fund, Reliance growth fund, Sundaram diversified equity, Sundaram select focus, Sundaram select midcap and Tata ethical fund of which only three funds Sundaram diversified equity, Sundaram select focus and Sundaram select midcap are significant.

From the analysis of Henriksson and Merton model we find that nine funds depict market timing ability in mutual funds. All these nine funds are also part of the twelve funds showcasing market timing ability in Treynor and Mazuy model. These funds are ABSL advantage fund, HDFC top 200, HDFC tax saver, Reliance vision fund, Reliance growth fund, Sundaram diversified equity, Sundaram select focus, Sundaram select midcap and Tata ethical fund. Out of these funds, four funds namely HDFC top 200, Sundaram diversified equity, Sundaram Select focus and Sundaram select midcap have shown more prominent market timing ability with the two funds HDFC top 200 and Sundaram select focus being significant.

Higher returns coming from the funds with negative market timing ability can be attributed to positive stock selection ability and other factors which are not part of the study.

Conclusion

The study has been carried out on twenty five equity mutual funds to evaluate the stock selection and market timing ability of mutual fund managers. The mutual funds were analysed for a period of 15 years from Dec 2002 to Nov 2017. The findings show that all the funds have generated higher returns than the market with ten funds having risk lower than the market. Twenty four funds are having beta lower than one, thus indicating the higher performance is due to other factors other than systematic risk. The reason could be attributed to stock selection and market timing abilities of the fund manager.. All the funds showed positive risk adjusted returns, measured by both Sharpe and Treynor ratio.All the funds have generated positive alpha as can be seen from the Jensen measure and positive net selectivity as seen from the results of Fama's selectivity.Both the models i.e. T & M and H & M models have shown that market timing is 48 per cent and 36 per cent respectively from the total sample out of which the significant results are 12 per cent and 8 per cent respectively. Only one fund Sundaram select focus has been able to show significant market timing ability in both the models used. These results indicate poor market timing ability of the mutual funds managers.

The five funds that have generate the good returns as well as higher risk adjusted returns are HDFC tax Saver, HDFC capital builder, Reliance growth fund, Franklin India prima fund and Sundaram select mid cap fund. The fund managers for his funds have also depicted better stock selection ability as compared to the other funds. Three funds namely HDFC tax saver, Reliance growth fund and Sundaram select mid cap fund have shown positive market timing ability with only Sundaram select mid cap fund showing some significance in the T & M model, overall these funds fail to showcase a significant market timing ability.

References

■ Association of Mutual Funds in India. Mutual Funds Average Assets Under Management growth rate 2007-2017, retrieved from www.amfiindia.com/indian-mutual.

■ Butler, K. C., Domian, D. L., & Simonds, R. R. (1995). International Portfolio Diversification and Magnitude of Market Timer's Penalty. *Journal of International Finance Management and Accounting*, 193-206.

■ Deb, S. G., Banerjee, A., & Chakrabarti, B. B. (2007). Market Timing and Stock Selection ability of Mutual funds in India: An Emperical Investigation. *Vikalpa*, 39-51.

■ Debashish, S. S., & Das, B. (2008). Forecasting Movement of Stock Index – Use of Spread between E/P Ratio and Interest Rate. *Asian Social Science*, 68-78.

■ Ferri, R. (2014, June 12). The Problem with Market Timing. *Forbes*.

■ Graham, J. R., & Harvey, C. R. (2004). *Market Timing Ability and Volatility Implied in Investment Newsletters' Asset Allocation Recommendations.* USA.

■ Grant, D. (1978). Market timing and Portfolio management. *The Journal of Finance*, 1119-1131.

■ Henriksson, R. D. (1982, February). Market Timing and Mutual Fund Performance: An Emperical Investigation. *Institute of Business and Economic Research*.

■ Jenter, D. (2005). Market Timing and Managerial Portfolio Decisions. *The Journal of Finance*, 1903-1949.

■ Kumar, R. (2012). Market Timing, Selectivity and Mutual Fund Performance: An Empirical Investigation of Selective Equity Diversified Schemes in India. *The IUP Journal of Financial Economics*, 62-84.

■ Lee, C.-F., & Rahman, S. (1990). Market Timing, Selectivity, and Mutual Fund Performance: An Empirical Investigation. *The Journal of Business*, 261-278.

■ Pfiefer, P. E. (1985). Market timing and Risk reduction. *The Journal of Financial and Quantitative Analysis*, 451-459.

■ Rijwani, P. (2014). Stock Selection, Market Timing and Mutual Fund Performance. *Indian Journal of Accounting*, 47-58.

■ Sharpe, W. F. (1975). Likely Gains from Market Timing. *Financial Analysts Journal*, 60-69.

■ Shen, P. (2003). Market Timing Strategies that worked. *The Journal of Portfolio Management*, 57-68.

■ Shyam, A. (2015, January 30). *Stocks news: Equities are the best bet in the long term.* Retrieved from Economic times website: https://economictimes.indiatimes.com/markets/stocks/news/equities-are-the-best-bet-in-the-long-term-morgan-stanley-report/articleshow/46060147.cms

■ Umanaheswar Rao, S. P. (2000). Market Timing and Mutual Fund Performance. *American Business Review*, 75-79.

■ Wikipedia. Number of AMCs and Schemes in India, retrieved from en.wikipedia.org/wiki/Mutual_funds_in_India.

Table 1 : Comparison of returns of various asset classes

Asset class	5-Year	10-Year	15-Year	20-Year
Equities	11%	17%	13.6%	12.9%
Gold	9%	12.9%	11%	8.4%
Bank fixed deposit	5.7%	5.2%	5.1%	5.5%
Property	8%	13.4%	10.8%	6.2%
CAGR in WPI index	6.2%	5.9%	5.7%	5.5%
Avg Inflation for the period	7.4%	6.3%	5.9%	5.7%

Source: - Morgan Stanley

Table 2 : List of mutual funds

Sr No	AMC	Fund name	Remarks
1	Aditya Birla	Frontline equity	
2		Opportunities fund	
3		Advantage fund	Tax saving
4	DSP Black rock	Opportunities fund	
5	Franklin India	Prima plus fund	
6		Prima fund	
7		Tax shield fund	Tax saving
8	HDFC	Capital Builder fund	
9		Top 200 fund	
10		Tax saver fund	Tax saving
11	ICICI Prudential	Top 100 fund	
12		Multicap fund	
13		Long term equity fund	Tax saving
14	Kotak	50 fund	
15	Reliance	Vision fund	
16		Growth fund	
17	SBI	Contra fund	
18		Magnum multiplier fund	
19		Magnum tax gain scheme	Tax saving
20	Sundaram	Diversified equity fund	Tax saving
21		Select focus	
22		Select mid cap	
23	TATA	Large cap fund	
24		Ethical fund	
25		Mid cap growth fund	

Note: - The names of the fund to be preceded by the AMC name

Table 3 : Returns of market, government bonds and mutual funds

Fund House	Fund Name	Nifty Returns	Govt bond Returns	Average Returns
Aditya Birla	Frontline equity	1.39%	0.62%	1.94%
	Opportunities fund	1.39%	0.62%	1.57%
	Advantage fund	1.39%	0.62%	1.88%
DSP Black rock	Opportunities fund	1.39%	0.62%	2.09%
Franklin India	Prima plus fund	1.39%	0.62%	2.00%
	Prima fund	1.39%	0.62%	2.25%
	Tax shield fund	1.39%	0.62%	1.94%
HDFC	Capital Builder fund	1.39%	0.62%	2.08%
	Top 200 fund	1.39%	0.62%	2.08%
	Tax saver fund	1.39%	0.62%	2.13%
ICICI Prudential	Top 100 fund	1.39%	0.62%	1.78%
	Multicap fund	1.39%	0.62%	1.91%
	Long term equity fund	1.39%	0.62%	2.13%
Kotak	50 fund	1.39%	0.62%	1.85%
Reliance	Vision fund	1.39%	0.62%	2.02%
	Growth fund	1.39%	0.62%	2.34%
SBI	Contra fund	1.39%	0.62%	1.63%
	Magnum multiplier fund	1.39%	0.62%	2.09%
	Magnum tax gain scheme	1.39%	0.62%	1.66%
Sundaram	Diversified equity fund	1.39%	0.62%	1.69%
	Select focus	1.39%	0.62%	1.74%
	Select mid cap	1.39%	0.62%	2.53%
Tata	Large cap fund	1.39%	0.62%	1.95%
	Ethical fund	1.39%	0.62%	1.98%
	Mid cap growth fund	1.39%	0.62%	2.03%

Standard deviation of market: - 6.8%

Table 4 : Risk adjusted performance

Fund House	Fund Name	Average Returns	Standard Deviation	Beta	Sharpe Ratio	Treynor ratio
Aditya Birla	Frontline equity	1.94%	6.30%	0.90	0.210	0.015
	Opportunities fund	1.57%	6.41%	0.81	0.149	0.012
	Advantage fund	1.88%	7.11%	0.99	0.178	0.013
DSP Black rock	Opportunities fund	2.09%	6.56%	0.92	0.225	0.016
Franklin India	Prima plus fund	2.00%	6.14%	0.86	0.225	0.016
	Prima fund	2.25%	7.30%	0.92	0.224	0.018
	Tax shield fund	1.94%	6.08%	0.86	0.216	0.015
HDFC	Capital Builder fund	2.08%	6.57%	0.88	0.222	0.017
	Top 200 fund	2.08%	6.80%	0.96	0.215	0.015
	Tax saver fund	2.13%	6.83%	0.93	0.221	0.016
ICICI Prudential	Top 100 fund	1.78%	6.24%	0.89	0.186	0.013
	Multicap fund	1.91%	6.59%	0.92	0.195	0.014
	Long term equity fund	2.13%	7.45%	0.96	0.203	0.016
Kotak	50 fund	1.85%	6.35%	0.88	0.193	0.014
Reliance	Vision fund	2.02%	7.06%	0.97	0.198	0.014
	Growth fund	2.34%	7.31%	0.97	0.235	0.018
SBI	Contra fund	1.63%	7.22%	0.91	0.140	0.011
	Magnum multiplier fund	2.09%	7.00%	0.95	0.210	0.016
	Magnum tax gain scheme	1.66%	7.46%	0.89	0.139	0.012
Sundaram	Diversified equity fund	1.69%	7.75%	0.97	0.138	0.011
	Select focus	1.74%	6.87%	0.95	0.163	0.012
	Select mid cap	2.53%	8.09%	1.01	0.236	0.019
Tata	Large cap fund	1.95%	6.38%	0.90	0.208	0.015
	Ethical fund	1.98%	7.04%	0.93	0.192	0.014
	Mid cap growth fund	2.03%	7.23%	0.91	0.195	0.015

Correlation between returns and risk: - 0.3

Correlation between returns and beta: - 0.5

Table 5 : Stock selection measures

Fund House	Fund Name	Jensens Measure	Fama's Selectivity
Aditya Birla	Frontline equity	0.0063	0.0060
	Opportunities fund	0.0032	0.0022
	Advantage fund	0.0050	0.0045
DSP Black rock	Opportunities fund	0.0077	0.0073
Franklin India	Prima plus fund	0.0072	0.0068
	Prima fund	0.0092	0.0080
	Tax shield fund	0.0066	0.0062
HDFC	Capital Builder fund	0.0078	0.0071
	Top 200 fund	0.0073	0.0069
	Tax saver fund	0.0079	0.0073
ICICI Prudential	Top 100 fund	0.0047	0.0045
	Multicap fund	0.0058	0.0054
	Long term equity fund	0.0077	0.0066
Kotak	50 fund	0.0055	0.0050
Reliance	Vision fund	0.0065	0.0060
	Growth fund	0.0097	0.0089
SBI	Contra fund	0.0031	0.0019
	Magnum multiplier fund	0.0074	0.0067
	Magnum tax gain scheme	0.0036	0.0019
Sundaram	Diversified equity fund	0.0032	0.0019
	Select focus	0.0039	0.0034
	Select mid cap	0.0113	0.0099
Tata	Large cap fund	0.0063	0.0060
	Ethical fund	0.0064	0.0055
	Mid cap growth fund	0.0071	0.0059

Table 6 : Treynor and Mazuy model

Fund House	Fund Name	Alpha	Beta	Gamma
Aditya Birla	Frontline equity	0.006*	0.9*	0.162
	Opportunities fund	0.004	0.815*	-0.098
	Advantage fund	0.004**	0.989*	0.204
DSP Black rock	Opportunities fund	0.008*	0.921*	-0.162
Franklin India	Prima plus fund	0.007*	0.864*	0.038
	Prima fund	0.01*	0.921*	-0.153
	Tax shield fund	0.006*	0.856*	0.037
HDFC	Capital Builder fund	0.009*	0.882*	-0.233
	Top 200 fund	0.006*	0.956*	0.264
	Tax saver fund	0.008*	0.936*	0.082
ICICI Prudential	Top 100 fund	0.006*	0.888*	-0.312**
	Multicap fund	0.008*	0.921*	-0.433**
	Long term equity fund	0.008**	0.965*	-0.027
Kotak	50 fund	0.007*	0.877*	-0.221
Reliance	Vision fund	0.005**	0.974*	0.221
	Growth fund	0.008*	0.976*	0.307
SBI	Contra fund	0.003	0.910*	-0.067
	Magnum multiplier fund	0.008*	0.946*	-0.119
	Magnum tax gain scheme	0.004	0.887*	-0.049
Sundaram	Diversified equity fund	0	0.973*	0.804**
	Select focus	0.001	0.955*	0.576*
	Select mid cap	0.008**	1.011*	0.807**
Tata	Large cap fund	0.008*	0.935*	-0.409***
	Ethical fund	0.006*	0.9*	0.103
	Mid cap growth fund	0.008**	0.912*	-0.191

*- Significant at 1%, **- Significant at 5% and ***- Significant at 10%

Table 7 : Henriksson and Merton model

Fund House	Fund Name	Alpha	Beta	Gamma
Aditya Birla	Frontline equity	0.006*	0.897*	-0.005
	Opportunities fund	0.007***	0.744*	-0.147
	Advantage fund	0.005***	0.995*	0.013
DSP Black rock	Opportunities fund	0.01*	0.877*	-0.092
Franklin India	Prima plus fund	0.008*	0.849*	-0.03
	Prima fund	0.014*	0.836*	-0.175
	Tax shield fund	0.007*	0.850*	-0.013
HDFC	Capital Builder fund	0.011*	0.815*	-0.139
	Top 200 fund	0.004***	1.016*	0.122***
	Tax saver fund	0.007**	0.960*	0.05
ICICI Prudential	Top 100 fund	0.007*	0.848*	-0.082
	Multicap fund	0.01*	0.839*	-0.171**
	Long term equity fund	0.009**	0.948*	-0.036
Kotak	50 fund	0.008*	0.825*	-0.109
Reliance	Vision fund	0.005***	1*	0.052
	Growth fund	0.009**	0.998*	0.045
SBI	Contra fund	0.006	0.847*	-0.13
	Magnum multiplier fund	0.011*	0.884*	-0.126
	Magnum tax gain scheme	0.006	0.835*	-0.106
Sundaram	Diversified equity fund	-0.004	1.107*	0.278
	Select focus	0	1.025*	0.146***
	Select mid cap	0.009***	1.063*	0.108
Tata	Large cap fund	0.012*	0.835*	-0.207**
	Ethical fund	0.006*	0.902*	0.005
	Mid cap growth fund	0.013*	0.803*	-0.226***

*- Significant at 1%, **- Significant at 5% and ***- Significant at 10%