Chapter-III

PERFORMANCE OF FUND HOUSES

3.1 MEASUREMENT OF PERFORMANCE: REVIEW OF EARLIER STUDIES

A number of scholarly attempts in the recent past have focussed on the measurement of performance of mutual funds.

J. Close in the year 1952 attempted to analyse the performance of mutual funds which is known as the 'first academic' mutual fund article. The study analysed data on assets under management during 1940-1950 and reported that the open-ended schemes outperformed the close-ended schemes by the end of 1943 and open-ended funds had 3-times the asset of close-ended funds under management by the end of 1950. According to Close, the growth in open-ended funds may be attributed to the continuous, and well composed sales effort via loads that is undertaken by these funds. The study analysed the actual investment performance of 37 open-ended and 11 close-ended funds listed on the New York Stock Exchange.

To begin with, according to Brown and Vickers (1963), the concept of investment performance relates to the effectiveness or efficiency with which the assets of the fund are administered, or the degree of success achieved by the fund in investing the capital entrusted to it by its shareholders.

Brown and Vickers (1963) in their study examined issues related to the portfolio turnover rates, the measurement of performance results and the impact of trading activity on price formation in market. According to them, portfolio performance measures are of primary interest for shareholders in

evaluating a fund's performance relative to its objectives. As far as portfolio turnover is concerned, according to the authors, it is generated by two forces: (1) the investing of fresh monies and (2) management decisions to alter the current portfolio. The major finding related to turnover is that turnover rates are inversely related to the fund size. Regarding performance issues, the authors viewed that funds on average perform neither better nor worse than the composite markets from which they select securities.

Traditional performance measures, strongly influenced by Capital Asset Pricing Model of Sharpe (1964), were developed prior to 1990.

Sharpe's Later work (1966) is considered as the pioneer in evaluating the performance of mutual funds which was based on the concepts of modern portfolio theory. According to him, if the efficient management of mutual funds demand for the selection of incorrectly priced securities, effective diversification and selection of a portfolio in a given risk category, then there is sufficient possibility of significant and persistent difference in funds returns.

Sharpe proposed reward-to-variability ratio, more popularly known as Sharpe Ratio, for measuring the performance of mutual funds which can be expressed as-

$$S_t = \left[\frac{R_P - R_F}{\sigma_P}\right]$$

The portfolio with the greatest reward-to-variability ratio is known as the optimal portfolio.

Treynor and Mazuy (1966) opined that a mutual fund can outperform the market to yield superior return only if the volatility of fund is adjusted systematically in such a way the variation produces a characteristic line of upwardly concave in nature. To examine the validity of this proposition, the authors considered a sample of 57 mutual funds covering a period between

1953-1962 and by using their rates of return, they tried to examine whether a fund exhibited higher volatility during good time of the market and *vice versa*. By plotting the values of rates of return for a managed portfolio against that of market portfolio, the characteristic line thus obtained did not show any curvature, meaning that no mutual fund could outguess the market.

Jensen (1968) was the first to measure the absolute performance of mutual funds through the introduction of a model that attempted to measure the performance of mutual funds statistically. The study was aimed at statistically measuring the performance of mutual funds relative to a benchmark. The model developed by Jensen was based on the premise of Capital Asset Pricing Model, the prime assumption of which is that all investors are risk averse, show homogeneous expectations and possess the expertise to select among the portfolios on the basis of their risk-return characteristics.

The Jensen model is represented by the following equation:

$$R_{jt} - R_{Ft} = \alpha_j + \beta_j(R_{Mt} - R_{Ft}) + u_{jt}$$

Where the constant α is termed as the Jensen's alpha, while the error term u_{jt} has an expected value of zero and is expected to be serially independent. A positive value of alpha indicates the fund manager's superior forecasting ability of security prices and vice versa while alpha value zero indicates fund managers do not have any contribution in the fund management.

Based on the analysis of data for 115 mutual funds during 1945-1964, using S&P 500 index as a proxy to the market, Jensen found that on an average, the mutual funds failed to produce returns which can offset the funds research expenses and management fees. Jensen also estimated the statistical significance of alpha, the result of which reveals that 14 funds have a t-value less than -2.0 (negative at the 5% level) while the same is found to be positive for mere 3 funds at the same significance level.

The Jensen model of equilibrium for pricing of asset is

$$R_j = R_f + \beta_j(R_M - R_F)$$

Carlson (1970) attempted to evaluate the mutual funds' performance with respect to market. The author opined that the mutual funds' performance is influenced by the type of the fund, the time period of interest, and the market index used. Using mutual fund data for the period ranging from 1948-1967, Carlson developed indices for three different types of mutual funds viz. diversified stock funds, balanced funds and income funds. Each of these indices is then compared with three most popular market indices. The study revealed that before a fund's performance is judged relative to the market, it must be grouped under the broad investment objective guiding it. The author put emphasis on the style of analysis i.e. while assessing a portfolio managers' performance, it must be compared with that of an index representing the actual return of another similar type of managed portfolio. The statement is supported by the fact that when the author regressed the actual return earned by mutual funds over S&P Composite index, the result shown a large amount of unexplained variance, the value of which is considerably lowered when a mutual funds index, instead of market index is used as a proxy to the market. The study proposed some potential factors which can significantly influence mutual funds performance and suggests that historical performance cannot be helpful in predicting future performance and there exist a positive correlation between funds performance and availability of fresh investible resources.

McDonald (1974) applying the monthly data of 123 mutual funds during the period of 1960-1969, attempted to examine the objectives and performance of mutual funds. The major emphasis of his work was examining the performance of mutual funds in terms of gross and risk-adjusted returns of schemes which differ on objectives. By regressing the funds monthly excess rerun on market excess return, the author estimated the systematic risk of the sample funds, which were divided into six different clusters. The study employed mean

excess return divided by standard deviation and beta as reward-to-variability ratio and volatility ratio respectively and Jensen's alpha as measure of performance statistics, and found that the performance of the majority of the funds fails to outperform the market return. The study concludes that there is not significant difference between the performance of the sample mutual funds and market as a whole.

Grant (1977) attempted to identify in detail not only return attributable to timing but also a previously unspecified "cost", in terms of increased risk, which timing decision incur. This work of Grant was on the basis and an extension of what suggested by Sharpe, Treynor, Jensen and Fama. This study of Grant advocates that the change in risk, caused by timing decision, is necessarily unrewarded only if β and market return are independent. Otherwise the expected return is also changed and the performance of the portfolio may be either superior or inferior to that of a benchmark portfolio with invariant risk equal to E(β). The study compared the performance of a managed (with respect to timing) portfolio and that of the appropriate benchmark under the assumption that β and market returns are not independent and are bivariate normal. Based on this, the author presented an empirical justification of their devised model under specific condition. The authors are of the view that for distributions other than bivariate normal, simulations may provide the most suitable approach. The last section of the study was devoted to analyse the implication of timing decision for the Jensen and Treynor measure of performance. In this section, the author, contradicting the Jensen standard of performance measure, showed that least-squares estimator of β are upward biased estimates of expected beta and therefore, Jensen's performance measures represent downward biased estimates of performance.

Kon (1983) in his study of market timing performance of mutual fund managers tried to propose an empirical methodology for measuring market-

timing performance and tested this methodology on a sample of mutual funds. The author is of the view that if an investment manager believes he can make better than average forecasts of market portfolio returns, he will adjust his portfolio risk level in anticipation of market movements. If he becomes successful, he will earn abnormal returns relative to an appropriate benchmark. Which means that evidence of non-stationarity of systematic risk of mutual fund is consistent with the timing activity. The study employed a sample of 37 mutual funds, each with 198 months of total rates of return data from January 1960 to June 1976 and having differing objectives. The 30 days Treasury bills rate is considered as the risk free rate of return and CRSP value-weighted market index as proxy to the market rate of return. The analysis of timing ability of fund managers suggested that there is evidence of superior market-timing ability and performance at the individual fund level, but none of the multivariate tests could reject the efficient market hypothesis. The study concluded that the investment managers can improve overall investment performance considerably by reallocating resources to their more productive activity.

Lehmann and Modest (1987) provided empirical evidence on the extent to which alternative benchmarks for normal performance alter the usual performance measures of mutual funds. The study used quadratic regression to examine the problems associated with the shifting composition and risk of managed portfolios. In the first section of the paper, the researchers presented the general framework for evaluating the stock-selection and market timing ability of a sample of 130 mutual funds based on the assumption that the return on individual securities are influenced by *K*-factors represented in the model below:

$$\widetilde{\boldsymbol{R}}_{\boldsymbol{pt}} = \boldsymbol{\beta}_{\boldsymbol{pt}}\widetilde{\boldsymbol{R}}_{\boldsymbol{mt}} + \tilde{\boldsymbol{\varepsilon}}_{\boldsymbol{pt}}$$

The study used two broad classes of portfolio for the empirical tests: those associated with CAPM and those associated with APT. For CAPM, the CRSP equally weighted and value weighted indices of NYSE stocks are taken from CRSP monthly index file. For the construction of APT reference portfolio, two step procedure is used. First, sensitivities to the common factors are estimated for a collection of individual securities and in the second step, the factors loading are used to construct the APT portfolio. The study concluded with three major observations (I) Jensen measure of individual mutual funds are quite sensitive to the method used to construct the APT benchmark. (II) the rankings of the funds are less sensitive to the exact number of common sources of systematic risk that are assumed to impinge on security returns and (III) there are considerable differences between performance measure yielded by the standard CAPM benchmark and those produced with APT benchmark.

Grinnblatt and Titman (1989a) in their study used actual returns and gross portfolio returns of mutual funds instead of actual returns earned by investors, which is mostly used by the previous researchers. With the help of this information, the authors estimated survivorship bias and total transaction costs for testing the abnormal returns. The study employed data on quarterly equity holdings of a sample of mutual funds existed for a part or all of the 1975-84 periods and calculated Jensen measures with four sets of benchmark portfolio: the monthly rebalanced equally weighted portfolio of all CRSP securities, the CRSP value weighted index, 10 factors portfolios created in accordance with Lehmann and Modest (1988) and the eight portfolio benchmark formed on the basis of firm size, dividend yield and past returns developed by Grinblatt and Titman (1988).

The study of Grinblatt and Titman (1993) is the first study that provides estimates of the performance of managed portfolio that are not subject to the benchmark problems and contradicts the most widely used performance measure of the date as proposed by Jensen. The study introduced the

application of a new measure of portfolio performance 'Portfolio Change Measure', taking idea from the event study measure as adopted by Cornell (1979). The study used quarterly holdings of 155 mutual funds from December 31, 1974 to December 31, 1984. The analysis of the sample mutual funds reveals that the performance measures are similar to that of Grinblatt and Titman (1989a) where the authors have used eight portfolio benchmarks that controls for dividend policy, firm size and past returns. The study concluded that there is strongest evidence of abnormal performance seen in the category of aggressive growth funds and superior and inferior funds performance persists across both the halves of the sample. The author emphasized that the abnormal performance revealed in the study does not imply that individual investors can achieve abnormal returns by investing in mutual funds. This is because on average, transaction costs and fund expenses dissipate the abnormal investment performance so that the net performance becomes close to zero on average.

Carhart (1997) raised the issue of persistence of mutual funds performance. In his study, Carhart used mutual fund database for 1892 funds (free from survivorship bias) covering diversified equity funds ranging from January 1962 to December, 1993.The funds are divided among three categories viz. aggressive, long term and growth & income. The study used two models of performance measurement: Capital Asset pricing Model (CAPM) and the author's own 4-factor model and estimated performance using value weighted aggregate market proxy, zero investment, and factor-mimicking portfolios for size, book-to-market equity and one year momentum in stock returns. In his first analysis, the author formed portfolio of mutual funds on lagged one-year return and estimated performance of the resulting portfolios. The author inferred that the 4-factor model noticeably performs better than CAPM and Fama and French's 3-factor model in terms of reducing the average pricing errors and better explaining the cross sectional variation in average stock returns. The study concludes that the spread in mean return unexplained by

common factors and investment costs is concentrated in strong underperformance by the bottom decile relative to the remaining sample. The author also suggests that expense ratios, portfolio turnover and load fees are significantly and negatively related to performance. Expense ratios appear to reduce performance a little more than one-for-one, turnover reduces performance about 95 bps for every buy and sell transactions. The average load-fund underperforms the average no-load funds by approximately 80bps per year.

D. Indro et al (1999) addressed a very pertinent question of their time in the wake of Magellan Funds not allowing fresh allotment of units to new subscribers- "Does size of funds have any adverse impact on the performance of a fund?" The authors are of the view that growth in AUM allows a fund to lower brokerage commissions because of larger transaction volume. It also helps to achieve economies of scale by reducing the costs related with data, research and administration expenses. But, at the same time, it may put a fund to a disadvantageous position too by raising the impact cost caused by trading of large block of stocks. The authors also opined that growing AUM size may cause administrative complexities and may indulge the fund manager to deviate from the fund's intended objective. The study reveals that higher systematic and unsystematic risk associated with funds are commensurate with the higher returns and there exist a negative correlation between a fund's return and its turnover and expense ratio. The most surprising fact, as revealed in the study, is that there exists a diminishing marginal return caused by increasing size of total asset under management.

Wermers (2000) attempted to find the answer to a simple question: "Do mutual fund managers actively trade stocks add value?" The motivation behind this was investors being increasingly optimistic and continue to park their money in huge volume into actively managed funds despite the fact that majority of the previously held mutual funds performance oriented studies

concluding that actively managed funds on average underperform passively managed funds.

The study revealed that growth oriented funds had become the most popular segment of investment among the whole fund family in the past 20 years, and that trading activity in mutual funds doubled from level of 1975 to 1994. But, the annual trading cost in 1994 reduced to the extent of one-third than 1975 level. In contrast, the average expense ratio increased during 1994 compared to 1975.

The study reports that on average, the stocks held with mutual funds outperform the market index by 1.3 per cent which roughly equates the expenses and transaction cost taken together. Funds recording high turnover also pay high transaction cost and higher expenses ratios, but own stocks that earn substantial higher average return than that of low turn-over funds. The study concluded that actively managed funds outperform the Vanguard 500 Index on a net return basis.

Otten and Bams (2004) evaluated the suitability of nine mutual fund performance measurement models on the basis of statistical and economical relevance. All the models were grouped under two broad heads (a) Conditional Model and (b) Unconditional Model. The search for the most suitable model to measure the mutual fund performance was addressed along two lines: First, statistical significance of adding more factors to the single factor model and second, the economic importance of more elaborate model specifications. To examine the efficiency of mutual fund models, the study employed the richest commercial database of that time which is CRSP survivor-bias free mutual fund database. To examine the statistical and economic power of a range of mutual fund performance models, the authors used an equally weighted portfolio of all funds as input. Using the log-likelihood (Log *L*), the author performed a standard likelihood ratio (LR) test in order to determine whether the explanatory power of the new model differs significantly from a previous

one in statistical sense. The statistical significance study of all the model suggested that all conditional models perform much better than their unconditional counterpart but in an unconditional setting, the four-factor Crahart model is best suited to measure mutual fund performance. Overall, the study suggested that conditional models add strong economic relevance because of the ability to detect patterns in fund betas. This enables the investors to monitor the dynamic behaviour of mutual fund managers.

Jayadev (1996) in his study titled "Mutual fund performance: An analysis of monthly returns" addressed two fundamental questions pertaining to the performance of mutual funds in India: (a) whether growth oriented mutual funds are earning higher returns than benchmark returns and (b) whether growth oriented mutual funds are offering the advantage of diversification, market timing and selectivity of securities to their investors. 'Capital Growth Unit Scheme' or 'Mastergain 1991' of UTI and 'Magnum Express' of SBI were the two growth oriented mutual funds selected for the purpose of the study. The author used CAPM, Sharpe, Treynor and Jensen measures to investigate the performance. The analysis of the study revealed that the two growth oriented mutual funds had not performed better than their benchmark indicators and fund managers of the two funds were found to be poor in terms of their ability of market timing and selectivity. The author is of the view that the fund managers can improve the return to the investors by increasing the systematic risk of the portfolio, which in turn can be done by identifying highly volatile shares.

Tripathy (1996) analysed the performance of growth oriented schemes by using CAPM model, Jensen alpha, Sharpe and Treynor measures which revealed that it is not difficult to appraise the performance of mutual funds schemes and return from the schemes will depend upon the performance of the mutual funds. Therefore, the funds may produce returns either above or below the industry average but in the long run, it may yield superior return.

Khurana and Panjwani (2010) attempted to study the relationship that exists between investment styles and performance of Indian mutual funds. The study compared the performance of 15 Open ended, balance funds, growth schemes launched by public sector, private sector and foreign mutual fund players in India. The analysis of the study used both statistical and financial tools like arithmetic mean, standard deviation, correlation, beta, Treynor ratio, Sharpe ratio and Fama model. It is revealed that all the selected schemes, excluding 6 out of 15, underperformed the industry index over the 5 years period of analysis. The analysis of performance of selected Balanced Fund schemes depicts that in the 5 years and 1 year analysis, all the 15 schemes outperformed the CRISIL Balance Fund Index but fails to beat the same in 6 months period of study. The analysis of Sharpe's index reveals that no scheme could generate positive risk premium whereas only 5 out of 15 schemes shows positive Treynor values. The study concluded that Canara Robeco Balanced Growth is the most aggressive hybrid mutual fund whereas Escort Balanced Fund-Growth is a relatively more defensive fund.

Loomba (2011) in his study titled 'Investigating performance of equity-based mutual fund schemes and comparison with Indian equity market' made an initiative to measure the return earned by the sample mutual funds schemes and compare against the market portfolio returns to distinguish the performers from laggards. The paper started with giving a description about the brief history of Indian mutual fund industry followed by a discussion on the performance measurement tools and a review of literature. The study had five hypotheses and used Sharpe ratio, Mann Whitney's U-test, Kruskal Wallis test for data analysis. Sample did consist the four different schemes of Franklin Templeton mutual fund in the category of Large Cap Equity (Open ended) with Nifty Index returns as proxy to the market and yield on 91-day Treasury bills as risk-free rate of return. The study ranked the schemes on the basis of Sharpe's ratio and found that Franklin India Bluechip (G) scheme is the most risky scheme. The analysis of Mann Whitney U-test revealed that Nifty returns

outperformed all the four scheme's return. The Kruskal Wallis H-test for the comparison of scheme's return indicated that there is no significant difference in the return of the sample schemes.

Dhanda, Batra and Anjum (2012) attempted to study the performance of mutual funds in the framework of risk and return during the period of 1st April, 2009 to 31st March, 2011. The researchers selected 10 growth schemes of open ended mutual funds with BSE 30 as a proxy to market. Considering the interest rate of fixed deposits as the risk-free rate, the authors calculated the rate of return, Sharpe ratio, Treynor ratio using data collected from AMFI website. The analysis of performance of sample schemes during 2009-10 reveals that except two schemes, all other schemes performed better than benchmark and all schemes has fulfilled the investors' expectations. During 2010-11, no schemes were found proving more return superior to the benchmark. Only four schemes were able to provide the reward for variability and volatility.

Prajapati and Patel (2012) attempted to evaluate and compare the performance of equity diversified mutual fund schemes vis-à-vis the market. The authors selected top 5 asset management companies as per AUM as on 30th September, 2011 and 5 equity diversified schemes from the top 5 funds were selected randomly for the analysis. Daily NAV of the sample schemes were collected from the AMFI mutual funds database and the closing value of BSE SENSEX was used as a proxy to the market. The data pertaining to the NAV of the selected schemes were collected during the period of January 2007 to December 2011 and the yield to maturity of 364 days treasury bills were taken as risk free rate of return. Portfolio return, risk (σ), beta, Sharpe's index, Treynor's ratio, Jensen alpha and Fama ratio were used as tools for analysis. The analysis of performance revealed that all selected mutual fund companies had positive return during 2007 to 2011 with HDFC and Reliance mutual fund performed well as compared to Sensex return.

From the review of literature, it is observed that the classical measures of portfolio performance compare the return of a managed portfolio over some evaluation period to the return of a benchmark portfolio. The review of literature reveals that the general trend in the recent literature has been around measuring the performance of mutual funds by such parameters as the ability of the portfolio to generate superior risk-adjusted returns, the ability of the fund manager to earn an abnormal return relative to the benchmark, and the security selection and the timing of investment of the fund manager, among others. While measuring performance of the fund houses, the scholarly attempts have focussed on such aspects as the growth of Average Asset under Management (AAUM), the growth of net resources mobilized by the fund house, and the growth of the number of folios under the fund house.

3.2 PERFORMANCE OF THE SELECT FUND HOUSES

The eight fund houses selected for intensive investigation of performance were:

1. Baroda Pioneer Mutual Fund
2. Birla Sun Life Mutual Fund
3. Franklin Templeton Mutual Fund
4. HDFC Mutual Fund
5. JM Financial Mutual Fund
6. LIC Nomura Mutual Fund
7. Tata Mutual Fund, and
8. UTI Mutual Fund

Based on the review of earlier studies, as presented in the preceding section in this Chapter, the following two parameters are adopted for measuring the performance of the eight fund houses:

(i) Net accretion to average assets under management (AAUM), and

(ii) Net resource mobilisation.

The overall assessment of the performance of the eight fund houses in terms of the aforesaid two parameters is presented below:

3.2.1 Growth of Average Assets under Management

Assets under Management (AUM) measure the total market value of all the financial assets which a mutual fund manages on behalf of its clients and themselves. Data related to the average assets under management (AAUM) for the sample mutual funds is collected from the AMFI website which presents the quarterly average assets under management a mutual fund is having under its operation during the reported quarter of that financial year. The last quarter AAUM (i.e. from January to March) of each year during 2006-07 to 2014-15 is considered for the purpose of the study, and the year-on-year growth in percentage terms is calculated for a period of eight years ranging from 2007 to 2015 for the individual mutual funds.

Table C-1 presents the year-on-year growth of average assets under management (AAUM) of the eight selected fund houses during 2007-2015.

Table C-1: Year-on-year Growth of Average Assets under Management (AAUM) during 2007-2015

Fund House	Year-wise Average Assets under Management (₹ in Lakhs)								
	2007	2008	2009	2010	2011	2012	2013	2014	2015
Baroda Pioneer Mutual Fund	10610.35	8220.52 (-22.52)	67731.81 (723.94)	378385.39 (458.68)	258479.18 (-31.69)	419083.37 (62.13)	730311.98 (74.26)	810594.81 (10.99)	717257.45 (-11.51)
Birla Sun Life Mutual Fund	2152809.38	3422900.91 (59.00)	4593641.42 (34.20)	6374811.28 (38.77)	6369619.52 (-0.08)	6114250.85 (-4.01)	7704643.21 (26.01)	8905113.53 (15.58)	11975165.76 (34.48)
Franklin Templeton Mutual Fund	2314762.18	2939399.80 (26.98)	1920843.02 (-34.65)	3297717.24 (71.68)	3788271.74 (14.88)	3449267.89 (-8.95)	4156426.37 (20.50)	4540442.72 (9.24)	7044365.89 (55.15)
HDFC Mutual Fund	3183586.39	4686982.26 (47.22)	5541385.73 (18.23)	9790708.69 (76.68)	8628224.46 (-11.87)	8987874.71 (4.17)	10172027.59 (13.18)	11296283.51 (11.05)	16163414.98 (43.09)
JM Financial Mutual Fund	378118.46	1360209.33 (259.73)	524126.41 (-61.47)	644383.56 (22.94)	591783.18 (-8.16)	588513.68 (-0.55)	741147.09 (25.94)	604619.35 (-18.42)	1223079.64 (102.29)
LIC Nomura Mutual Fund	1158610.88	1490407.90 (28.64)	2202802.21 (47.80)	4540220.35 (106.11)	1119557.16 (-75.34)	579904.95 (-48.20)	718472.60 (23.89)	1058434.39 (47.32)	931299.94 (-12.01)
Tata Mutual Fund	1396575.66	2040532.93 (46.11)	1882346.83 (-7.75)	2228488.78 (18.39)	2268110.53 (1.78)	1981827.34 (-12.62)	1989709.46 (0.40)	2195421.05 (10.34)	2696830.00 (22.84)
UTI Mutual Fund	3824552.90	5277522.93 (37.99)	4804683.63 (-8.96)	7801264.88 (62.37)	6718882.58 (-13.87)	5892214.59 (-12.30)	6945039.72 (17.87)	7423329.33 (6.89)	9275061.17 (24.94)

Notes: 1. Average assets under management figures relate to the status as on 31st March of the respective years.
2. Figures in parentheses represent the percentage growth in AAUM over the previous year.

Source: AAUM data from AMFI Quarterly Newsletter - *Update*; various issues.

Table C-1 presents the year-on-year growth of average assets under management (AAUM) of the selected fund houses during 2007 to 2015. It is observed from the table that UTI Mutual Fund had the highest AAUM during 2007 followed by HDFC Mutual Fund, Franklin Templeton Mutual Fund and Birla Sun Life Mutual Fund. Baroda Pioneer Mutual Fund was the smallest of all in terms of AAUM during 2007. But, at the end of the study period, HDFC Mutual Fund occupied the top position with the highest AAUM, replacing UTI Mutual Fund, followed by Birla Sun Life Mutual Fund. UTI Mutual Fund finds a place in the third position followed by Franklin Templeton Mutual Fund. Baroda Pioneer Mutual Fund continues to remain the smallest amongst all during 2015 too. In terms of percentage growth in AAUM, Baroda Pioneer Mutual Fund did particularly well during 2009 and 2010 recording an overwhelming growth rate of 723 per cent and 458 percent respectively. The growth during 2009 needs a special mention considering the fact that Baroda Pioneer Mutual Fund achieved this growth at a time when the AAUM of other fund houses either declined or experienced a moderate growth. A close observation of the growth of AAUM of selected fund houses during the period of the study reveals that HDFC Mutual Fund maintained a steady positive growth of its AAUM throughout the period of the study, except for the year 2011 during which its AAUM declined marginally, which may be attributed as the reason behind the fund house's achieving the highest AAUM. The AAUM of all other fund houses declined for multiple years. JM Mutual Fund experienced the negative growth of AAUM for four years, which is found to be the highest among all the fund houses studied.

Table C-2 presents the net accretion to AAUM of the eight fund houses during 2007-2015.

Table C-2: Net Accretion to AAUM of Fund Houses during 2007-2015

Fund House	Year-wise Net Accretion to AAUM (₹ in Lakhs)									
	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total Net Accretion to AAUM
Baroda Pioneer Mutual Fund	*	-2389.8	59511.3	310653.6	-119906.0	160604.2	311228.6	80282.8	-93337.4	706647
Birla Sun Life Mutual Fund	*	1270092.0	1170741.0	1781170.0	-5191.8	-255369.0	1590392.0	1200470.0	3070052.0	9822356
Franklin Templeton Mutual Fund	*	624637.6	-1018557.0	1376874.0	490554.5	-339004.0	707158.5	384016.4	2503923.0	4729604
HDFC Mutual Fund	*	1503396.0	854403.5	4249323.0	-1162484.0	359650.3	1184153.0	1124256.0	4867131.0	12979829
JM Financial Mutual Fund	*	982090.9	-836083.0	120257.2	-52600.4	-3269.5	152633.4	-136528.0	618460.3	844961
LIC Nomura Mutual Fund	*	331797.0	712394.3	2337418.0	-3420663.0	-539652.0	138567.7	339961.8	-127134.0	-227311
Tata Mutual Fund	*	643957.3	-158186.0	346142.0	39621.8	-286283.0	7882.1	205711.6	501409.0	1300254
UTI Mutual Fund	*	1452970.0	-472839.0	2996581.0	-1082382.0	-826668.0	1052825.0	478289.6	1851732.0	5450508

*2007 is taken as base year for calculation of annual net accretion to AAUM

Source: Compiled on the basis of data furnished in Table C-1.

Table C-2 presents the net accretion to AAUM of the eight selected fund houses during 2007-2015. As there exists wide variation in the volume of AAUM of the fund houses during the base year, the study refrained from using either exponential growth or logarithmic growth or mean growth of AAUM considering the fact that the application of such tools may produce misleading results. It is observed from table C-2 that HDFC Mutual Fund had a stable performance in terms of net accretion to AAUM. A close observation into the table reveals that HDFC Mutual Fund was able to make the highest net accretion to AAUM for four years (2008, 2010, 2012 and 2015), while for three years (2009, 2013 and 2014), it was in the second position in terms of net accretion to AAUM. During 2011, all the selected fund houses recorded negative net accretion to AAUM and HDFC Mutual Fund was second in that list. LIC Nomura Mutual Fund experienced the highest depletion of AAUM. Birla Sun Life Mutual Fund secured the first position in terms of net accretion to AAUM for three years (2009, 2013 and 2014) and second position during 2015 only. UTI Mutual Fund had the second highest net accretion to AAUM during 2008 which it failed to maintain during the successive years. In terms of total net accretion to AAUM during the period of the study, HDFC Mutual Fund was found to top the list with total net accretion of ₹1,29,79,829 lakhs followed by Birla Sun Life Mutual Fund (₹98,22,356 lakhs) and UTI Mutual Fund (₹54,50,508 lakhs). LIC Nomura Mutual Fund was found to have the poorest performance as the fund house experienced net outflow of funds [(-) ₹2,27,311 lakhs].

Table C-3 presents the change in rank of fund houses between the base and terminal years in terms of their share of total AAUM.

Table C-3: AAUM: Change in Rank of Fund Houses between Base and Terminal Years

Fund House	Base Year (2007) status			Terminal Year (2015) status			Change in rank during 2007-2015
	AAUM (in ₹ lakhs)	% share of Total AAUM of 8	Rank	AAUM (in ₹ lakhs)	% share of Total AAUM of 8	Rank	
Baroda Pioneer Mutual Fund	10610.35	0.07	**8**	717257.45	1.43	**8**	0
Birla Sun Life Mutual Fund	2152809.38	14.93	**4**	11975165.76	23.94	**2**	2
Franklin Templeton Mutual Fund	2314762.18	16.05	**3**	7044365.89	14.08	**4**	-1
HDFC Mutual Fund	3183586.39	22.08	**2**	16163414.98	32.31	**1**	1
JM Financial Mutual Fund	378118.46	2.62	**7**	1223079.64	2.44	**6**	1
LIC Nomura Mutual Fund	1158610.88	8.03	**6**	931299.94	1.86	**7**	-1
Tata Mutual Fund	1396575.66	9.69	**5**	2696830.00	5.39	**5**	0
UTI Mutual Fund	3824552.90	26.52	**1**	9275061.17	18.54	**3**	-2
TOTAL	14419626.20	100		50026474.80	100		

Source: Compiled on the basis of data furnished in Table C-1.

Table C-3 presents the change in rank of fund houses between the base and terminal years in terms of their share of total AAUM. It is evident from the table that there was not much shift in ranks among the fund houses in grabbing a larger share of their total AAUM-pie between the base and terminal years. HDFC Mutual Fund, which was found to be occupying the second position at the base year, could improve its performance to secure the rank 1 at the terminal year. Birla Sun Life Mutual Fund climbed two steps from 4th position during 2007 to 2nd position during 2015. UTI Mutual Fund declined two steps to secure rank 3 from rank 1. Franklin Templeton Mutual Fund and LIC Nomura Mutual Fund declined one step to secure the 4th and 7th rank respectively. Baroda Pioneer Mutual Fund (Rank 8) and Tata Mutual Fund (Rank 5) showed neither improvement nor deterioration to continue with their ranks of base year in the terminal year too. JM Financial Mutual Fund improved its rank from 7th position to 6th position in the year 2015.

Table C-4 ranks the fund houses in terms of their total net accretion to AAUM.

Table C-4: Ranks of the Eight Fund Houses in Terms of Total Net Accretion to AAUM

Fund House	Total Net Accretion to AAUM by the firm during 2007- 2015		Rank in terms of % share of group's Total Accretion
	Total Net Accretion (in ₹ lakhs)	% share of group's Total Accretion	
Baroda Pioneer Mutual Fund	706647	2.0	**7**
Birla Sun Life Mutual Fund	9822356	27.6	**2**
Franklin Templeton Mutual Fund	4729604	13.3	**4**
HDFC Mutual Fund	12979829	36.5	**1**
JM Financial Mutual Fund	844961	2.4	**6**
LIC Nomura Mutual Fund	-227311	-0.6	**8**
Tata Mutual Fund	1300254	3.7	**5**
UTI Mutual Fund	5450508	15.3	**3**
TOTAL	35606848	100	

Source: Compiled on the basis of data furnished in Table C-2

Table C-4 presents the rank of the selected fund houses in terms of total net accretion to AAUM. It is observed from the table that HDFC Mutual Fund had the highest net accretion to AAUM both in absolute and percentage share terms. The fund house made a total net accretion of ₹1,29,79,829 lakhs which is 36.5 per cent of the combined net accretion of all the eight fund houses. Birla Sun Life Mutual Fund was found to be the closest competitor of HDFC Mutual Fund which occupied the second positon and contributed 27.6 per cent to the total net accretion of the eight fund houses taken together. Though, UTI Mutual Fund (15.3 per cent) secured the third rank in terms of its share of total net accretion to AAUM, but its net accretion was found to be half of that of Birla Sun Life Mutual Fund and one-sixth of HDFC Mutual Fund in absolute terms. With 13.3 per cent share of total net accretion to AAUM, Franklin Templeton Mutual Fund occupied the 4th rank among the selected fund houses. Tata Mutual Fund, JM Financial Mutual Fund and Baroda Pioneer Mutual Fund had less than four per cent share of total net accretion to AAUM and are ranked 5, 6 and 7 respectively. LIC Nomura Mutual Fund is the only firm which experienced negative total net accretion amongst all the studied found houses and hence, is ranked 8.

3.2.2 Growth of Net Resources Mobilised

Net resources mobilised represents the excess of sales over redemption. Data related to the net resources mobilised by the sample fund houses are collected from the SEBI handbook of statistics for the study period. The year-on-year growth in percentage terms is calculated for a period of eight years ranging from 2008 to 2015 for each fund house which is presented in Table C-5.

Table C-5: Net Resources Mobilised

Fund House	Year-wise Net Resource Mobilised by Mutual Funds (₹ in Crores)								
	2007	2008	2009	2010	2011	2012	2013	2014	2015
Baroda Pioneer Mutual Fund	-97.00	-38.00 (-60.82)	556.00 (1563.16)	1288.00 (131.65)	-520.00 (-140.37)	337.00 (164.81)	1377.00 (308.61)	301.00 (-78.14)	-1565.00 (-619.93)
Birla Sun Life Mutual Fund	5187.00	14551.00 (180.53)	6634.00 (-54.41)	12493.00 (88.32)	-4737.00 (-137.92)	-1784.00 (62.34)	7492.00 (519.96)	8651.00 (15.47)	17205.00 (98.88)
Franklin Templeton Mutual Fund	4334.00	1753.00 (-59.55)	-2650.00 (-251.17)	5775.00 (317.92)	-1769.00 (-130.63)	438.00 (124.76)	3565.00 (713.93)	4834.00 (35.60)	9948.00 (105.79)
HDFC Mutual Fund	6610.00	15789.00 (138.87)	7440.00 (-52.88)	11831.00 (59.02)	-2970.00 (-125.10)	11409.00 (484.14)	5267.00 (-53.83)	5282.00 (0.28)	16543.00 (213.20)
JM Financial Mutual Fund	453.00	8619.00 (1802.65)	-4903.00 (-156.89)	1395.00 (128.45)	-3590.00 (-357.35)	-45.00 (98.75)	-276.00 (513.33)	-66.00 (76.09)	5100.00 (7827.27)
LIC Nomura Mutual Fund	4158.00	2190.00 (-47.33)	5852.00 (167.21)	4871.00 (-16.76)	-16423.00 (-437.16)	-3099.00 (81.13)	1312.00 (-142.34)	2272.00 (73.17)	-1045.00 (-145.99)
Tata Mutual Fund	3315.00	6683.00 (101.60)	-4184.00 (-162.61)	446.00 (110.66)	-1107.00 (-348.21)	-1065.00 (3.79)	-2644.00 (-148.26)	2879.00 (208.89)	1835.00 (-36.26)
UTI Mutual Fund	7326.00	9820.00 (34.04)	-3658.00 (-137.25)	12499.00 (441.69)	-13555.00 (-208.45)	-3394.00 (74.96)	4629.00 (236.39)	401.00 (-91.34)	-1278.00 (-418.70)

Notes: 1. Figures in the table relate to the status as on 31st March of the respective years.

2. Figures in the parentheses represent the percentage growth in net resources mobilised over the previous year.

Source: Based on the data collected from Securities and Exchange Board of India: *Hand Book of Statistics*, various issues

Table C-5 presents the net resources mobilised by the select eight fund houses during 2007 to 2015. It reveals that HDFC Mutual Fund and Birla Sun Life Mutual fund had a close completion in mobilizing resources in all the eight years studied. During 2007, UTI Mutual Fund (₹7,326 crores) mobilised the highest volume of resources followed by HDFC Mutual Fund (₹6,610 crores) and Birla Sun Life Mutual Fund (₹5,187 crores). LIC Nomura Mutual Fund (₹4,158 crores) and Tata Mutual Fund (₹3,315 crores) also made an impressive amount of mobilisation of resources. JM Financial Mutual Fund (₹453 crores) was lagging behind than the rest of the fund houses to a large extent while LIC Nomura Mutual Fund [(-) ₹97 crores] had a net out flow of resources during 2007. In the year 2008, though most of the fund houses (except LIC Nomura Mutual Fund and Baroda Pioneer Mutual Fund) made remarkable strides in mobilising resources as compared to 2007, but HDFC Mutual Fund (₹15,789 crores) and Birla Sun Life Mutual Fund (₹14,551 crores) were way ahead than others in absolute terms. Though all the fund houses experienced fall in mobilisation of resources during 2009 following the outbreak of financial crisis in 2008, Baroda Pioneer Mutual Fund achieved remarkable growth (1,563 per cent) in the same. The worst performance was exhibited by Franklin Templeton Mutual Fund which experienced more than 250 per cent fall in net resource mobilisation over the previous year. In 2010, except LIC Nomura Mutual Fund, all other fund houses recorded impressive growth with UTI Mutual Fund (₹12,499 crores) and Birla Sun Life Mutual Fund (₹124,93 crores) leading the league followed by HDFC Mutual Fund (₹11,831 crores) in absolute terms. 2011 was found to be the year of worst performance for all the studied fund houses during which all of them were found to experience net outflow of funds and it was maximum for LIC Nomura Mutual Fund (-437 per cent). In 2012 too, five out of eight fund houses experienced negative growth in net resource mobilisation. However, HDFC Mutual Fund achieved its highest growth during the study period both in percentage and absolute terms in the same year along with Baroda Pioneer Mutual Fund and

Franklin Templeton Mutual Fund. The situation improved during 2013, though few fund houses were found to continue with the net outflow of funds in this year too. The highest net resource mobilisation was recorded by Birla Sun Life Mutual Fund (₹7,492 crores) followed by HDFC Mutual Fund (₹5,267 crores) and UTI Mutual Fund (₹4,629 crores) while Tata Mutual Fund [(-)₹2,644 crores] and JM Financial Mutual Fund [(-)₹276 crores] experienced net outflow of resources. Franklin Templeton Mutual Fund (713 per cent) recorded the highest growth in net resource mobilisation in percentage term in the same year. During 2014 too, Birla Sun Life Mutual Fund (₹8,651 crores) had the highest net resource mobilisation followed by HDFC Mutual Fund (₹5,282 crores) and Franklin Templeton Mutual Fund (₹4,834 crores). However, Tata Mutual Fund topped the list with 208 per cent rise in net resource mobilisation over the previous year. 2015 was found to be a great year for many of the studied fund houses as the net resource mobilisation increased manifold. JM Financial Mutual Fund (7,827 per cent) recorded the highest growth of net resources mobilised during the year followed by HDFC Mutual Fund (213 per cent) and Franklin Templeton Mutual Fund (105 per cent). Birla Sun Life Mutual Fund with ₹17,205 crores of net resource mobilisation, topped the list in absolute terms in the same year. Unfortunately, Baroda Pioneer Mutual Fund, LIC Nomura Mutual Fund and UTI Mutual Fund could not take the advantage of the good condition of the market as they experienced net outflow of resources.

Table C-6 represents the ranks of the fund houses in terms of net resources mobilised during 2007 – 2015.

Table C-6: Ranks of Fund Houses in terms of Net Resources Mobilised during 2007-2015

Fund House	Year-wise Net Resource Mobilised by Mutual Funds (₹ in Crores) (as on 31st March)									Total net Resources mobilised during 2007-2015 (₹ in crores)	Rank in terms of Total net Resources mobilised during 2007-2015
	2007	2008	2009	2010	2011	2012	2013	2014	2015		
Baroda Pioneer Mutual Fund	-97	-38	556	1288	-520	337	1377	301	-1565	1639	**7**
Birla Sun Life Mutual Fund	5187	14551	6634	12493	-4737	-1784	7492	8651	17205	65692	**2**
Franklin Templeton Mutual Fund	4334	1753	-2650	5775	-1769	438	3565	4834	9948	26228	**3**
HDFC Mutual Fund	6610	15789	7440	11831	-2970	11409	5267	5282	16543	77201	**1**
JM Financial Mutual Fund	453	8619	-4903	1395	-3590	-45	-276	-66	5100	6687	**5**
LIC Nomura Mutual Fund	4158	2190	5852	4871	-16423	-3099	1312	2272	-1045	88	**8**
Tata Mutual Fund	3315	6683	-4184	446	-1107	-1065	-2644	2879	1835	6158	**6**
UTI Mutual Fund	7326	9820	-3658	12499	-13555	-3394	4629	401	-1278	12790	**4**

Source: Compiled on the basis of data furnished in Table C-5.

Table C-6 exhibits the ranks of the fund houses in terms of net resources mobilised during 2007 – 2015. It is observed from the table that on the basis of total net resource mobilisation, HDFC Mutual Fund (₹77,201 crores) tops the list followed by Birla Sun Life Mutual Fund (₹65,692 crores). Franklin Templeton Mutual Fund recorded a total net mobilisation of resources of ₹26,228 crores and is ranked 3 followed by UTI Mutual Fund (₹12,790 crores), JM Financial Mutual Fund (₹6,687 crores), Tata Mutual Fund (₹6,158 crores), and Baroda Pioneer Mutual Fund (₹1,639 crores). With only ₹88 crores of total net resource mobilisation, LIC, Nomura Mutual Fund is ranked 8.

Table C-7 shows the composite ranking of the selected fund houses in terms of the adopted performance parameters.

Table C-7: Composite Ranks of Fund Houses in terms of the Adopted Performance Parameters

Fund House	Rank in terms of Net Accretion to AUM during 2007-2015	Rank in terms of Total of net Resources mobilised during 2007-2015	Composite Rank
HDFC Mutual Fund	1	1	**1**
Birla Sun Life Mutual Fund	2	2	**2**
UTI Mutual Fund	3	4	**3**
Franklin Templeton Mutual Fund	4	3	**4**
Tata Mutual Fund	5	6	**5**
JM Financial Mutual Fund	6	5	**5**
Baroda Pioneer Mutual Fund	7	7	**7**
LIC Nomura Mutual Fund	8	8	**8**

Source: Compiled on the basis of data furnished in tables C-4 and C-6.

Table C-7 presents the composite ranks of the selected fund houses in terms of the adopted performance parameters. It is evident from the table that HDFC mutual Fund is ranked one on both the adopted parameters and hence is able top the list of the composite performance ranking. Birla Sun Life Mutual Fund too because of its consistent ranking in terms of both the adopted parameters,

is ranked 2 followed by UTI Mutual Fund and Franklin Templeton Mutual Fund, which are ranked 3 and 4 respectively. Tata Mutual Fund and JM Financial Mutual Fund are found to have equal level of performance and as a result both the fund houses are ranked 5. Baroda Pioneer Mutual Fund and LIC Nomura Mutual Fund secured the 7th and 8th rank respectively.

3.3 PERFORMANCE OF THE SCHEMES OF SELECT FUND HOUSES

In order to verify the findings on performance of fund houses as obtained in the previous section, a comparison of the performance of the schemes offered by two fund houses, namely, the HDFC Mutual Fund and the LIC Nomura Mutual Fund, which ranked at the top and at the bottom respectively in terms of performance (*cf*., Table C-7) is undertaken in this section. As both the fund houses are found to have large numbers of schemes, only those schemes that are Open-ended, Equity oriented, and Sensex benchmarked offering Growth options under the category of direct plan and were launched prior to 1st April, 2004 are considered for the comparison. Based on these criteria, a set of nine schemes are identified from Capitaline NAV Database. The names of the schemes are mentioned below:

Schemes of HDFC Mutual Fund:

- HDFC Growth Fund (G)
- HDFC Index Fund-Sensex Plan
- HDFC Index Fund-Sensex Plus Plan
- HDFC Long Term Advantage Fund (G)

Schemes of LIC Nomura Mutual Fund:

- LIC NOMURA MF Equity Fund - (G)
- LIC NOMURA MF Growth Fund (G)
- LIC NOMURA MF Index - Sensex Advantage (G)
- LIC NOMURA MF Index Fund - Sensex Plan (G)
- LIC NOMURA MF Tax Plan - (G)

3.3.1 Performance Evaluation Techniques Used

The tools of analysis used in this study are detailed below:

(i) Portfolio Return (R_p): Portfolio return refers to the yield from the selected growth schemes with growth option. Portfolio returns are calculated on the basis of changes in the NAV on daily basis. Average of such daily returns are calculated for the entire study period as follows:

$$R_p = \frac{NAV_t - NAV_{t-1}}{NAV_{t-1}}$$

Where, R_p = Portfolio return on daily basis

t = Time period.

(ii) Market Return (R_m): Market return is calculated on the basis of the changes in BSE Sensex on a daily basis and the average of such daily returns are calculated for the entire period of the study. BSE Sensex was used as a benchmark for the selected growth schemes as it is popularly and widely considered as a market proxy or benchmark for the purpose of academics, research and practising fund managers. The market return is calculated as follows:

$$R_m = \frac{Market\ Index_t - Market\ Index_{t-1}}{Market\ Index_{t-1}}$$

(iii) Risk-free Return (R_f): Risk-free return is the return available from zero risk investment avenues like treasury bills and bank deposits. For the present study, the average return on 91-days treasury bills

auctioned by the RBI during the entire period of the study is considered as the risk-free rate of return.

(iv) Risk**:** Risk is the uncertainty and variability of returns/capital appreciation or loss of both. Total risk is measured with the help of standard deviation of both scheme and market returns. The total risk of an investment consists of two components: Diversifiable and non-diversifiable risk.

Diversifiable (Unsystematic) risk represents that portion of an investment's risk that can be eliminated by holding enough number of varied types of securities. It is calculates as:

$$Unsystematic\ Risk = \left(\sigma_p^2\right) - (\beta^2 \times \sigma_m^2)$$

Where, σ_p is the Standard deviation of the scheme's return,

σ_m is the Standard deviation of the market return.

Non-diversifiable (Systematic) risk is that part of total variability in returns caused by changes in the macro-economic variables like variability of growth in money supply, interest rate volatility, and variability in such factors as industrial production, corporate earnings and corporate cash flow. That is, systematic risk is not unique to an investment avenue and is unavoidable. Each security possesses its own level of systematic risk, which is measured by using beta coefficient.

$$Systematic\ Risk = \beta^2 \times {\sigma_p}^2$$

Beta reflects how volatile the return from an investment is in response to market swings. It measures the impact of market forces on return expected from funds. Beta is calculated by relating portfolio return with market return using regression analysis. Beta

values greater than one depicts high sensitivity of the scheme's returns against the market being aggressive. Beta value less than one indicates defensive nature of the schemes. The regression slope coefficient from the Characteristic Regression Line (CRL) measures the systematic risk of an asset. The CAPM is applied to compute beta value from the following equation:

$$R_i = \alpha + \beta R_m + e$$

3.3.2 Adopted Performance Evaluation Models

The models of analysis, (as adopted from the review of literature) which are used for the evaluation of performance of the selected schemes, are discussed below:

(i) Sharpe Index (S_t): Sharpe index measures the risk premium of the portfolio with reference to the total amount of risk. The index $\boldsymbol{S_t}$ measures the slope of the line emanating from the risk-free rate outward the portfolio. The larger the $\boldsymbol{S_t}$, the better the portfolio has performed. $\boldsymbol{S_t}$ is the reward to variability of the scheme's total risk and is a summary measure of scheme's performance adjusted for risk.

$$S_t = \frac{R_p - R_f}{\sigma_p}$$

where, S_t = Sharpe Index

R_p= Average return on portfolio 'p'

R_f= Risk-free rate of return

σ_p= Risk involved in portfolio 'p'

(ii) Treynor Index (T_t): It sums up the risk and return of a portfolio in a single number. The index measures the slope of the line emanating outward from the risk-free rate to the portfolio under consideration. Treynor index is a reward to volatility of the portfolio. The

characteristic line relates the market return to a specific portfolio return without any direct adjustment for risk. This line can be fitted through a least square regression involving single market portfolio. To use Treynor's measure, first the Characteristic Regression Line of the portfolios are fixed by estimating the following equation:

$$R_p = \alpha_p + \beta_p R_m + e_p$$

Where,

R_p = Return on portfolio 'p'

α_p = Intercept coefficient for portfolio

β_p = Portfolio's beta coefficient

R_m = Return on market index

e_p = Random error term for portfolio 'p'

The Treynor Index (T_t) is written as:

$$T_t = \frac{R_p - R_f}{\beta_p}$$

(iii) Jensen's Alpha (α): Jensen constructed a measure of absolute performance on a risk adjusted basis while Sharpe and Treynor models provided measure for ranking the relative performance of various portfolios on a risk-adjusted basis. The Jensen's Alpha is determined by applying the market model in difference form. In computing the Jensen's alpha, the excess return of portfolio 'p' is regressed against the excess return of the market portfolio.

$$(R_p - R_f) = \alpha_p + \beta_p(R_m - R_f) + e_p$$

where:

R_p = Return on portfolio 'p',

R_f = Risk-free rate of return,

α_p = Intercept of the characteristic line,

β_p = Beta coefficient for portfolio 'p',

R_m = Return on market portfolio.

e_p = Error term.

The intercept, α_p, is Jensen's Alpha and is based on the excess return of a security or portfolio relative to that of the excess return of the market. The interpretation of Jensen's Alpha is based on the sign of α_p and its statistical significance. For a portfolio to have a risk-adjusted return superior to the market, α_p must be positive and statistically significant. A negative and significant α_p indicates performance below that of market portfolio. If α_p is statistically insignificant, the portfolio has performed as well as the market.

(iv) Eugene Fama's Decomposition of Performance: Eugene Fama provides for an analytical framework enabling for a detailed break-up of a fund's performance into the components of total returns to identify the impact of different skills involved in active portfolio management. It segregates the total return into risk-free rate of return, return due to market risk and return emanating from the stock selection ability (selectivity) of the manager at a given level of risk. This can be illustrated as below:

$$R_p = R_f + \beta_p(R_m - R_f) + \left(\frac{\sigma_p}{\sigma_m} - \beta\right)(R_m - R_f) + (R_p - R_f) - (\frac{\sigma_p}{\sigma_m})(R_m - R_f)$$

Total return = Risk-free return (R_f) + Excess Return

Excess return = Risk premium + Return from Pure Stock Selectivity (R_3)

Risk premium = Return for bearing Systematic risk (R_1) + Return for bearing Unsystematic risk (R_2)

Return for Systematic risk (R_1) = β_p ($R_m - R_f$)

Return for Unsystematic risk (R_2) = $\left[\left(\frac{\sigma_p}{\sigma_m}\right) - \beta_p\right] \times (R_m - R_f)$

Return from pure Stock Selectivity (R_3) = $R_p - (R_f + R_1 + R_2)$

As per Fama (1972), selectivity i.e. stock selection ability of the fund managers can again be decomposed into two parts, viz. compensation for diversification

and net selectivity. In fact, greater the diversification achieved by a fund, lesser would be the compensation for inadequate diversification and vice-versa. This may be close to zero for a well-diversified fund and will always take on a non-negative value otherwise. As a result, net selectivity, which is the difference between the selectivity and the compensation for inadequate diversification, can always be less than or equal to that of the selectivity. A positive net selectivity represents superior return even after the extra return required for inadequate diversification. On the other hand, negative net selectivity denotes that the fund manager has failed to earn even a part of the return required for inadequate diversification.

Table C-8 presents the evaluation of selected mutual fund schemes in terms of the return, the risk and the expense ratio.

Table C-8: Evaluation of Selected MF Scheme Performance: The Return, the Risk, and the Expense Ratio

Name of the Schemes	Return (%)	Risk	Expense Ratio (%)
HDFC Long Term Advantage Fund (G)	19.23	1.32	2.57
HDFC Growth Fund (G)	18.76	1.37	2.51
HDFC Index Fund-Sensex Plus Plan	17.73	1.43	1.06
Benchmark (Sensex) Return	**16.38**	**1.62**	
HDFC Index Fund-Sensex Plan	15.34	1.57	0.69
LIC NOMURA MF Growth Fund (G)	14.17	1.58	2.7
LIC NOMURA MF Index Fund - Sensex Plan (G)	14.13	1.57	1.7
LIC NOMURA MF Index - Sensex Advantage (G)	12.93	1.44	1.7
LIC NOMURA MF Equity Fund - (G)	12.41	1.64	2.7
LIC NOMURA MF Tax Plan - (G)	10.83	1.58	2.7

Notes:
1. Returns of the schemes are calculated on the basis of the formula explained in the point no. (i) of sub-section 3.3.1 earlier in this Chapter.
2. The Benchmark (Sensex) return is calculated by applying the formula mentioned in the point no. (ii) of sub-section 3.3.1.
3. The risk of the schemes is calculated by taking the standard deviation of the schemes' returns.
4. The expense ratio is the percentage of total asset that are spent to run a mutual fund. The information about expense ratio of the selected schemes is collected from the Capitaline NAV database.

Sources:
1. Schemes' return Calculated on the basis of the NAV-data of the selected schemes collected from the Capitaline NAV Database.
2. Sensex closing values are obtained from Bombay Stock Exchange (www.bseindia.com)

Table C-8 compares the performance of the selected mutual fund schemes in terms of the return, the risk and the expense ratio. It is clearly evident from the table that HDFC Long Term Advantage Fund produced the highest return (19.23 per cent) amongst all the nine schemes under consideration followed by HDFC Growth Fund (18.76 per cent) and HDFC Index Fund – Sensex Plus Plan (17.73 per cent). Moreover, it is found that the market return during the same period was 16.38 per cent which could be exceeded by only these three schemes of HDFC Mutual Fund. No scheme of LIC Nomura Mutual Fund could generate return either more than or equal to that of the market. The best scheme of LIC Nomura Mutual Fund is found to be worse than the worst scheme of HDFC Mutual Fund. Moreover, the risks associated with the schemes managed by LIC Nomura Mutual Fund were found to be higher than those of the schemes under management of HDFC Mutual Fund. In terms of expense ratio also, LIC Nomura Mutual Fund is found to charge more than that of HDFC Mutual Fund.

Table C-9 compares the performance of the selected mutual fund schemes in terms of the Sharpe and Treynor Ratio.

Table C-9: Comparison of the Performance of the Selected MF Schemes in terms of Sharpe and Treynor Ratio

Name of Schemes	Beta Value*	Sharpe Ratio #	Treynor Ratio @
HDFC Growth Fund (G)	0.79	0.0345	0.0598
HDFC Index Fund-Sensex Plan	0.92	0.0214	0.0365
HDFC Index Fund-Sensex Plus Plan	0.82	0.0302	0.0524
HDFC Long Term Advantage Fund (G)	0.70	0.0375	0.0700
LIC NOMURA MF Equity Fund - (G)	0.94	0.0131	0.0228
LIC NOMURA MF Growth Fund (G)	0.90	0.0181	0.0320
LIC NOMURA MF Index - Sensex Advantage (G)	0.85	0.0164	0.0278
LIC NOMURA MF Index Fund - Sensex Plan (G)	0.94	0.0181	0.0304
LIC NOMURA MF Tax Plan - (G)	0.90	0.0095	0.0166

* Represents the sensitivity of the schemes return to the market and is obtained by regressing the schemes return over market return

Obtained by employing the equation explained in the point no. (i) of sub-section 3.3.2.

@ Obtained by employing the equation explained in the point no. (ii) of subsection 3.3.2.

Source: Compiled on the basis of data collected from Capitaline NAV database, Reserve Bank of India (www.rbi.org.in)and Bombay Stock Exchange (www.bseindia.com).

Table C-9 presents the analysis of the selected mutual fund schemes' performance on the basis of Sharpe and Treynor ratio. In terms of both the ratios, it is evident from the table that, all the four schemes of HDFC Mutual Fund performed much better than those managed by LIC Nomura Mutual Fund.

Table C-10 depicts the ranking of the selected mutual fund schemes in terms of return, Sharpe Index and Treynor Index.

Table C-10: Ranking of the Selected MF Schemes in terms of Return, Sharpe Index and Treynor Index

Name of Schemes	Ranking on the basis of		
	Return	Sharpe Index	Treynor Index
HDFC Growth Fund (G)	2	2	2
HDFC Index Fund-Sensex Plan	4	4	4
HDFC Index Fund-Sensex Plus Plan	3	3	3
HDFC Long Term Advantage Fund (G)	1	1	1
LIC NOMURA MF Equity Fund - (G)	8	8	8
LIC NOMURA MF Growth Fund (G)	5	5	5
LIC NOMURA MF Index - Sensex Advantage (G)	7	7	7
LIC NOMURA MF Index Fund - Sensex Plan (G)	6	5	6
LIC NOMURA MF Tax Plan - (G)	9	9	9

Source: Compiled on the basis of data furnished in Table C-8 and Table C-9.

Table C-10 ranks the selected mutual fund schemes of both HDFC Mutual Fund and LIC Nomura Mutual Fund on the basis of average return, Sharpe Index and Treynor Index. It can be observed from the table that, in terms of all the three parameters, the schemes managed by HDFC Mutual Fund are better placed than those managed by LIC Nomura Mutual Fund.

Table C-11 presents the performance of the selected mutual fund schemes on the basis of Jensen Alpha.

Table C-11: Performance of the Selected MF Schemes on the Basis of Jensen Alpha

Name of Schemes	Jensen Alpha *	p-Value	Rank
HDFC Growth Fund (G)	0.02	0.02	2
HDFC Index Fund-Sensex Plan	0.00	1.00	12
HDFC Index Fund-Sensex Plus Plan	0.02	0.12	5
HDFC Long Term Advantage Fund (G)	0.03	0.02	1
LIC NOMURA MF Equity Fund - (G)	-0.01	0.27	19
LIC NOMURA MF Growth Fund (G)	0.00	0.80	14
LIC NOMURA MF Index - Sensex Advantage (G)	-0.01	0.54	16
LIC NOMURA MF Index Fund - Sensex Plan (G)	-0.01	0.44	17
LIC NOMURA MF Tax Plan - (G)	-0.02	0.14	20

*Obtained by employing the equation mentioned earlier in point no. (iii) of sub-section 3.3.2.

Source:
1. Compiled on the basis of NAV data of schemes collected from the Capitaline NAV Database.
2. Risk-free return data obtained from Reserve Bank of India (www.rbi.org.in).
3. Market return is calculated on the basis of Sensex closing values collected from Bombay Stock Exchange (www.bseindia.com)

Table C-11 represents the performance of the selected mutual fund schemes by using Jensen's Alpha. It is evident from the table that all the four schemes managed by HDFC Mutual Fund scored positive alpha whereas four out of the five schemes managed by LIC Nomura Mutual Fund scored negative alpha. For the remaining one scheme, the alpha value is found to be zero. There are two schemes managed by HDFC Mutual Fund for which the alpha values are found to be statistically significant, mean that these two schemes surpassed the return generated by the benchmark index Sensex and can be attributable to the superior fund management skills of the fund managers. The rest of the two schemes, for which the alpha value is found to be positive but not statistically significant, could generate return as good as the market. LIC Nomura MF Growth Fund for which the alpha value is found to be zero reveals that the fund manager of this scheme has no contribution in the performance of the scheme. Moreover, LIC Nomura MF Equity Fund, LIC Nomura MF Index - Sensex Advantage, LIC Nomura MF Index Fund - Sensex Plan and LIC Nomura

MF Tax Plan, for which the alpha value is found to be negative indicate that the performance of these schemes fell short of market which may be attributable to the inferior fund management skills of the portfolio managers of the respective schemes.

Table C-12 represents the performance of the selected MF schemes on the basis of Fama Decomposition Model.

Table C-12: Performance of the Selected MF Schemes on the basis of Fama Decomposition Model

Name of Schemes	Return* from				Ranking on the basis of Net Selectivity	Ranking on the basis of Selectivity
	Systematic Risk (R1)	Unsystematic Risk (R2)	Net Selectivity (R3)	Selectivity (R1+R2+R3)		
HDFC Growth Fund (G)	0.0310	0.0021	0.0143	0.0474	3	3
HDFC Index Fund-Sensex Plan	0.0359	0.0019	-0.0043	0.0335	12	12
HDFC Index Fund-Sensex Plus Plan	0.0322	0.0023	0.0087	0.0432	6	6
HDFC Long Term Advantage Fund (G)	0.0275	0.0042	0.0176	0.0493	2	2
LIC NOMURA MF Equity Fund - (G)	0.0368	0.0029	-0.0181	0.0215	17	17
LIC NOMURA MF Growth Fund (G)	0.0350	0.0032	-0.0095	0.0287	14	13
LIC NOMURA MF Index - Sensex Advantage (G)	0.0332	0.0015	-0.0347	0.0000	20	20
LIC NOMURA MF Index Fund - Sensex Plan (G)	0.0367	0.0013	-0.0095	0.0285	13	14
LIC NOMURA MF Tax Plan - (G)	0.0353	0.0028	-0.0231	0.0150	19	18

* Calculated on the basis of the model suggested by Eugene Fama (1972) which is discussed in detail in the point no (iv) of sub-section 3.3.2.

Source: Compiled on the basis of data collected from Capitaline NAV database, Reserve Bank of India (www.rbi.org.in)and Bombay Stock Exchange (www.bseindia.com).

Table C-12 exhibits the selected MF schemes' performance on the basis of Fama Decomposition of Total Returns. Following this table, it is revealed that return expected by the investors of mutual funds consists of three components; Risk-free rate of return, expected additional return for assuming market risk (Risk premium), and expected additional return for inadequate

diversification. Excess of the actual return over expected return of the portfolio, can be contributed to the superior stock selectivity of the portfolio manager and is known as Net Selectivity.

Analysing the Fama's components on investment performance, it is evident that expected risk premium i.e. β (R_m-R_f) for the schemes are very high with a maximum of 3.68 per cent for LIC Nomura MF-Equity Fund and minimum of 2.75 per cent for HDFC Long Term Advantage Fund. In average, risk premium expected is found to be very high (3.37 per cent) and takes away a substantial portion of the actual average return (5.88 per cent) earned by the scheme throughout the study period. This is mainly because of the high systematic risk assumed by the schemes as represented by their beta values (Table C-9) close to 1. It may be noted that the beta value is particularly very high for almost all the index funds, as the portfolio of an index fund replicates the composition of an index and thus shadows it, and which makes the funds to have a relatively higher expected risk premium than other funds.

It is very important to note also that all the schemes, which have shown negative selectivity following the Jensen criterion (Table C-11), have scored negative selectivity values following the Fama measure too. Moreover, all the four schemes of HDFC Mutual Fund have displayed better stock selection ability than those of LIC Nomura Mutual Fund following the Fama model.

In the net selectivity front, three of the four schemes of HDFC Mutual Fund scored positive net selectivity indicating superior stock selection ability of their fund managers. But, in case of LIC Nomura Mutual Fund, all the schemes have displayed negative net selectivity reflecting the inferior stock selection ability of the fund manager(s) of the fund.

Table C-13 presents the overall ranking of the selected mutual funds schemes based on the observed performance scores.

Table C-13: Overall Ranking of the Selected MF Schemes Based on the Observed Performance Scores

Mutual Fund Schemes	Ranking of Schemes on the basis of							Overall Rank
	Return	Sharpe Index	Treynor Index	Jensen Alpha	Fama Net Selectivity	Fama Selectivity	Sum of Ranks	
HDFC Growth Fund (G)	2	2	2	2	2	2	12	2
HDFC Index Fund-Sensex Plan	4	4	4	4	4	4	24	4
HDFC Index Fund-Sensex Plus Plan	3	3	3	3	3	3	18	3
HDFC Long Term Advantage Fund (G)	1	1	1	1	1	1	6	1
LIC NOMURA MF Equity Fund - (G)	8	8	8	8	7	7	46	8
LIC NOMURA MF Growth Fund (G)	5	5	5	5	6	5	31	5
LIC NOMURA MF Index - Sensex Advantage (G)	7	7	7	6	9	9	45	7
LIC NOMURA MF Index Fund - Sensex Plan (G)	6	5	6	7	5	6	35	6
LIC NOMURA MF Tax Plan - (G)	9	9	9	9	8	8	52	9

Source: Compiled on the basis of the ranking of the schemes in terms of the adopted performance evaluation models.

Table C-13 presents the overall ranking of the selected MF schemes based on the observed performance scores. It is observed from the table that schemes of HDFC Mutual Fund have better scores on all the adopted performance measurement criteria than those of LIC Nomura Mutual Fund.

Table C-14 presents the composite performance ranking of the selected mutual fund schemes.

Table C-14: The Nine MF Schemes Arranged in order of their Composite Performance Ranking

Fund House	Composite rank
HDFC Long Term Advantage Fund (G)	1
HDFC Growth Fund (G)	2
HDFC Index Fund-Sensex Plus Plan	3
HDFC Index Fund-Sensex Plan	4
LIC NOMURA MF Growth Fund (G)	5
LIC NOMURA MF Index Fund - Sensex Plan (G)	6
LIC NOMURA MF Index - Sensex Advantage (G)	7
LIC NOMURA MF Equity Fund - (G)	8
LIC NOMURA MF Tax Plan - (G)	9

Source: Compiled on the basis of the data furnished in Table C-13.

Table C-14 ranks the schemes of the two selected fund houses on the basis of the adopted performance evaluation criteria. As there exist significant disagreement among the scholars about the capacity of individual performance evaluation model to accurately measure the mutual funds scheme performance, the composite ranking of the schemes of the two selected fund houses is ascertained by taking the summation of the ranks obtained by each scheme in each of the model adopted. It can be observed from the above table that schemes managed by HDFC Mutual Fund performed much better than the schemes of LIC Nomura Mutual Fund. The result obtained by evaluating the scheme performance substantiates the proposition that fund house having better performance in terms of total net accretion to AAUM and total net resources mobilised also had their schemes performed better than others.

3.4. SUMMING UP THE FINDINGS

The observations in this chapter are summed up below:

1. Although, the growth of the mutual fund industry was assessed earlier for the period 2004-05 to 2014-15, by keeping in view the availability of data on a consistent basis, for measuring the performance of select fund houses, the period 2007-2015 was specifically considered. Also based on the availability of data, eight fund houses were purposively selected for intensive examination of performance and disclosure practices. These eight fund houses were:

    (i) Baroda pioneer Mutual Fund,

    (ii) Birla Sun Life Mutual Fund,

    (iii) Franklin Templeton Mutual Fund

    (iv) HDFC Mutual Fund,

    (v) JM Financial Mutual Fund,

(vi) LIC Nomura Mutual Fund,

(vii) Tata Mutual Fund, and

(viii) UTI Mutual Fund.

The eight fund houses together collectively accounted for 42.08 per cent of the Average Asset under Management (AAUM) as on 31st March, 2015 and 45.25 per cent of the net resources mobilized by the whole industry during the year 2015.

2. Based on the review of literature, the following two parameters were adopted for measuring the performance of the eight fund houses:
   i) Net accretion to average assets under management (AAUM), and
   ii) Net resource mobilisation.

3. Total net accretion to AAUM during 2007-2015 for the eight selected fund houses taken together was found to be ₹ 3,56,06,848 lakhs to which HDFC Mutual Fund had the largest share (36.5 per cent) and was ranked at the top. Birla Sun Life Mutual Fund, which contributed 27.6 per cent to the total net accretion to AAUM, secured the second position followed by UTI Mutual Fund (15.3 per cent), Franklin Templeton Mutual Fund (13.3 per cent), Tata Mutual Fund (3.7 per cent), JM Financial Mutual Fund (2.4 per cent) and Baroda Pioneer Mutual Fund (2.0 per cent). LIC Nomura Mutual Fund, which was found to have negative net accretion to AAUM [(-) ₹2,27,311] during the period of the study, was ranked at the bottom in terms of total net accretion to AAUM.

4. In terms of total net resource mobilisation, HDFC Mutual Fund mobilised a total net resources of ₹77,201 crores, which was found to be the highest amongst the eight studied fund houses, and was ranked at the top. The second position was found to be secured by Birla Sun

Life Mutual Fund which could mobilise a net resource of ₹65,692 crores, and was ranked second followed by Franklin Templeton Mutual Fund (₹26,228 crores), UTI Mutual Fund (₹12,790 crores), JM Financial Mutual Fund (₹6,687 crores), Tata Mutual Fund (₹6,158 crores), and Baroda Pioneer Mutual Fund (₹1,639 crores). LIC Nomura Mutual Fund was found to mobilise the lowest amount of net resources (₹88 crores) and was ranked at the bottom.

5. The composite performance index constructed on the basis of the adopted performance parameters ranked HDFC Mutual Fund at the top followed by Birla Sun Life Mutual Fund, UTI Mutual Fund, Franklin Templeton Mutual Fund, Tata Mutual Fund, JM Financial Mutual Fund, and Baroda Pioneer Mutual Fund. LIC Nomura Mutual Fund was ranked 8th in terms of composite performance index too.

6. In order to verify the findings of performance of fund houses as obtained by applying the adopted performance parameters, namely, net accretion to AAUM and net resource mobilisation, a comparison of the performance of the schemes offered by two fund houses, namely, the HDFC Mutual Fund and the LIC Nomura Mutual Fund, which ranked at the top and at the bottom respectively in terms of performance, was undertaken. As both the fund houses were found to have large numbers of schemes, only those schemes that are Open-ended, Equity oriented, and Sensex benchmarked offering Growth options under the category of direct plan and were launched prior to 1st April, 2004 were considered for the comparison. Based on these criteria, a set of nine schemes were identified from Capitaline NAV Database. The names of the schemes are mentioned below:

   Schemes of HDFC Mutual Fund:

   - HDFC Growth Fund (G)

- HDFC Index Fund-Sensex Plan
- HDFC Index Fund-Sensex Plus Plan
- HDFC Long Term Advantage Fund (G)

Schemes of LIC Nomura Mutual Fund:

- LIC NOMURA MF Equity Fund - (G)
- LIC NOMURA MF Growth Fund (G)
- LIC NOMURA MF Index - Sensex Advantage (G)
- LIC NOMURA MF Index Fund - Sensex Plan (G)
- LIC NOMURA MF Tax Plan - (G)

7. The performance of each of these nine schemes was evaluated with the help of Sharpe Index, Treynor Index, Jensen Alpha and Fama Decomposition model. The composite performance ranking of the schemes of the two selected fund houses was ascertained on the basis of the sum of the ranks obtained by each scheme in each of the adopted models.

8. The composite performance ranking of the selected schemes on the basis of the adopted performance evaluation models revealed that the selected four schemes of HDFC Mutual Fund outperformed the five selected schemes of LIC Nomura Mutual Fund which corroborates to the performance analysis of the fund houses measured in terms of net accretion to AAUM and net resource mobilisation.

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