PERFORMANCE OF MUTUAL FUNDS IN INDIAN CONTEXT
EVALUATION MARKET TIMING ABILITY AND STOCK SELECTION SKILLS OF THE FUND MANAGER

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*P*URPOSE
MUTUAL funds are the investment vehicles that provide a platform for the investors who would want to invest in the equity or debt market but do not have the financial expertise or time to analyze and select the securities. Mutual funds pool money from the investors and invest the corpus in different securities according to the objectives of the respective mutual funds. The advantages that investors get by putting their money in the mutual funds range from professional management of their funds, low costs, liquidity, low start up investment, choice of schemes, flexibility, and diversification. Evaluation of the performance of mutual funds and the fund manager's ability to time the market have been a subject of discussion ever since the inception of mutual funds. This paper attempts to evaluate the performance of selected mutual funds of three private asset management companies in India. The funds have been analyzed in terms of their risks and return per unit of risk. Also, the fund manager's ability to time the market has been analyzed using the Treynor-Mazuy and Fama Selectivity model.

Design/Methodology/Approach: The study is descriptive in nature. The data used for the study is secondary, taken from various national and international sources relevant to the study.

Findings: From the present study, we have come to the conclusion that "HDFC FMP 793D February 2014 (1) - Direct Option-Flexi Option", "HDFC FMP 793D February 2014 (1) - Direct Option-Growth Option", and "HDFC FMP 1175D January 2014 (1) - Regular Option-Growth Option" have performed better in terms of their excess returns per unit of total risk and Jensen's alpha. Also, the fund managers of these three funds have displayed superior security selection skills as indicated by their Fama Index. The market timing skills of the fund managers is reflected in "Axis Hybrid Fund - Series 5 (1346 Days) - Direct Plan – Growth" and "Axis Hybrid Fund - Series 7 (1305 Days) - Regular Plan – Growth"

Research Limitations: The data taken is past data of 10 closed ended funds, hence, generalization for all other funds or to the future is not applicable.

Practical Implications: The study attempts to evaluate the market timing and security selection abilities of the fund managers based on the past data.

Originality/Value: This paper is based on an independent analysis of mutual funds by the researcher. The findings are the researchers' own evaluations.

Key Words: Mutual Funds, Market Timing, Security Selection, Performance Evaluation.

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Introduction

Mutual funds are the financial intermediaries that help in collecting the money from the surplus sector (households) and deploying it to the deficit sector (industries, government, etc.). Mutual funds pool in the money from the surplus sectors and invest them in various financial and real assets according to the scheme's objectives. The investors invest their money in various schemes according to their interests and risk appetites.

UTI was the first mutual fund, started by government of India in 1963. After that mutual funds of SBI and Canara bank were set up in 1987. Six more public sector mutual funds came up between 1988 and 1992. In 1992, legislation was passed allowing the entry of private sector in mutual fund industry. In 1993, SEBI issued guidelines for the same. This was followed by the launch of first private sector mutual fund- ITI Pioneer mutual fund in October, 1993.

Since the inception of mutual fund in 1963, there has been a significant growth in this particular industry. The growth is seen in assets under management, fund houses, and the number of schemes. The industry's under management average assets stood at Rs. 26,13,666 crore as on 31st October, 2019 (AMFI, 2019).The AUM of the MF Industry in India grew from Rs. 7.75 trillion as on 31t October, 2009 to Rs. 26.33 trillion as n 31st October 2019- about 3½ fold increase in a span of 10 years. Thus, mutual funds have been important in the growth of economy of India. This has made it pertinent to study the mutual fund services and their contribution as an investment intermediary.

Performance evaluation of mutual funds has been a topic of discussion ever since the inception of mutual funds. A mutual fund manager can be evaluated in terms of his/her timing of the market skills and securities selection skills. If the manager of the fund is able to predict the peaks and troughs of the market and invest in stocks with high Beta during rising markets and low Beta stocks or debt when the markets are falling, then he displays superior market timing skills. Similarly, if he is able to invest in stocks which are undervalued, that is, the stocks whose price is lower than its intrinsic value, then he showcases his superior security selection skills.

This paper attempts to understand the return over and above the risk free rate per unit of risk by using the Sharpe's & Treynor's ratio, and Jensen's Alpha. Also, the ability of fund manager to time the market along with his security selection skills has been analyzed by using Treynor Mauzy model, Coefficient of determination (R^2), and Fama Selectivity model.

Review of Literature

Numerous studies have been undertaken to study the performance of various mutual funds. Below is a brief literature on these studies:

Masiperiyannan, & Mohanamani (2016) analyzed the performance from 2010 to 2015 of 10 open ended mutual fund. They used various measures like Return, Coefficient of Determination (R^2), Beta, Treynor Ratio, and Fama's net selectivity model. As per their analysis, though the ability of the fund manager to time the market failed in most of the cases, a few funds were able to perform better due to the better than other market timing ability.

Hasan, & Ahsan (2016) evaluated the fund manager's ability to outperform the market. The study was pertaining to the funds in Bangladesh. They investigated the data of 25 mutual funds from 2010 to 2016 on weekly basis and used return. Based on their analysis, they found that fund managers had no ability to time the market and resultantly had negative profits.

Zaheeruddin, Sivakumar, & Reddy (2013) examined mutual funds in India on the basis of the fund returns, risks, and performance ratios. Through their analysis of three funds, they found that ICICI

equity fund has the highest returns, even though the risk of ICICI equity fund is lower than Birla Sunlife equity fund.

Prasad, & Srinivas (2012) analyzed 17 equity schemes in India from 2000 to 2010 using Treynor Mazuy, Henriksson, and Merton models. They indicated that fund managers do display distinct market timing abilities during this period.

Tripathy (2006) analyzed the market timing ability of 31 India fund managers for tax planning schemes from 1995 to 2004. Using the Henriksson Merton model and Jensen Mazuy Model. It was concluded that the fund managers could not time the market and reaped negative returns in comparison to the market.

Chander (2002) examined performance of portfolios of fund managers to identify components of investment performance in India. Overall, he found dissatisfactory performance but observed that closed ended growth funds sponsored by the private sector had above normal performance.

Gupta (2000) analyzed the NAV of 73 selected mutual fund schemes using market index and Fundex from 1994 to 1999. As per his analysis, no evidence was found for market timing ability of these mutual funds. These were not completely diversified schemes and hence, the risk and return of the schemes were not as per the objectives of the scheme.

Rao, & Venkateshwarlu (2000) studied the abilities related to market timing of the fund managers for Unit Trust of India. For studying the market timing ability, they analyzed using Treynor-Mauzy method and Henrisson-Merton techniques. As per the analysis, apart from one fund, they did not find any evidence of macro forecasting abilities.

Fama (1972) presented a model to evaluate the performance related to investments using risk (selectivity) and return. It was stated that the portfolio's performance can be split into various components. It compares the extra returns obtained from a fund with a specific risk to the returns obtained with the same amount of systematic risks.

Jensen (1967) developed the "Capital Asset Pricing Model (CAPM)". He suggested that market cannot be predicted on the bases of 115 mutual funds. If the fund's management expenses were taken into account, they were not able to recoup the brokerage verses the level of risk undertaken.

Treynor, & Mazuy (1966) analyzed funds to find whether fund managers successfully anticipate turns in the market. They came up with a statistical test of mutual fund by analyzing the curvature of fund returns against the market returns. They found that the mutual funds are completely dependent on the market fluctuations and fund managers do not have the ability to outperform the market as a whole.

Treynor (1965) described a simple return and risk measure denoted by the risk free rate of return deducted from the return of the security on an annual basis, and then dividing the result by fund's beta during the same time period.

Need for the Study

If an individual investor tries to invest in the financial market on his own, he may not have the financial expertise to do so. Besides even, having financial expertise, he may have to invest a large sum of money to get the complete benefit of diversification. To diversify away his unsystematic risk, he may have to invest in at least 20 securities. Whereas, if he/she invests in mutual funds, the individual investor may invest as little as Rs. 1,000 and get the benefit of diversification. Therefore, the current study aims at analyzing three closed ended mutual funds and fund manager's ability to choose the securities and to time the market.

Objectives of the Study

- To understand the risk of each fund by using the standard deviation of return (which is total risk) and Beta (which is systematic risk)

- To study the return per unit of risk of each fund by using the Sharpe ratio, Treynor's ratio, Jensen's alpha

- To compare the performance of fund schemes with themselves and with the benchmark.

- To analyze the fund manager's ability to time the market.

Research Methodology

Period of the study

The study has been conducted for the closed- ended funds of the three fund houses for five years from 1st April 2014 to 31st March 2019. The data are the daily NAVs of said closed ended funds, NSE Nifty fifty index and 91 days Treasury-Bill rate for the given period.

Data Collection

The data collected is secondary in nature. Daily NAVs of these funds have been collected from the AMFI website and factsheets of the fund houses under study. Nifty Fifty index values have been collected from the NSE website. Also 91- day T-Bill value for the above period has been extracted from the RBI website.

Sample Selection

Table no. 1 depicts the twenty closed- ended funds selected for the study.

Table No. 1: Twenty Closed- Ended Funds

Fund Name (Rp)
Aditya Birla Sun Life Emerging Leaders Fund - Series 3 - Direct Plan - Dividend
Aditya Birla Sun Life Emerging Leaders Fund - Series 3 - Regular Plan - Dividend
Aditya Birla Sun Life Emerging Leaders Fund - Series 3 - Regular Plan - Growth
Aditya Birla Sun Life Emerging Leaders Fund - Series 4 - Regular Plan - Growth
Aditya Birla Sun Life Interval Income Fund - Quarterly Series 1 - Dividend - Regular Plan
Aditya Birla Sun Life Interval Income Fund - Quarterly Series I - Growth - Direct Plan
Axis Capital Protection Oriented Fund - Series 5 - Dividend option
Axis Fixed Term Plan - Series 52 - Direct Plan – Growth
Axis Fixed Term Plan - Series 52 - Regular Plan - Quarterly Dividend
Axis Fixed Term Plan - Series 64 - Direct plan – Growth
Axis Hybrid Fund - Series 5 (1346 Days) - Direct Plan – Growth
Axis Hybrid Fund - Series 7 (1305 Days) - Regular Plan – Growth
HDFC FMP 1175D January 2014 (1) - Direct Option-Quarterly Dividend Option
HDFC FMP 1175D January 2014 (1) - Regular Option-Dividend Option
HDFC FMP 1175D January 2014 (1) - Regular Option-Growth Option
HDFC FMP 3360D March 2014 (1)-Regular Option-Dividend Option
HDFC FMP 793D February 2014 (1) - Direct Option-Flexi Option
HDFC FMP 793D February 2014 (1) - Direct Option-Growth Option
HDFC FMP 793D February 2014 (1) - Regular Option-Flexi Option
HDFC FMP 793D February 2014 (1) - Regular Option-Growth Option

Source: AMFI (2019).

Tools for Analysis

The study analyzes the performance of a few mutual funds in terms of their risk (systematic and unsystematic) and returns per unit of risk. The tools used for this purpose are:

Average Returns: The daily NAV is used for calculating the average returns. The daily returns are calculated by subtracting NAV of a particular day from the NAV of the next day and dividing the result by the NAV of that day. Then average of the returns thus calculated is taken.

$$\text{Daily Return} = \frac{NAV_{t+1} - NAV_t}{NAV_t}$$

$$\text{Average Return } (R_t) = \frac{\sum Daily\ return}{\sum t}$$

Standard Deviation: It measures the dispersion of the fund. Higher the standard deviation, higher is the deviation of the returns of the fund from the mean value. Standard deviation is used to measure the total risk of the fund.

$$Standard\ Deviation\ (\sigma) = \frac{\sum (R_r - \bar{R}_t)^2}{n}$$

Where n = Number of observations.

Beta: It measures the systematic risk, which is inherent in the investment in risky assets and cannot be diversified away. Beta denotes the volatility of the fund in comparison to benchmark. Beta of the benchmark is always one as it is calculated as the covariance of the benchmark with itself divided by the variance of benchmark. Thus if the fund has a beta greater than one, the volatility of the fund is greater than the benchmark whereas a fund with beta less than one has volatility less than benchmark.

$$\text{Beta } (\beta) = \frac{COV_{i,m}}{\sigma_m^2}$$

Sharpe Ratio: Sharpe (1966) came up with the Sharpe ratio which measures the return of the portfolio over the risk free rate of return divided by total risk. Thus Sharpe's ratio helps in comparing the performance of different funds. Funds which have Sharpe ratio more than the benchmark performed better or over the benchmark and likewise, the funds having Sharpe ratio lower than the bench mark have performance lower than the benchmark.

$$Sharpe\ Ratio = \frac{r_p - r_f}{\sigma_p}$$

Where, r_p = Portfolio's return, r_p = Risk free return, σ_p = Standard Deviation of the asset return

Treynor's Ratio: Jack L Treynor developed a ratio to compare the performance of various portfolios based on their systematic risk. According to Treynor (1965), "the idiosyncratic risk is already diversified away by investing in a portfolio of securities. The only risk that remains is systematic risk. Hence, the Treynor's ratio is a measures of the return of the portfolio above the risk-free rate of return per unit of systematic risk. Higher the Treynor's ratio, better the performance of the portfolio under analysis".

$$T = \frac{r_p - r_f}{\beta_p}$$

Where, T = Treynor Ratio; r_p = Portfolio's return, r_p = Risk free return, β_p = Beta of the portfolio

Jensen's Alpha: Developed by Jensen (1968), it is used to determine the return of the portfolio above the theoretical return mostly denoted by Capital Asset pricing Model (CAPM). Positive alpha signifies that the portfolio performed better than expected.

$$\alpha_p = (\bar{r}_p - \bar{r}_f) - \beta_p\ (\bar{r}_m - \bar{r}_f)$$

Where, r_p = Alpha of Portfolio, $\bar{r}_p$ = Average return of portfolio, $\bar{r}_f$ = Average risk-free return, $\bar{r}_m$ = Average market return, β_p = Beta of the portfolio

Coefficient of Determination R²: measures the diversification of the portfolio in comparison to the market. A coefficient of correlation closer to 1 denotes that the portfolio is well diversified. An R^2 of zero means the portfolio return has no correlation with the market return, whereas, a portfolio of one indicates that the portfolio's return is completely correlated with the market return.

Treynor Mazuy Model: Treynor Mazuy came up with a model to predict ability of the fund managers to be able to time the market. It is a quadratic extension of CAPM model which uses multiple regression. Gamma which is the coefficient of the square of market return above the risk free rate of return indicates the market timing ability of the fund manager. Positive gamma indicates the fund manager has the market timing ability as the curve becomes steeper, that is the excess returns are higher.

$$R_p - R_f = \alpha + \left(R_m - R_f\right) + \gamma(R_m - R_f)^2$$

Fama's Net Selectivity Measure: compares excess return that the portfolio managergot with a specific risk and excess return that the manager could have obtained with the market risk. A positive value of this measure represents that the returns obtained from the fund were higher than the excess return and the returns lie above the capital market line. Whereas, a negative value indicates that the return earned by the funds are lower than the excess return and lies below the capital market line.

$$Fama\ net\ selectivity = (R_p - R_f) - \frac{\sigma_i}{\sigma_m}\ (R_m - R_f)$$

Results and Findings

Close Funds analyzed: Data is taken for Axis, Aditya Birla and HDFC from 1 Apr 2014 to 31 Mar 2019. All analysis has been done on a DAILY NAV of the fund.

Axis has 279 close ended funds, Aditya Birla has 1200 close ended funds, and HDFC has 1750 close ended funds. Of these the funds which were present for most of the analysis period (2014-2019) were picked. That is, these were the funds that were active for most of the period.

Returns: From the above table no. 2, it can be seen that the funds having best returns are: "HDFC FMP 793D February 2014 (1) - Direct Option-Flexi Option", "HDFC FMP 793D February 2014 (1) - Direct Option-Growth Option" and "HDFC FMP 1175D January 2014 (1) - Regular Option-Growth Option".

Risk: Table no. 2 shows that the funds "Aditya Birla Sun Life Emerging Leaders Fund - Series 3 - Direct Plan - Dividend" and "Aditya Birla Sun Life Emerging Leaders Fund - Series 3 - Regular Plan - Dividend" have high risk and negative returns.

Beta: Aditya Birla Sun Life Emerging Leaders Fund - Series 4 - Regular Plan – Growth, Aditya Birla Sun Life Emerging Leaders Fund - Series 3 - Regular Plan – Growth, Aditya Birla Sun Life Emerging Leaders Fund - Series 3 - Regular Plan – Growth and Aditya Birla Sun Life Emerging Leaders Fund - Series 3 - Regular Plan – Dividend have betas closer to one which indicates that these four funds are highly correlated to the market and hence have high systematic risk.

Table No. 2: Risk-Return-RSQ Analysis

Fund Name (Closed Ended)	Return	Risk (σ)	Beta	R-Square
HDFC FMP 793D February 2014 (1) - Direct Option-Flexi Option	**0.04%**	0.00047	0.00487	0.00877
HDFC FMP 793D February 2014 (1) - Direct Option-Growth Option	**0.04%**	0.00047	0.00487	0.00877
HDFC FMP 1175D January 2014 (1) - Regular Option-Growth Option	**0.04%**	0.00050	0.007151	0.01701
HDFC FMP 793D February 2014 (1) - Regular Option-Flexi Option	0.03%	0.00047	0.004866	0.00886
HDFC FMP 793D February 2014 (1) - Regular Option-Growth Option	0.03%	0.00047	0.004866	0.00886
Aditya Birla Sun Life Interval Income Fund - Quarterly Series I - Growth - Direct Plan	0.03%	0.00034	0.001346	0.00131
Axis Fixed Term Plan - Series 64 - Direct plan - Growth	0.03%	0.00046	0.002816	0.00308
Axis Fixed Term Plan - Series 52 - Direct Plan - Growth	0.03%	0.00046	0.005796	0.01322
HDFC FMP 3360D March 2014 (1)-Regular Option-Dividend Option	0.03%	0.00220	0.039921	0.02667
Axis Capital Protection Oriented Fund - Series 5 - Dividend option	0.03%	0.00661	0.60388	**0.67513**
Aditya Birla Sun Life Emerging Leaders Fund - Series 4 - Regular Plan – Growth	0.03%	0.01088	**0.905582**	0.56061
Aditya Birla Sun Life Emerging Leaders Fund - Series 3 - Regular Plan – Growth	0.03%	0.01131	**0.945443**	0.56566
Axis Hybrid Fund - Series 5 (1346 Days) - Direct Plan - Growth	0.02%	0.00731	0.516624	0.40420
Axis Hybrid Fund - Series 7 (1305 Days) - Regular Plan - Growth	0.02%	0.00563	0.511335	**0.66736**
HDFC FMP 1175D January 2014 (1) - Regular Option-Dividend Option	0.01%	0.01064	-0.03486	0.00087
Aditya Birla Sun Life Emerging Leaders Fund - Series 3 - Regular Plan – Growth	-0.02%	**0.01575**	**0.933542**	0.28439
Axis Fixed Term Plan - Series 52 - Regular Plan - Quarterly Dividend	0.00%	0.00232	0.006274	0.00060
Aditya Birla Sun Life Emerging Leaders Fund - Series 3 - Regular Plan – Dividend	-0.02%	**0.01546**	**0.934943**	0.29597
Aditya Birla Sun Life Interval Income Fund - Quarterly Series 1 - Dividend - Regular Plan	0.00%	0.00229	0.019213	0.00570
HDFC FMP 1175D January 2014 (1) - Direct Option-Quarterly Dividend Option	0.00%	0.00299	0.004219	0.00016

Source: Analysis of Secondary Data (AMFI, 2019).

R-Squared: The funds "Axis Capital Protection Oriented Fund - Series 5 - Dividend option" and "Axis Hybrid Fund - Series 7 (1305 Days) - Regular Plan - Growth" have the highest RSQ which means that these funds have high correlation with the market. That is, these funds have overreacted to the market actions or fluctuations.

Table No. 3: Top Funds based on Risk-Return-RSQ Analysiss

Fund Name (Closed Ended)	Return	Risk (σ)	Beta	R-Square
HDFC FMP 793D February 2014 (1) - Direct Option-Flexi Option	0.04%	0.00047	0.00487	0.00877
HDFC FMP 793D February 2014 (1) - Direct Option-Growth Option	0.04%	0.00047	0.00487	0.00877
HDFC FMP 1175D January 2014 (1) - Regular Option-Growth Option	0.04%	0.00050	0.007151	0.01701

Source: Analysis of Secondary Data (AMFI, 2019).

Table no. 3 depicts that the top two funds are "HDFC FMP 793D February 2014 (1) - Direct Option-Flexi Option" and "HDFC FMP 793D February 2014 (1) - Direct Option-Growth Option" which have the highest returns, lowest risks, low Betas, and low RSQ (low correlation with market fluctuations).

Table No. 4: Risk Adjusted Return Analysis

Fund Name (Closed Ended)	Sharpe Ratio	Rank: Sharpe	Treynor Ratio	Rank: Treynor	Jensen's Alpha	Rank: Jenson σ	Rank: Overall
HDFC FMP 793D February 2014 (1)-Direct Option-Flexi Option	**0.35712**	2	0.0345	3	**0.0002**	2	1
HDFC FMP 793D February 2014 (1)-Direct Option-Growth Option	**0.35712**	2	0.0345	3	**0.0002**	2	1
HDFC FMP 1175D January 2014 (1)-Regular Option-Growth Option	**0.37839**	1	0.0263	7	**0.0002**	1	3
HDFC FMP 793D February 2014 (1)-Regular Option-Flexi Option	0.34740	4	0.0334	5	0.0002	4	4
HDFC FMP 793D February 2014 (1)-Regular Option-Growth Option	0.34740	4	0.0334	5	0.0002	4	4
Aditya Birla Sun Life Interval Income Fund-Quarterly Series I-Growth-Direct Plan	0.34397	6	**0.0866**	1	0.0001	7	6
Axis Fixed Term Plan-Series 64-Direct Plan-Growth	0.32298	7	**0.0526**	2	0.0001	6	7
Axis Fixed Term Plan-Series 52-Direct Plan-Growth	0.19741	8	0.0155	8	0.0001	9	8

HDFC FMP 3360D March 2014 (1)-Regular Option-Dividend Option	0.04717	9	0.0026	10	0.0001	8	9
Axis Capital Protection Oriented Fund-Series 5-Dividend option	0.01372	10	0.0002	11	-0.0001	10	10
Aditya Birla Sun Life Emerging Leaders Fund-Series 4-Regular Plan-Growth	0.00970	11	0.0001	12	-0.0001	12	11
Aditya Birla Sun Life Emerging Leaders Fund-Series 3-Regular Plan-Growth	0.00778	12	0.0001	13	-0.0002	15	13
Axis Hybrid Fund-Series 5 (1346 Days)-Direct Plan-Growth	-0.00082	13	0.0000	14	-0.0001	13	13
Axis Hybrid Fund-Series 7 (1305 Days)-Regular Plan-Growth	-0.00285	14	0.0000	15	-0.0001	14	15
HDFC FMP 1175D January 2014 (1)-Regular Option-Dividend Option	-0.01141	15	0.0035	9	-0.0001	11	11
Aditya Birla Sun Life Emerging Leaders Fund-Series 3-Direct Plan-Dividend	-0.02525	16	-0.0004	16	-0.0006	19	16
Axis Fixed Term Plan-Series 52-Regular Plan-Quarterly Dividend	-0.08118	19	-0.0300	19	-0.0002	16	17
Aditya Birla Sun Life Emerging Leaders Fund-Series 3-Regular Plan-Dividend	-0.02606	17	-0.0004	17	-0.0006	20	17
Aditya Birla Sun Life Interval Income Fund-Quarterly Series 1-Dividend-Regular Plan	-0.08401	20	-0.0100	18	-0.0002	18	20
HDFC FMP 1175D January 2014 (1)-Direct Option-Quarterly Dividend Option	-0.06463	18	-0.0458	20	-0.0002	17	19

Source: Analysis of Secondary Data (AMFI, 2019).

Table no. 4 represents the risk adjusted return analysis of the selected funds.

Sharpe's Ratio: "HDFC FMP 793D February 2014 (1) - Direct Option-Flexi Option", "HDFC FMP 793D February 2014 (1) - Direct Option-Growth Option" and "HDFC FMP 1175D January 2014 (1) - Regular Option-Growth Option" have higher Sharpe's ratio as compared to the ratio of all other funds. Among these three funds, the fund "HDFC FMP 1175D January 2014 (1) - Regular Option-Growth Option" has the highest ratio as it has high returns, coupled with low risk (as shown in table no. 2).

Treynor Ratio: The top two funds are "Aditya Birla Sun Life Interval Income Fund - Quarterly Series I - Growth - Direct Plan" and "Axis Fixed Term Plan - Series 64 - Direct plan - Growth". That is, these funds had the maximum returns based on the risk assumed for these funds. These two funds performed better than the HDFC funds mentioned above as their Beta was almost half of the Beta of the HDFC funds.

Jensen's Alpha: "HDFC FMP 793D February 2014 (1) - Direct Option-Flexi Option", "HDFC FMP 793D February 2014 (1) - Direct Option-Growth Option" and "HDFC FMP 1175D January 2014 (1) - Regular Option-Growth Option" Jensen's alpha is higher than the alpha of all other funds analyzed which shows that these funds outperformed their theoretical returns given by CAPM model.

Dividend Funds: From the table no. 4, it can be seen that the bottom six funds are Dividend funds. These could be falling behind the Flexi and Growth funds as the dividend given out by the funds is not being reflected in the NAV of the fund, resulting in an overall zero to negative growth. Again, we see that the best performing Dividend fund is from HDFC "HDFC FMP 3360D March 2014 (1) - Regular Option-Dividend Option", which has outperformed many of its peers by a huge margin.

Table No. 5: TM and Fama Selectivity Analysiss

Fund Name (Closed Ended)	Treynor Mauzy Gamma	Rank TM (σ)	Fama Selectivity	Rank: Fama
HDFC FMP 793D February 2014 (1)-Direct Option-Flexi Option	0.179672	6	**0.00015**	2
HDFC FMP 793D February 2014 (1)-Direct Option-Growth Option	0.179672	6	**0.00015**	2
HDFC FMP 1175D January 2014 (1)-Regular Option-Growth Option	0.208984	5	**0.00017**	1
HDFC FMP 793D February 2014 (1)-Regular Option-Flexi Option	0.176640	8	0.00015	4
HDFC FMP 793D February 2014 (1) -Regular Option-Growth Option	0.176640	8	0.00015	4
Aditya Birla Sun Life Interval Income Fund-Quarterly Series I-Growth-Direct Plan	0.046487	13	0.00011	7
Axis Fixed Term Plan-Series 64-Direct Plan-Growth	0.122636	11	0.00013	6
Axis Fixed Term Plan-Series 52-Direct Plan – Growth	0.052592	12	0.00008	8
HDFC FMP 3360D March 2014 (1)-Regular Option-Dividend Option	0.629928	3	0.00004	9

Axis Capital Protection Oriented Fund-Series 5-Dividend option	-0.80000	15	-0.00011	10
Aditya Birla Sun Life Emerging Leaders Fund-Series 4-Regular Plan-Growth	-8.66934	19	-0.00022	12
Aditya Birla Sun Life Emerging Leaders Fund-Series 3-Regular Plan-Growth	-8.78518	20	-0.00025	14
Axis Hybrid Fund-Series 5 (1346 Days) -Direct Plan-Growth	**2.412036**	2	-0.00022	13
Axis Hybrid Fund-Series 7 (1305 Days)-Regular Plan-Growth	**2.559092**	1	-0.00018	11
HDFC FMP 1175D January 2014 (1)-Regular Option-Dividend Option	-0.77829	14	-0.00044	18
Aditya Birla Sun Life Emerging Leaders Fund-Series 3-Direct Plan-Dividend	-8.58746	18	-0.00087	20
Axis Fixed Term Plan-Series 52-Regular Plan-Quarterly Dividend	0.123095	10	-0.00026	15
Aditya Birla Sun Life Emerging Leaders Fund-Series 3-Regular Plan-Dividend	-8.49582	17	-0.00087	19
Aditya Birla Sun Life Interval Income Fund-Quarterly Series 1-Dividend-Regular Plan	-1.62007	16	-0.00026	16
HDFC FMP 1175D January 2014 (1)-Direct Option-Quarterly Dividend Option	0.290962	4	-0.00028	17

Source: Analysis of Secondary Data (AMFI, 2019).

Table no. 5 depicts the TM and Fama selectivity analysis for the selected funds.

Fama's Decomposition: This index gives the extra returns that the manager obtained by investing in the market or the benchmark portfolio. Here again we see that the top 3 funds from HDFC "HDFC FMP 793D February 2014 (1) - Direct Option-Flexi Option", "HDFC FMP 793D February 2014 (1) - Direct Option-Growth Option" and "HDFC FMP 1175D January 2014 (1) - Regular Option-Growth Option" score the highest rank. Thus the fund managers of these three funds have displayed superior security selection skills.

Treynor Mazuy model: "Axis Hybrid Fund - Series 5 (1346 Days) - Direct Plan – Growth and Axis Hybrid Fund - Series 7 (1305 Days) - Regular Plan – Growth" have displayed higher market timing skills of the fund managers as indicated by their higher Treynor Mazuy Gamma Coefficient. Also, negative Gamma coefficient indicates no market timing skills of fund managers. This is reflected in "Axis Capital Protection Oriented Fund - Series 5 - Dividend option"," Aditya Birla Sun Life Emerging Leaders Fund - Series 4 - Regular Plan – Growth"," Aditya Birla Sun Life Emerging Leaders Fund - Series 3 - Regular Plan – Growth","HDFC FMP 1175D January 2014 (1) - Regular Option-Dividend Option","

Aditya Birla Sun Life Emerging Leaders Fund - Series 3 - Direct Plan – Dividend", "Aditya Birla Sun Life Emerging Leaders Fund - Series 3 - Regular Plan – Dividend"and "Aditya Birla Sun Life Interval Income Fund - Quarterly Series 1 - Dividend - Regular Plan".

Conclusion

From the above analysis, it can be concluded that HDFC FMP 793D February 2014 (1) - Direct Option-Flexi Option, HDFC FMP 793D February 2014 (1) - Direct Option-Growth Option and HDFC FMP 1175D January 2014 (1) - Regular Option-Growth Option have performed better in terms of their excess returns per unit of total risk and Jensen's alpha.Also, the fund manager's of these three funds have displayed superior security selection skills as indicated by their Fama Index. The market timing ability of the fund managers is reflected in **"**Axis Hybrid Fund - Series 5 (1346 Days) - Direct Plan – Growth" and "Axis Hybrid Fund - Series 7 (1305 Days) - Regular Plan – Growth".

Scope for Further Research

Similar study can be done on other types of mutual funds from the same fund houses or other mutual funds from other fund houses to understand if they exhibit the market timing abilities of the fund managers.

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