Chapter - I

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1.1 Introduction

Mutual fund is an investment company or trust that pools the resources from thousands of its unit holders, who share common investment goal, and then diversifies its investments into different types of securities in order to realize potential returns with reasonable safety.

Within a short span of time, mutual fund operation has become an integral part of the Indian financial scene and is poised for rapid growth in the near future. The mutual fund industry has been remarkably resilient over the last decade inspite of varying economic conditions, capital market scams and increasing competitions. Today numerous schemes, tailored to meet the diversified needs of savers, are being offered by many institutions. The Indian mutual fund industry has witnessed a structural transformation during the past few years. Therefore, it becomes important to examine the performance of the industry in the changed environment.

SEBI regulations, 1993 defines a mutual fund as “a fund in the form of a trust by a sponsor, to raise money by the trustee’s through the sale of units to the public, under one or more schemes, for investing in securities in accordance with these regulations”.

The performance appraisal of mutual funds is a matter of concern to the fund managers, investors and researchers. Proper evaluation measures will help small investors to decide the level of investment in various mutual fund schemes, so as to
maximize the returns. Further, growing competition in the market, forces the fund managers to satisfy themselves and the management.

1.2 Need for the study

In the present scenario, most of the corporates have been reportedly tapping the Mutual fund route as a reliable source of finance. In the era of globalization, rapid price fluctuations are occurring in assets like shares, bonds, real estate, derivatives, etc., and an individual also finds it difficult to keep track of ownership of his investments, brokerage dues bank transactions, etc. In this context, mutual funds are the solution, which help the small and medium size investors to participate in today's complex and modern financial scenario.

With the increase in savings and improvement in the deployment of investment through markets, the need and scope for mutual fund operation have increased tremendously. Another important reason is that the dividends and capital gains are reinvested automatically in mutual funds and, hence, are not frittered away. Mutual funds also create awareness among the urban and rural middle-class about the benefits of investment in capital markets through profitable and safe avenues, and are able to gather a large amount of their surplus funds. These funds play a significant role in financial intermediation, development of capital markets and growth of the financial sector as a whole. The active involvement of mutual funds in economic development can be seen by their dominant presence in the money and the capital market.

The lowering of interest rates by the Government on different instruments, which generally are looked up for savings purpose by the small investors, has prepared the bed for long innings expected to be played by mutual funds in India.
Since a majority of the general investors do not have the expertise to select their portfolio of investment in shares and debt instruments, the alternative open to them is to make investment in mutual funds and get the benefit of the expertise of the professional fund managers.

The whopping corpus of funds under management surfaces two hard facts. Firstly, the investors still carry a belief of mutual funds providing better return opportunity coupled with good safety of invested money. Secondly, the environment is getting more and more conducive for fund mobilization by mutual funds because of active role being played by SEBI and Association of Mutual Funds for India (AMFI) in controlling their work by imposing more accountability on them. The time is fully ripe now to float tailor-made mutual fund schemes for different categories of investors. Hence an attempt has been made to evaluate the behavior of returns and performance of various mutual fund schemes on different parameters.

1.3 Review of Literature

A number of studies have been conducted to evaluate the performance of mutual fund schemes. Some of the earlier studies and articles published related to the study are presented in this section:

**Friend, et al., (1962)** have done an extensive and systematic study of mutual funds. The study considered 152 mutual funds with annual data from 1953 to 1958. Using their own benchmark, the authors found that mutual funds earned an (unweighted) average annual return of 12.4 percent, while their composite benchmark earned a return of 12.6 percent. Their alpha-of sorts was a negative 20 basis points. On the whole, it revealed that overall results did not suggest widespread inefficiency...
in the industry. The study also compared returns of the funds across turnover categories and expense categories. The analysis did not reveal a strong relationship between turnover rates and performance. The same was found true in respect of expenses.

**Sharpe (1966)** developed a composite measure that considers return and risk and evaluated performance of 34 open ended mutual funds during the period 1944-63 by the measure so developed. He found that the performance of 11 funds were superior to that of DJIA (index). His reward to variability ratio for each fund was significantly less than the same measure applied to the DJIA over the period 1954-63. Based on this evidence Sharpe concluded that average mutual fund performance was distinctly inferior to an investment in the DJIA. An analysis of relationship between fund performance and its expense ratio indicated that good performance was associated with low expense ratio. On the other hand, only a low relationship was discovered between size and performance. Notably, there was some consistency in the risk measure over time for alternative funds.

**Treynor and Mazuy (1966)** found no statistical evidence that investment managers of any of the 57 funds had successfully outguessed market. The results suggested that an investor in mutual funds was completely dependent on fluctuations in the general market. This is not to say that a skilful fund management cannot provide investor with a rate of return that is higher, in both bad and goods times than the one provided by market averages. But, it did suggest that improvement in the rate of return was due to the fund manager’s ability to identify underpriced industries and
companies, and not because of their ability to outguess turns in the level of market as a whole.

Levy (1968) pondered upon the importance to develop an accurate and complete measure of investment performance. In an attempt to develop theoretically sound measures of risk and return in portfolio evaluation, he focused on Sharpe’s measure and put forward some modifications in the Sharpe’s methodology for calculation of risk and return. He advocated the use of geometric mean against arithmetic mean of sub-period return and vulnerability for variability as used by Sharpe (1966).

Jensen (1968) developed a composite portfolio evaluation technique that considered returns adjusted for risk differences and used it for evaluating 115 open-end mutual funds during the period 1945-66. For the full period Jensen examined returns net of expenses and gross of expenses. The analysis of net returns indicated that 39 funds (34 percent) had above average returns adjusted for risk, while 76 (66 percent) experienced abnormally poor returns. Using gross returns, 48 funds (42 percent) showed above-average results and 67 (58 percent) had below-average results. Jensen concluded that evidence on mutual fund performance indicated not only that these 115 mutual funds were on an average not able to predict security prices well enough to outperform buy-the-market-and-hold policy, but also that there was very little evidence that any individual fund was able to perform significantly better than expected, from a mere random chance.

Carlson (1970) examined the overall performance of mutual funds during the period 1948-1967 with emphasis on analyzing the effect of market series used over
different time periods. The analysis of performance relative to the market indicated that results were heavily dependent on the market series used, viz., S & P 500, NYSE composite, or DJIA. For the total period, almost all fund groups outperformed DJIA but only a few had gross returns that were better than those for S & P 500 or NYSE composite. Although there was consistency over the time period for risk and return taken alone, there was no consistency in the risk adjusted performance measures. Carlson also analyzed performance relative to size, expense-ratio, and a new-funds factor. The results indicated no relationship with size or expense ratio, although there was a relationship between performance and a measure of new cash into funds.

Fama (1972) suggested that managers can achieve abnormal returns through superiority ability in security selection and in market timing. Selection ability is defined as being able to identify undervalued. Market timing ability refers to the ability to correctly time the market cycles; a manager with this ability increases the relative volatility of his portfolio prior to bull market to earn abnormal returns and decreases its volatility anticipation of a bear market in order to minimize potential losses. A portfolio manager’s superior market timing ability will allow his portfolio to earn higher than the normal risk premium for his portfolio’s level of risk.

Williamson (1972) made a comparison of rankings of 180 funds over the period 1961-65 with their rankings over the subsequent five-year time period 1966-70. The absence of correlation between rankings over the two time period for the entire group of 180 funds was consistent with the identical investment ability of most of the fund managers. The study has also highlighted growing prominence of volatility in the measurement of investment risk.
Klemosky (1973)\(^9\) analysed investment performance of mutual funds based on quarterly returns for 40 funds during the period 1966-1971. The analysis identify bias in Sharpe, Treynor, and Jensen measures which could be removed by using mean absolute deviation and semi-standard deviation as risk surrogates. The resultant performance measure was found better risk adjusted performance measure than composite measures derived from the capital asset pricing models.

McDonald (1974)\(^10\) examined performance of 123 mutual funds relative to the stated objective of each fund. The results indicated a positive relationship between objectives and risk measures, that is, risk increasing with the objective becoming more aggressive. Rates of return generally increased with aggressiveness, and as expected, there was a positive relationship between return and risk. The relationship between objective and risk-adjusted performance indicated that more aggressive funds experienced better results, although only one-third of the funds did better than the aggregate market.

Meyer's (1977)\(^11\) findings based on stochastic dominance model re-validated Sharpe's findings with the caution that these were relevant to the mutual fund performance in designated past period rather than implications for the future.

Klemkosky (1977)\(^12\) examined consistency of results for 158 mutual funds in order to examine performance consistency of fund managers for the period 1968-1975 by analyzing rank order of performance over different two-year and four-year periods. The results showed some consistency in performance between four year periods, but relatively low consistency between adjacent two-year periods.
Kon and Jen (1978)\textsuperscript{13} empirically estimated the levels of systematic risk and performance of 49 mutual funds over the period 1960-71 based on monthly data by using SLM (Sharpe, Lintner and Mossin) and Blake model as benchmark equilibrium. The results indicated that a very substantial fraction of mutual funds had two levels of systematic risk during each of three sub-periods. It also examined the performance bias and reproduced the same in favour of high risk mutual fund portfolios as found by Klemkosky (1973) and McDonald (1974). In the process, it found switching regression estimates as unbiased risk-adjusted measures of performance. The study demonstrated that, if fund managers had no forecasting ability, then, the findings of Balke, Jensen, and Scholes (BJS) would appear inconsistent.

Henricksson and Merton Model (1981)\textsuperscript{14} assumed fund managers target two systematic risk levels; one where the manager forecasts the risk-free asset to outperform the market portfolio and the other where the market return is expected to outperform the risk-free rate. Successful market timing exists only where $\gamma_p$ is significantly positive. As such, the model looks at the direction of the forecast that a portfolio manager uses to re-weight the portfolio between risky assets and the risk-free asset rather than predicting the size of the return differential between risky assets and risk-free asset. The managers in this model are less sophisticated than those in Jensen (1972), in which they actually forecast the size of the differential return. Jensen’s selectivity and timing model (1972) compares the ex-post return of a mutual fund with the market returns to detect fund manager’s selection and market timing skills. Assuming a joint normal distribution for a market timer’s forecasted market return and
the actual return on the market, this manager's forecasting ability can be measured by the correlation between the forecasted and actual market returns.

**Kon (1982)**\(^{15}\) proposed an empirical methodology for measuring the market-timing performance of an investment manager and provided evidence for a sample of mutual funds. The results indicated that at individual fund level there was an evidence of significant superior timing ability and performance. The multivariate tests also produced results consistent with efficient market hypothesis. That is, the fund managers as a group had no special information regarding information of expectations on returns of market portfolio.

**Reilly (1982)**\(^{16}\) studied performance of 20 open-ended mutual funds over 15 years period, 1966-80 and found that mean return of all the funds was quite close to that of the market. On the basis of return alone, 12 funds outperformed the market. The study noted large range of fund returns indicating inadequacy of portfolio diversification. Likewise, the two risk measures (standard deviation and beta) exhibited a wide range, but generally consistent with expectations. Specifically, 14 funds had a standard deviation larger than market which was found consistent with the lack of complete diversification. The performance of individual funds was very consistent for alternative performance evaluation models. In Sharpe's model, 13 funds had a higher value than the market, in Treynor's measure 14 had a higher value than the market, while the Jensen's model indicated 13 of the 20 having positive intercepts, with only one of positive intercepts being statistically significant. These results indicated that, on an average, sample of funds outperformed the market during the period of study.
Heriksson (1984)\textsuperscript{17} empirically investigated market timing ability of 116 open-ended mutual funds for the period 1968-80. The findings of the study did not support the hypothesis that mutual fund managers were able to follow an investment strategy that successfully time the return on market portfolio. It found no evidence to support that forecasters were more successful in their market timing activity with respect to predicting large changes in the value of market portfolio relative to smaller changes. The absolute magnitude of returns on the market portfolio did not have any influence on measures of performance evaluation.

Eric C. Chang & Wilbur G. Lewellen (1984)\textsuperscript{18} employed the parametric statistical procedure recently developed by Henriksson and Merton to test jointly for the presence of either superior market timing or security selection ability in managed portfolios to evaluate empirically the investment performance of a sample of mutual funds. This procedure and the associated findings are compared with those of prior investment performance evaluations.

Chen and Stockum (1986)\textsuperscript{19} adopted a generalized varying parameter regression procedure to examine mutual funds selectivity, beta instability, and timing decisions simultaneously. Their model allowed a non-stationarity to include both market timing and random beta behaviour. They found that in their sample of 43 funds, around 30 per cent had selectivity, 19 percent had random betas, and 14 percent had significantly negative market timing performance.

Grinblatt and Titman (1989)\textsuperscript{20} introduced the positive period weighting measure (PPWM) which, by design, assigns positive performance to selection ability and/or market timing ability if the portfolio manager is a positive market timer and
selectivity and timing information are independent. The PPWM measure is obtained by selecting a weighting vector and then computing performance as a weighted average of the period-by-period portfolio excess returns. Jensen’s alpha and the Treynor-mazuy total performance measures can be expressed as a specific case of a PPWM. The ‘perverse’ behavior of Jensen’s alpha can then be explained in terms of negative marginal utility, e.g. negative weights. At wealth levels that exceed the satiation point of the quadratic utility investor: successful timers having very high betas when the market returns are very high are penalized rather than rewarded. In the absence of market timing and with the assumption of normality, Jensen’s Alpha, the Treynor-mazuy measure, and the PPWM measure would all be identical.

Grinblatt, Mark and Titman (1989)\textsuperscript{21} in a study of 274 funds during 1974 to 1984, concluded that superior performance existed among growth funds and those funds with the smallest net asset values.

Koh, Kok and Hin (1989)\textsuperscript{22} evaluated the investment performance of investment trusts and unit trusts of Singapore during 1980 to 1987. Market timing ability was used as one of the parameters for performance evaluation of the fund managers. They reported that the evidence was inconclusive as to the presence of market timing amongst Singapore fund managers.

Sheridan Titman (1989)\textsuperscript{23} in his article employs the 1975-84 quarterly holdings of a sample of mutual funds to construct an estimate of their gross returns. This sample, which is not subject to survivorship bias, is used in conjunction with a sample that contains the actual (net) returns of the mutual funds. In addition to estimating the bias in measured performance that is due to the survival requirement
and to estimate total transaction costs, the sample is used to test for the existence of abnormal performance. The tests indicate that the risk-adjusted gross returns of some funds were significantly positive.

Richard A Ippoleto (1989)\textsuperscript{24} cited that mutual funds offer superior returns; that excess returns are offset by additional expense and loading charges. This characterizes the efficient market hypothesis.

Cheng-few lee & shafiqur Rahman (1990)\textsuperscript{25} in their article empirically examined market timing and selectivity performance of a sample of mutual funds. They used a very simple regression technique to separate stock selection ability. This technique was first suggested by Treynor and Mazuy and later refined by Bhattacharya and Pfleiderer, used as a modified security-market line approach to produce individual measures of timing and stock selection ability. The empirical results indicate that at the individual fund level there is some evidence of superior micro and macro forecasting ability on the part of the fund manager.

Connor and Korajczyk (1991)\textsuperscript{26} argued that $\gamma_p$ coefficient would be better captured by the multiple factors of the APT. They extended the Henriksson-Merton model to a multi-factor model where they would expect the $\gamma_i >$ coefficient to be greater than zero if and only if the manager has superior information. The $\alpha_p$ term measures selectivity, accordingly $\alpha_p > 0$ implies superior selectivity. They found little change in coefficient $\gamma_i$ in its comparison with the original Henriksson-Merton model and their version. The advantage of the Connor-Korajczyk version over the original Henriksson-Merton model is its consistent measure of performance when the mutual fund buys or sells costly options. However, it is subject to limitations that the
Henriksson-Merton is not, namely, one month horizon with European options only, and the inability to decompose market-timing skill and selectivity skill.

**Obaidullah and Sridhar** (1991)\textsuperscript{27} evaluated the performance of two major growth oriented mutual funds-Mastershare and Canshare from India and concluded that these funds provided abnormal returns. Mastershare did it on a total-risk adjusted basis and Canshare on a market risk-adjusted basis. The study provided contradictory evidence to the near-strong efficient market hypothesis for these funds.

**Chen, Lee, Rahman and Chan** (1992)\textsuperscript{28} studied 93 US funds over a period of 87 months and found that only 5 funds showed positive market timing ability while 23 funds showed inferior timing ability. They also found evidence of a trade-off between market timing and security selection activity.

**Christopher R. Blake, Edwin J. Elton & Martin J. Gruber** (1993)\textsuperscript{29} Used linear and nonlinear models, to examine two samples of bond funds: one sample designed to eliminate survivorship bias, and a second much larger sample. Overall and for subcategories of bond funds, they found that bond funds and under performed relevant indexes post-expenses. The results were robust across a wide choice of models. They found that, on average, a percentage-point increase in expenses leads to a percentage-point decrease in performance. They found no evidence of predictability using past performance to predict future performance for unbiased sample.

**Darryll Hendricks, Jayendu Patel, and Richard Zeckhauser** (1993)\textsuperscript{30} concluded that the relative performance of no-load, growth-oriented mutual funds persisted in the near term, with the strongest evidence for a one-year evaluation horizon. Portfolios of the recent poor performers and significantly worse than standard
benchmark; those of recent top performers did better, though not significantly so. The difference in risk-adjusted performance between the top and bottom octile portfolios was six to eight percentages per year. These results were not attributable to known anomalies or survivorship bias. Investigations with a different data set and with some past 1988 data conformed to the finding of persistence.

Ajay Shah and Thomas Susan (1994) evaluated the performance of 11 mutual fund schemes using Jensen and Sharpe measures. They concluded that except one scheme other schemes showed inferior returns than market returns.

Droms and William G (1994) examined the investment performance of international mutual funds by applying cross section and time series regression methodology. They found that risk adjusted and unadjusted performance were not related to whether the fund size is load or no-load, asset size and expense ratios. Also turn over rates were not related to investment performance. There was no reward for paying a load fee while investing in mutual funds.

Jaideep and Sudipta Majumdar (1994) evaluated the performance of five growth schemes for the period from February 1991 to August 1993. They have used CAPM and Jensen Measure to evaluate the performance. They concluded that the selected mutual fund schemes had not out performed the market return. But they found that the same selected schemes had performed well during the boom period.

Grinblatt and Titman (1994) empirically contrasted the Jensen Measure, the Positive Period Weighting Measure, developed in Grinblatt and Titman (1989b), and a measure developed from the Treynor-Mazuy (1966) quadratic regression on a sample of 279 mutual funds and 109 passive portfolios, using a variety of benchmark
portfolios. The study concluded that the measures generally yield similar inferences when using the same benchmark and that inference could vary, even for the same measure, when using different benchmarks. This paper also analysed the determinants of mutual fund performance. Tests of fund performance that employ fund characteristics, such as net asset value, load, expenses, portfolio turnover, and management fee were reported. These tests surprisingly suggest that turnover was significantly and positively related to the ability of fund managers to earn abnormal returns.

Saha and Murthy (1994) highlighted relevance and importance of mutual funds and discussed analytical framework for performance evaluation, and justified the use of portfolio selection techniques in stock selection and portfolio composition. It emphasized that performance evaluation models provided effective decision support system and thus facilitated informed judgment.

Kaura and Jayadev (1995) evaluated the performance of growth schemes. They have used Sharpe, Jensen and Treynor measures to evaluate the risk adjusted performance and found that the schemes had not performed better than market.

Kale and Uma (1995) examined risk return relationship for 77 mutual fund schemes managed by 8 mutual funds and found that schemes proved worth their objectives.

Ferron and Warther (1996) attempted to modify classical performance measures to take account of well-known market indicators and to remove some of biases that plagued traditional measures through conditional performance evaluation based on monthly data for 63 mutual funds and lagged dividend and treasury bills.
yields as market indicator. It also highlighted that traditional measure (Jensen’s alpha) more often understated performance which could be done away with conditional models suggested by the study. The same was reported about the market-timing ability of fund managers.

Jayadev (1996) evaluated the risk adjusted performance of selected mutual fund schemes and found that the fund managers appeared to keep their portfolio’s within the risk classes defined by their investment objectives. He found that majority of the schemes had shown the superior performance than the bench mark portfolio in terms of total risk as well as systematic risk. The funds were able to earn higher returns due to selectivity, but the proper balance between selectivity and diversification was not maintained. The study concludes that, due to lack of proper diversification, the fund’s performance had declined and it showed that the Indian mutual funds were not properly diversified.

Yadav R.A. Biswadeep Mishra (1996) have examined the performance of 14 mutual fund schemes using monthly data. Risk adjusted performance measures given by Sharpe, Treynor and Jensen were used. They concluded that general funds performed better in terms of non-risk adjusted measure of average returns. The fund managers of growth oriented schemes adopted a conservative policy in investment and maintained the risks at lower level.

Ferson and Scadt (1996), modified the classical performance measures (of timing and stock selection ability) to account for the well-known information variables like interest rate, market dividend yield, etc. They termed it as “conditional approach” of measuring mutual fund performance and claimed that conditioning on
public information controls bias in traditional market timing and stock selection models. The traditional model called 'unconditional models' have taken the view that 'any information' correlated with the future market returns was a superior information.

Ramseyer and Ackert (1996)\textsuperscript{42} investigated the issue of persistence of Canadian fund performance. They looked at whether the investment performance of Canadian equity mutual funds persisted from the late 1980s to the early 1990s. Their sample comprised 54 no – load funds that met a survivorship requirement, in that all of them existed for the entire 16 – quarter period, over the period from the fourth quarter of 1993. They discovered little evidence of persistence in winners – they did not repeat their performance, and past performance is no predictor of future performance. As for losers, the results suggest that losers tend to repeat. But, compared to US mutual funds, performance persistence was much weaker for Canadian mutual funds.

Murthi, Choi and Desai (1997)\textsuperscript{43} initiated with new index to measure the performance of portfolio. It was named as Data Envelopment Portfolio Efficiency Index (DPEI) which does not require the specification of a benchmark and it includes the transaction costs. As regards the relationship between performance and transaction costs they found that mean scores were not related to mean expense ratios and mean turnover, implying that the higher transaction costs are not correlated with better efficiency scores (DPEI). They concluded that efficiency was not related to the size of the fund.
Thiripalraja M, Patil and Prabhakar R (1997)\textsuperscript{44} conducted a study for the period from 1994 to 1999 to analyze the forecasting ability of fund managers. They concluded that none of the schemes outperformed the market due to poor forecasting ability of fund managers. Even they could not realize the profit in the boom period due to lack of knowledge in the market.

Carhart (1997)\textsuperscript{45} investigates the topic of fund performance persistence by using a four-factor model in which the four benchmark portfolios were the S&P 500 index, and portfolios based on size, book-to-market ratio, and prior-year stock market return. Carhart (1997) constructed the four-factor model by using Fama and French’s (1993) three-factor model plus an additional factor capturing the one-year momentum anomaly documented by Jegadeesh and Titman (1993). These portfolios capture the impact of the three market anomalies: the small-firm’s effect, the book-to-market effect, and the momentum effect.

Bello and Janjigian (1997)\textsuperscript{46} used an extended version of the Treynor-Mazuy (henceforth TM) model to examine the market timing and stock selection abilities of the US equity mutual funds. They included two more predictors in the form of two other indices to include the non-S&P 500 assets while using S&P 500 assets as the original proxy for the market. They found evidence of market timing abilities which is in sharp contrast with the findings using the original Treynor Mazuy model.

Ramachandran G (1997)\textsuperscript{47} suggested that influence of external imperfections of Indian stock markets were leading to non-reliable on portfolio performance. He stated that instead of using mean and standard deviation of returns, median of returns
and mean absolute deviations of returns could be considered while evaluating risk adjusted performance of mutual funds.

**Gupta and Sehgal (1998)** evaluated investment performance of 80 mutual fund schemes for the Indian market over a four year period 1992-96. It tested propositions relating to fund diversification, consistency of performance, parameter of performance and risk-return relationship. Their study showed that out of the selected schemes, income schemes performed well. Due to lack of proper diversity, there was no consistency in the performance from year to year. They also found that the relationship between fund objectives and systematic risk was inconsistent with expectations.

**Kao, Cheng, Chan (1998)** also examined selectivity and the market timing ability of the international mutual fund managers. Working on a sample of 97 US international mutual funds, they found evidence of goods selectivity and overall performance but weak evidence of poor market timing ability.

**Jayadev (1998)** in his analytical study on the performance of mutual fund analyzed 62 schemes of mutual funds during the period of 1994 – 95 and compared Jensen’s measure and sharpe’s differential returns of the scheme. He has stated that there was high difference between the two measures and concluded that lack of diversification was the reason for the declining trend in performance.

**Indro and Daniel (1999)** examined whether fund size affects the performance. They concluded that mutual funds must attain a minimum fund size in order to achieve sufficient returns to justify their costs of acquiring and trading on information. They observed that marginal returns became negative when the mutual
fund exceeded its optimal fund size. They found that, out of the sample of 683 non
indexed equity funds over the period 1993-95, 20 percent of the mutual funds were
smaller than the break even-cost fund size.

Sehgal and Gupta (1999)\(^{52}\) provided some evidence on persistence in fund
performance owing to stock selectivity and market timing skills. They however
admitted that their results were to be interpreted with caution as continuous data was
not available for many sample funds.

Philpot and Jame (2000)\(^{53}\) examined whether non conventional bond funds
like high yield bonds, global issues and convertible bonds provided consistent
performance. They found that short-term performance persistence was present but
limited to the high yield bond funds only. Also observed that equity mutual funds
provided consistent performance relative to other funds over time.

Rameshchander (2000)\(^{54}\) studied the performance of mutual funds in India,
during the period 1994 to 1997. The study covered 34 mutual fund schemes. The
models given by Sharpe, Treynor, Jensen and Fama were used to examine the
performance of sample schemes. A majority of fund schemes had outperformed the
benchmark portfolio. It was found that fund managers were successful in predicting
market movements.

Vijayalakshmi S. (2000)\(^{55}\) studied the performance of mutual funds in terms of
achieving diversification benefit and fund manager’s timing ability to invest in right
stocks at the right time. The sample comprised of 46 schemes of public sector banks
and financial institutions managed mutual funds, 22 schemes of 12 private sector
mutual funds and 4 foreign fund schemes. Many mutual funds had out performed the
BSE - 30 index. The holdings of a large number of schemes of mutual funds were compared with top performing stocks of the period under study. The study was concluded that the fund managers had failed to invest in top performing stocks of the period. It was suggested that the mutual funds should shift their investment strategy.

Gupta (2002)\textsuperscript{56} also used both Treynor-Mazuy and Henrikson-Merton model to test the market timing abilities of 73 Indian mutual funds schemes during 1994 - 1999 and found little evidence of meaningful market timing ability.

Bishwadeep Mishra (2002)\textsuperscript{57} covered the period between April 1992 and December 1996 and evaluated the performance of mutual funds based on 24 selected schemes having at least 24 monthly data. The return on mutual fund schemes was calculated on the monthly net asset value of the schemes and the Generalized Varying Parameter (GVP) was estimated by using returns. Through the GVP estimates, the study concluded that above 25\% of the schemes possessed timing skills and 29\% had negative timing parameter indicating that these schemes brought about changes in their portfolio based on a wrong forecast of the market trend. Thus, in general, it was concluded that the selected mutual fund schemes had no timing ability, even though at individual level some of the schemes had timing skills. The GVP estimates also revealed that the systematic risk of Indian mutual funds did not remain idle over time.

Anuradha and Muralidhar (2003)\textsuperscript{58} studied the growth of mutual funds in India and found that winning and surviving mutual funds were those who had set their goals realistically and had invested early in life stayed invested by regularly investing and have put all their investments in different types of schemes.
Kshama Fernandes (2003) evaluated index fund implementation in India. Tracking error of index funds in India was measured. The consistency and level of tracking errors obtained by some well-run index fund suggests that it was possible to attain low levels of tracking error under Indian conditions. At the same time, there were periods where certain index funds appeared to depart from the discipline of indexation. K. Pendaraki et al. studied construction of mutual fund portfolios, developed a multi-criteria methodology and applied it to the Greek market of equity mutual funds. The methodology was based on the combination of discrete and continuous multi-criteria decision aid methods for mutual fund selection and composition. Goal programming model was employed to determine proportion of select mutual funds in the final portfolios.

Bijan Roy (2003) conducted an empirical study on conditional performance of Indian mutual funds. This paper used a technique called conditional performance evaluation on a sample of eighty-nine Indian mutual fund schemes. This paper measures the performance of various mutual funds with both unconditional and conditional form of CAPM, Treynor- Mazuy model and Henriksson-Merton model. The effect of incorporating lagged information variables into the evaluation of mutual fund managers' performance was examined in the Indian context. The results suggested that the use of conditioning lagged information variables improved the performance of mutual fund schemes, causing alphas to shift towards right and reducing the number of negative timing coefficients.

S. Narayan Rao (2003) evaluated performance of Indian mutual funds in a bear market through relative performance index, risk-return analysis, Treynor's ratio,
Sharpe’s ratio, Sharpe’s measure, Jensen’s measure, and Fama’s measure. The study used 269 open-ended schemes (out of total schemes of 433) for computing relative performance index. Then after excluding funds whose returns were less than risk-free returns, 58 schemes were finally used for further analysis. The results of performance measures suggest that most of mutual fund schemes in the sample of 58 were able to satisfy investor’s expectations by giving excess returns over expected returns based on both premium for systematic risk and total risk.

Nalani Prava Tripathy (2004) evaluated the performance of tax planning schemes in India and examined the investment performance in terms of six performance measures. The majority of the schemes under study had not outperformed the market. It was found that proper balance between selectivity and diversification was not maintained by the fund managers.

OP Gupta and Amitabh Gupta (2004) in their paper aimed at evaluating the investment performance of select Indian mutual fund schemes during the recent four-year period from April 1, 1999 to March 31, 2003. For this purpose, they had used weekly returns based on NAV for 57 growth schemes SBP CNX Nifty index had been used as a proxy for the market portfolio, while weekly yields on 91-day Treasury bills (T-bills) had been used as a surrogate for risk-free rate of return. The investment performance had been studied in the terms of five measures viz..., (a) Rate of returns measure (b) Sharpe’s ratio (c) Treynor’s ratio (d) Jensen’s differential returns measure and (e) Fama’s Components of investment performance. The empirical results reported here indicate mixed performance of sample funds during the study period. There is no conclusive evidence, which suggests that performance of Indian mutual funds was
superior to the market. However, there was evidence that some of the funds are performing better than the market. Further, they found that the sample funds were not adequately diversified. However, the diversification level seemed to have changed over time.

Bailey and Barrie A (2005) examined the impact of political risk on the risk-adjusted returns of international mutual funds. They found that share holders of international equity mutual funds earned significant abnormal returns in the face of political turmoil.

Shishir Kumar (2005) has ranked the selective open-end growth mutual fund schemes. The funds had been ranked on the risk adjusted returns basis by using Sharpe Ratio. He found that the schemes of both private and public sectors had shown mixed performance in the ranking.

Sanjay J Bhayani, Vishal G. and Patidar(2005) have evaluated the performance of select mutual fund schemes and found that majority of the schemes had recorded superior performance over market returns. The performance of schemes was better in case of returns and had earned returns on lower risk as compared to the market.

Sondhi H.J (2005) examined the rate of returns generated by equity mutual funds against 364 days T-bills and the Bombay Stock Exchange (BSE)-100 indexes. He has found that the investors expected not only risk premium but also better returns than the market portfolio. The study concluded that compared to public sector equity mutual funds, private equity mutual funds performed better than market portfolio. The
analysis proved that ownership pattern had significant bearing on the profitability of equity mutual funds.

John (2006) evaluated the performance of US and UK mutual funds. There were around 2-5% of top performing UK and US equity mutual funds which outperformed their benchmarks and around 20-40% of funds were genuinely poor. He found that returns from bond funds were similar to those from equity mutual funds, but hedge funds showed better risk adjusted performance. The study suggested that the investors could hold low cost index funds and avoid holding past “active” loser funds. Only very sophisticated investors could pursue an active investment strategy of trying to pick winners with much caution.

Mei-Chen (2006) examined the performance of three types of the Taiwan mutual funds over various investment horizons. They found that aggressive funds appeared to be more attractive for both short term (less than 1 year) and long term (greater than four years) investments. Growth cum income funds and growth funds were more attractive for medium term investment such as one to three years and three to four years respectively. In addition, fund performance was positively related to net asset value, but inversely related to expense ratio.

Anand (2006) made an attempt to examine the components and sources of investment performance in order to attribute it to specific activities of Indian fund managers. It also attempted to identify a part of observed return which was due to the ability to pick up the best securities at given level of risk. For this purpose, Fama’s methodology was adopted. The study covered the period between April 1999 and March 2003 and evaluated the performance of mutual funds based on 113 selected...
schemes having exposure more than 90% of corpus to equity stocks of 25 fund houses. The empirical results revealed the fact that the mutual funds were not able to compensate the investor for the additional risk. The study concluded that the influence of market factor was more severe during negative performance of the funds while the impacts of selectivity skills of fund managers was more than the other factors on the fund performance in terms of generating positive return by the funds. It can also be observed from the study that selectivity, expected market risk and market return factors had shown closer correlation with the fund return.

D. N. Rao (2006) in his study classified 419 open-ended equity mutual fund schemes into six distinct investment styles, analyzed the financial performance of select open-ended equity mutual fund schemes for the period 1st April 2005 - 31st March 2006 pertaining to the two dominant investment styles and tested the hypothesis whether the differences in performance were statistically significant. The variables chosen for analyzing financial performance were: monthly compounded mean return, risk per unit return and Sharpe ratio. A comparison of the financial performance of the 21 Open-ended Equity growth plans and 21 Open-ended Equity dividend plans were made in terms of the chosen variables. The analysis indicated that Growth plans had generated higher returns than that of Dividend plans but at a higher risk. Further, 17 Growth plans had generated higher returns than that of corresponding Dividend plans offered by the same Asset Management Companies (AMC) and only one Dividend plan could generate higher return than its corresponding Growth plan. However, three Growth plans and the corresponding Dividend plans had the same returns. Out of the 21 Growth plans, 4 Growth plans had higher Coefficient of
Variation (Risk per unit Return) than the corresponding Dividend plans and 13 Dividend plans had higher Coefficient of Variation (Risk per unit Return) than the corresponding Growth plans offered by the AMC. Three Growth plans and three Dividend plans had almost equal Risk per unit return. A comparison of the Sharpe ratios of Growth plans and the corresponding Dividend plans indicated that 18 Growth plans out of 21 (approximately 90%) had better risk adjusted excess returns highlighting the fact that Growth plans were likely to reward the investors more for the extra risk they were assuming.

Sharad Panwar & R. Madhumathi (2006) in their study used sample of public-sector sponsored & private-sector sponsored mutual funds of varied net assets to investigate the differences in characteristics of assets held, portfolio diversification, and variable effects of diversification on investment performance for the period May, 2002 to May, 2005. The study found that public-sector sponsored funds did not differ significantly from private-sector sponsored funds in terms of mean returns. However, there was a significant difference between public-sector sponsored mutual funds and private-sector sponsored mutual funds in terms of average standard deviation, average variance and average coefficient of variation (c.v). The study also found that there was a statistical difference between sponsorship classes in terms of e SDAR (excess standard deviation adjusted returns) as a performance measure. When residual variance (RV) is used as the measure of mutual fund portfolio diversification characteristic, there was a statistical difference between public-sector sponsored mutual funds and private-sector sponsored mutual funds for the study period.
Sanjay Sehgal and Manoj Jhanwar (2007) in their study examined if there was any short-term persistence in mutual funds performance in the Indian context. They found no evidence that confirmed persistence using monthly data. Using daily data, they observed that, for fund schemes sorted on prior period four-factor abnormal returns, the winner’s portfolio did provide gross abnormal returns of 10% per annum on post-formation basis. Their empirical findings were consistent with the efficient market hypothesis and had implications for hedge funds and other managed portfolios who relied on innovative investment styles, including the fund of funds trading strategies that implicitly assumed short-term persistence.

Soumya Guha Deb, Ashok Bakeries, and B B Chakrabarti (2007) made an attempt to find the stock selection and market timing abilities of the Indian Mutual funds managers using unconditional as well as conditional approaches. With a sample of 96 Indian mutual fund schemes, lack of market timing ability and presence of stock selection ability were observed among the Indian funds managers in both unconditional as well as conditional approaches. A pooled regression was carried out for various categories of funds as well as for the entire sample, which also showed lack of market timing abilities and presence of stock selection abilities.

Research gap and need for present study

The small investors who intend to invest in the various schemes of mutual funds require information about the expected return on mutual funds. This would enable them to select among the available mutual funds to maximize their returns. Further an investor within an intention to create a portfolio of mutual funds may like to know about the risk and return characteristics of various mutual fund schemes as
well as public and private sector mutual fund schemes. Hence an attempt is made to study the behaviour of mutual fund returns.

From the reviews it can be stated that, on an average mutual fund managers are not able to offer higher returns. Further, their ability in stock selection and market timing is also poor. If fund managers can correctly ‘time’ the market, they can generate superior returns compared to the market. Performance evaluation is essential for investors and fund managers.

1.4 Statement of the problem

Economic liberalization and globalization have brought about a new and competitive environment for the common and small investors who are willing to participate in the equity of the corporate sector in our country. There are large number of small investors, who have the ability to save and make an investment in equity but a majority of them lack professional expertise to judge or forecast the violent volatility and swings which rock the stock markets. As most of the investors are not experts in choosing the right scrip or portfolio, sometimes they get their fingers burnt on certain investment choices. Factors like, lower per capita income, apprehensions of loss of capital and economic insecurity significantly influence the investment decisions of the investors.

There is a general misconception amongst the investors that decline in stock market leads to decline in mutual fund returns. However, one should understand that mutual funds are not synonymous with stock. Even during the time of falling stock markets, one can make money through well planned investment in mutual funds. This is due to the fact that the mutual funds are bunch of financial instruments such as
stocks, bonds etc, which depend mainly upon the nature and objective of the scheme. It is due to the advantage of diversification in portfolio which helps in offsetting the severity of one or few declining stocks by other assets within the portfolio that are either holding steady or increasing value.

The Indian economy is under transition on account of the ongoing structural adjustment programmes and liberalization. Economic transition is usually marked by changes in the market mechanism, institutional integration, market regulation, reallocation of savings and investment. These changes shake investor confidence in the capital market. Mutual funds, as efficient allocators of resources, play a crucial role in this transitional period. Increasing trend in household savings, especially in the financial assets, growth of money supply and low yield on deposits of commercial banks are the reasons attributed to the growth of mutual funds in India.

Mutual funds provide the much needed fund requirements for the corporate sector. Corporates turn towards the mutual fund route due to the fact that there is no need to declare dividends/interest as in the case of shares. Also, a minimum or reasonable annual rate of return would be sufficient in case of mutual funds to satisfy the investors.

The study attempts to seek answers to the following questions:

- What is the growth and performance of mutual fund industry?
- Whether the growth oriented mutual funds are earning higher returns than the bench mark returns in terms of risk?
- Whether the growth oriented mutual funds are offering the advantages of diversification and superior returns due to the selectivity to their investors?
To what extent public sector mutual funds are comparable with private sector mutual funds?

1.5 Objectives of the study

The general objective of the study is to evaluate the performance of mutual funds in India. The following are the specific objectives:

➢ To examine the origin and growth of mutual funds in India.
➢ To analyse the behaviour of mutual fund returns of select mutual fund schemes.
➢ To compare the behaviour of mutual fund returns of select mutual funds in private and public sectors.
➢ To evaluate the performance of select mutual funds.
➢ To summarize the findings of the study and to give suitable suggestions on the mutual fund schemes to the investors

1.6 Hypotheses

To fulfill the second objective of the study the following hypotheses have been formulated and tested:

➢ There is no significant difference in the returns of mutual fund schemes in each category.
➢ There is no significant difference between the average return of each scheme and the average return of Bombay stock exchange National Index.
➢ There is no significant difference between Top 5 schemes in each category.
➢ There is no significant difference in the Independence of mutual fund returns.
To fulfill the third objective of the study the following hypotheses have been formulated and tested:

➢ There is no significant difference between the performance of public and private sector mutual funds.

To fulfill the fourth objective of the study the following hypotheses have been formulated and tested:

➢ There is no systematic risk

➢ Mutual funds do not offer superior risk-adjusted returns.

➢ Mutual funds are not successful at market timing.

1.7 Methodology

1.7.1 Sampling Scheme

To construct the sampling scheme, all the schemes in mutual fund industry are taken into consideration. The closed ended schemes are excluded due to the high preference of open ended schemes by the investors. Of the 382 total schemes (120 Equity schemes, 117 Debt schemes, 35 Balanced schemes, 32 Liquid and money market schemes, 31 Gilt schemes and 47 ELSS) as on 31st March 2003, 329 open ended schemes were taken into consideration. The analysis is further confined to 246 open ended schemes comprising 115 Equity schemes, 98 Debt schemes, and 33 balanced schemes. Finally 107 open ended schemes are selected, which have a life history for a continuous period of five years. The final sample consists of 107 selected growth oriented open ended schemes i.e., 50 equity schemes, 35 debt schemes and 22 balanced schemes.
1.7.2 Period of study

The study covers a period of five years from 1st April 2003 to 31st March 2008.

1.7.3 Sources of Data

This study is based on the secondary data collected from the websites of Association of mutual funds in India (AMFI), Securities and Exchange Board of India (SEBI), Reserve Bank of India (RBI) and the respective mutual fund websites, publications from the periodicals like Business India, Capital market, Harvard Business Review and Dailies like Economic Times and Business Line. The broad 100 shares based BSE National index was taken from www.bseindia.com. The fixed deposit rate (Risk-free rate) was collected from State Bank of India.

List of Sample Schemes

Sample schemes are selected on the basis of their investment objective i.e. equity, debt and balanced. They are:

**BIRLA SUN LIFE MUTUAL FUND**

**Equity:**

<table>
<thead>
<tr>
<th>Scheme Name</th>
<th>Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Birla sun life madcap fund</td>
<td>Private</td>
</tr>
<tr>
<td>2. Birla sun life buy India fund</td>
<td>&quot;</td>
</tr>
<tr>
<td>3. Birla sun life equity fund</td>
<td>&quot;</td>
</tr>
<tr>
<td>4. Birla sun life.</td>
<td>&quot;</td>
</tr>
<tr>
<td>5. Birla sun life advantage fund</td>
<td>&quot;</td>
</tr>
<tr>
<td>6. Birla sun life basic industry fund</td>
<td>&quot;</td>
</tr>
<tr>
<td>7. Birla sun life MNC fund – B</td>
<td>&quot;</td>
</tr>
<tr>
<td>8. Birla sun life Frontline equity fund</td>
<td>&quot;</td>
</tr>
</tbody>
</table>
9. Birla sun life dividend yield plus
10. India Advantage (off shore) fund

**Bond:**

11. Birla sun life income plus – retail  Private
12. Birla sun life income fund of 54EB
13. Birla sun life short term fund
14. Birla sun life MF monthly income
15. Birla sun life MIP
16. Birla sun life liquid plus – retail

**Balanced:**

17. Birla sun life 95 fund  Private
18. Birla sun life balanced

**BARODA PIONERR MUTUAL FUND**

**Equity:**  Sector


**DBS CHOLA MUTUAL FUND**

**Equity:**  Sector

20. DBS chola opportunities fund (cumulative)  Private
21. DBS chola Growth fund
22. DBS chola opportunities fund (regular)

**Bond:**

23. DBS chola freedom income short term
24. DBS chola monthly plan
25. DBS chola trible ACE Bonus plan

DEUTSCHE MUTUAL FUND

Equity: Sector

26. DWS Alpha equity fund Private

DSP MERILL LUNCH MUTUAL FUND Sector

Equity:

27. DSPML top 100 equity fund Private
28. DSPML opportunity fund Private
29. DSPML equity

Bond:

30. DSP BR short term fund

Balanced:

31. DSP BR balanced fund

ESCORT MUTUAL FUND

Bond: Sector

32. ESCORT income bond Private
33. ESCORT income plan

Balanced:

34. ESCORT balanced fund

FRANKLIN TEMPLETON MUTUAL FUND

Equity: Sector

35. Franklin India prime Private
36. Franklin India prima plus
Balanced:

37. Franklin Asian equity fund

38. India balanced fund

39. Temptation India children asset education

40. Temptation India children asset gift plan

HDFC MUTUAL FUND

Equity:

41. HDFC equity fund

42. HDFC Index fund – sensex plus plan

Bond:

43. HDFC higher interest fund – STP

44. HDFC income fund

45. HDFC floating rate income long term

46. HDFC short term plan

Balanced:

47. HDFC children gift fund – saving

48. HDFC MF pru fund balanced

49. HDFC children gift fund – inst plan

50. HDFC balanced fund

HSBC MUTUAL FUND

Equity:

51. HSBC equity fund
**Bond**

52. HSBC Income fund – inst
53. HSBC short term plan

**ICICI PRUDENTIAL MUTUAL FUND**

**Equity:**

54. ICICI pru Dynamic Plan  
55. ICICI pru growth fund  
56. ICICI pur power

**Bond:**

57. ICICI pru income plan – inst  
58. ICICI pru long term plan  
59. ICICI pru MF floating rate – option – B  
60. ICICI pru MF flexible income plan

**Balanced:**

61. ICICI pru balanced fund  
62. ICICI pru children care plan – gift plan

**ING MUTUAL FUND**

**Equity:**

63. ING core equity fund  

**Bond:**

64. ING short income fund  

**Balanced:**

65. ING balanced fund
<table>
<thead>
<tr>
<th>Fund Name</th>
<th>Equity</th>
<th>Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>JM FINANCIAL MUTUAL FUND</td>
<td>66. JM Equity</td>
<td>Private</td>
</tr>
<tr>
<td></td>
<td>67. JM floater fund – STP</td>
<td></td>
</tr>
<tr>
<td>KODAK MAHINDRA MUTUAL FUND</td>
<td>68. Kotak 30</td>
<td>Private</td>
</tr>
<tr>
<td></td>
<td>69. Kotak MNC</td>
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<tr>
<td></td>
<td>70. Kotak</td>
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</tr>
<tr>
<td>LIC MUTUAL FUND</td>
<td>71. Kodak Bond short term plan</td>
<td></td>
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<tr>
<td></td>
<td>72. Kodak MF Deposit plan</td>
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<td></td>
<td>73. Kodak MF regular plan</td>
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</tr>
<tr>
<td></td>
<td>74. LIC equity fund</td>
<td>Public</td>
</tr>
<tr>
<td></td>
<td>75. LIC mutual fund growth</td>
<td></td>
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<td></td>
<td>76. LIC MF Children fund</td>
<td></td>
</tr>
<tr>
<td></td>
<td>77. LIC MF monthly income splan</td>
<td></td>
</tr>
</tbody>
</table>

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38
78. LIC MF bond fund

Balanced:
79. LIC MF unit linked – insurance share
80. LIC MF balanced fund (C)
81. LIC MF balanced fund (B)

PRINCIPLES PNB MUTUAL FUND

Balanced:
82. Principle PNB children carrier builder
83. Principle balanced fund

RELIANCE MUTUAL FUND

Equity:
84. Reliance growth fund
85. Reliance vision fund
86. Reliance growth

Bond:
87. Reliance income fund

SAHARA MUTUAL FUND

Equity:
88. Sahara growth fund
SUNDARAM BNP PARIBAS MUTUAL FUND

Equity:

89. Sundaram BNP Paribas select focus  
90. Sundaram BNP Paribas select midcap  
91. Sundaram BNP Paribas growth fund

Balanced:

92. Sundaram BNP Paribas balanced fund

TATA MUTUAL FUND

Equity:

93. Tata select equity  
94. Tata equity opportunity (App)  
95. Tata growth fund  
96. Tata equity opportunities Fund (Reg)  
97. Tata life science & technology fund

Bond:

98. Tata short term plan

Balanced:

99. Tata young citizen fund

TAURUS MUTUAL FUND

Equity:

100. Taurus starshare  
101. Taurus Discovery fund  
102. Taurus Bonanza fund


**Bond:**

103. Taurus income

**UTI – II MUTUAL FUND Sector**

**Equity:**

104. UTI MC fund Public

**Bond:**

105. UTI

106. UTI bond fund

**Balanced:**

107. UTI – CCP balanced fund

1.7.4. Tools of Analysis

For the purpose of analysis of data the following statistical tools are used:

The growth of mutual fund schemes are analyzed with the help of Annual Compound Growth Rate (ACGR).

\[
ACGR = n \sqrt[n]{\frac{P_n}{P_o}} - 1 \times 100
\]

Where \( P_n \) – Figure in the last year

\( P_o \) – Figure in the first year

\( n \) – Number of years less 1.

To understand and analyze the behaviour of mutual fund returns, as well as behavior of the public and private mutual fund returns, statistical tools viz Mean, Standard deviation, coefficient of determination, Skewness, and Kurtosis are used.
Paired “t” test has been applied to test the significant difference between average returns of each scheme and the average return of Bombay Stock Exchange National Index.

To test the independence of mutual fund returns, Runs test, regression techniques and Correlation techniques are used.

1.8 Concepts used

1.8.1 Net Asset Value (NAV)

NAV is the price or value of one unit of a fund. It is calculated by summing up the current market values of all securities held by the fund adding in cash and any accrued income, then subtracting liabilities and dividing the result by the number of units outstanding. Most open-ended funds companies compute NAVs once a day based on closing market prices.

1.8.2 Benchmark Index (Market proxy)

For this study, broad 100 shares based BSE National Index (Natex) has been used as a proxy for market index. BSEN (Bombay Stock Exchange National Index) is a broad based index in comparison to BSE Sensitive index and BSE Dollex which are of recent origin. Though many indices are available BSEN has been selected as it has data from 1983-84 onwards which is taken as the base year. In the case of BSEN prices prevailing in BSE along with 4 other exchanges are considered. Out of 100 scrips, 34 scrips listed at Bombay, 5 at Calcutta, 1 at Delhi, 8 at Chennai and 2 at Ahmedabad are considered. The remaining 50 scrips are inter market scrips.
1.8.3 Return

For mutual fund scheme in the sample, returns are computed on the basis of Net Asset Values (NAVs) of the funds for the accounting year 2003-2004 to 2007-2008. Similarly, returns on the market index are computed on the basis of BSE National Index values of the respective months.

The return has been calculated as under:

\[
\text{Portfolio Return: } R_{it} = \frac{NAV_t - NAV_{t-1}}{NAV_{t-1}}
\]

where \( R_{it} \) is the difference between Net Asset Values (NAVs) for two consecutive months divided by the NAV of the preceding month.

1.8.4 Market Return

Market Return is the difference between market indices of two consecutive days divided by market index for the preceding day. It is calculated as follows:

\[
\text{Market Return: } R_{mt} = \frac{M.\text{Ind}_t - M.\text{Ind}_{t-1}}{M.\text{Ind}_{t-1}}
\]

1.8.5 Risk

Risk is neither good nor bad. Risk in holding securities is generally associated with the possibility that realized returns will be less than expected returns. The difference between the required rate of return on mutual fund investment and the risk free return is the risk premium.

i. Standard Deviation

It is used to measure the variation in the individual returns from the average expected return over a certain period. The higher the standard deviation, the greater is the fluctuation in expected return.
ii. Beta ($\beta$)

Beta measures the systematic risk and shows how the price of securities responds to the market forces. It is calculated by relating the return of a security with the return for the market. By convention, market will have beta 1.0. Mutual fund may be volatile or non-volatile; If beta is greater than 1 the stock is said to be riskier than market. If beta is less than 1, the indication is that stock is less risky in comparison to market. If beta is zero, then the risk is same as that of the market. Negative beta is rare.

iii. Alpha ($\alpha$)

The size of alpha exhibits the stock’s unsystematic return and its average return is independent of market return. If the fund produces the expected return at the level of risk assumed, the fund would have an alpha equal to zero. Alpha is calculated by comparing the fund’s actual performance with the risk-adjusted expected return.

1.9 Models adopted for performance Evaluation

The performance of mutual fund schemes is evaluated according to the criteria evolved in the following models:

- Sharpe measure
- Treynor measure
- Jensen differential measure
- Sharpe Differential return
- Fama’s decomposition measure
1.9.1 Sharpe Ratio

Sharpe’s reward to variability ratio measures the excess return per unit of total risk as measured by standard deviation. While a high and positive Sharpe ratio shows a superior risk-adjusted performance of a fund, a low and negative Sharpe ratio is an indication of unfavourable performance. The Sharpe’s ratios for different mutual funds, as well as benchmark portfolio, have been computed by using the following equation:

\[
\text{Sharpe Ratio} = \frac{(R_p - R_f)}{\sigma_p}
\]

Where,

\( R_p \) = Average fund return on the portfolio,
\( R_f \) = Average risk free return,
\( \sigma_p \) = Standard deviation of fund returns.

1.9.2 Treynor Ratio

Treynor’s model is expressed as a ratio of returns to systematic risk. This ratio measures the relationship between funds additional return over risk free return \((R_p - R_f)\) and funds volatility (market risk) measured by \(\beta_p\). This is called as Reward to Volatility Ratio (RVOL) which can be expressed as follows:

\[
\text{Treynor Ratio} = \frac{(R_p - R_f)}{\beta_p}
\]

\( R_p \) = Average fund return on the portfolio
\( R_f \) = Average risk free return,
\( \beta_p \) = Systematic risk of the portfolio
1.9.3 Jensen Differential Measure

The Jensen measure is as under:

\[ R_p - R_f = \alpha + \beta (R_m - R_f) + e_p \]

Where,

- \( R_p \) = Average return on the portfolio
- \( R_f \) = Risk-free rate
- \( R_m \) = Average return on the market
- \( \alpha \) = Differential return earned by the scheme, out of the ability of fund manager in selection of the securities.
- \( \beta \) = Systematic risk of the scheme portfolio
- \( e_p \) = Error term

Alpha is a measure of differential return earned by the fund while beta measures its systematic risk. The parameters (\( \alpha \) and \( \beta \)) of the model have been estimated by standard Regression technique. A positive and significant alpha will reflect superior performance (Fuller and Farrell, 1987)

1.9.4 Sharpe Differential Return

Differential return refers to the quantum of incremental return earned by the scheme over the expected return for the given level of risk. Sharpe has applied the following formula to know the incremental returns earned by the mutual fund manager for the given level of total risk:

\[
R_p = \frac{[R_f + (R_m - R_f)]\sigma_p}{\sigma_m}
\]
This measure takes into account both, the manager’s ability to select stocks and his ability to provide diversification.

1.9.5 Fama’s Decomposition Measure

The performance of the funds is also examined in terms of Fama’s Components of Investments’ Performance Measure. In terms of Fama’s framework, portfolio return constitutes the following four components - (a) Risk-free return, (b) compensation for systematic risk, (c) compensation for diversification and (d) net selectivity. The different components have been worked out as under:

- **Risk – free return:** \( R_f \)
- **Compensation for systematic risk:** \( \beta (R_m - R_f) \)
- **Compensation for diversification:** \( (R_m - R_f)(\sigma - \beta) \), and
- **Net Selectivity:** \( (R_p - R_f) - (\sigma_p/\sigma_m)(R_m - R_f) \).

Fama developed a methodology that helps to decompose selectivity skills into diversifiable return and net selectivity. A positive net selectivity indicates superior performance for a fund. However, in case of well diversified funds, both the net selectivity and selectivity are not likely to be significantly different from each other.

1.10 Limitations of the study

The study is subject to the following limitations:-

- The study is confined to 107 open ended schemes only. Closed ended schemes are outside the purview of the study.
- The study is limited to a period of five years from 1st April 2003 to 31st March 2008.
BSENI is selected as benchmark portfolio and it consists of top 100 companies which may not be a representative benchmark for performance evaluation.

Since the study is based on secondary data, it is subject to the inherent limitations of the secondary data.

1.11 Chapter Scheme

The study consists of six chapters.

- **The first chapter** presents the introduction and design of the study.

- **The second chapter** is devoted to the analysis of Growth of mutual fund industry in India.

- The behaviour of mutual fund returns of 107 open ended schemes has been analyzed in the **third chapter**.

- **The fourth chapter** presents the behaviour of returns of private sector and public sector mutual fund schemes.

- **Fifth Chapter** deals with the performance evaluation of select mutual funds.

- **Sixth chapter** recapitulates the key findings of the study and offers valuable suggestions on the mutual fund schemes to the fund managers and investors.

Towards the end of this research work, comprehensive bibliographies on the subject have been added.
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