Chapter II

Review of Literature and Research Design
I. REVIEW OF LITERATURE

This chapter presents the review of previous research studies made in the area of Mutual Funds. Articles published in national / international journals, websites and books were used to compile the review of this study.

Mohinder N. Kaura and Jayadev.M (1995), in their paper entitled, "Performance of Growth Oriented Mutual Funds: An Evaluation", have empirically examined the performance of five growth oriented Mutual Funds during the accounting period 1993 to 1994. This paper used the methodology which was derived by Jensen, Treynor, Sharpe and Fama. The paper concluded that growth oriented Mutual Funds possibly out performed the market with respect to systematic risk and exceptionally demonstrate the superior performance in terms of total risk.¹

Miranda Lam Detzler and James B. Wiggins (1997), in their study entitled, "The Performance of Actively Managed International Mutual Funds", analyzed the role of international funds in our country. Their study found that there was no evidence of security selectivity ability using a 12 country benchmark. However, those active international funds provided global diversification benefits.²

According to a Study, "Irrelevance of CAPM and Problems with Fund Performance Metrics", conducted by Ramachandran.G (1997), the relationship between returns, and risk was inversed during the study period from 1994 to 1997. The study rejected CAPM results under predictive and non predictive forms during the study period.³

Yuxing Yan (1999), in his article, discussed the ARCH effect on the Treynor – Mazuy Index (TM) which is used to overcome the shortcomings of other indices to measure the timing ability of Mutual Fund Managers. The article found that for


majority of Mutual Funds, the assumption of constant variance was not correct in majority of cases. The article has directed the researchers, who use the Bivariate Generalized Auto Regressive Conditional Heteroskedasticity (GARCH) Model, to estimate the TM Index when the time dependent variances of Portfolio and the Market Index are estimated.4

A paper entitled, Market Timing Abilities of Indian Mutual Fund Manager: An Empirical Study, by Amitabh Gupta (2000), examined the market timing abilities of Indian Fund Managers in terms of two models, one proposed by Treynor and Mazuy and the other by Henriksson and Merton. The empirical results reported have not provided evidence to the market timing abilities of the Indian Fund Managers.5

Ramesh Chander (2000), in his doctoral dissertation entitled, Performance Appraisal of Mutual Funds in India, studied the investment performance of selected Mutual Funds in terms of risk and returns across the fund characteristics. Besides, the study examined the portfolio management practices of mutual fund managers with respect to portfolio construction, portfolio management, portfolio evaluation, disclosure practices and investors services. The researcher concluded that in terms of average returns, majority of the sample mutual fund schemes have recorded superior performance compared to benchmark portfolio.6

A joint paper entitled, Performance Analysis of Mutual Funds in India, by Narasimhan.M.S and Vijayalakshmi.S (2001), evaluated the performance of the Mutual Funds in terms of achieving diversification benefit and fund manager’s timing ability. The study found that there was a general shift in the investment strategy of holding a

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diversified portfolio and in optimizing the risk-returns of investments to invest in predictive winners of the period. 

Maria Doceu Cortez and Florinda Silva (2002), in their study on *Conditioning Information on Portfolio Performance Evaluation: A Re-examination of Performance Persistence in the Portuguese Mutual Fund Market*, analyzed the performance of sample of Portuguese stock funds using both unconditional and conditional measures. They found that the incorporation of public information variables were an important contribution to the process of evaluating fund performance. The authors concluded that time varying betas might allow for a better assessment of performance. However, they emphasized that further research was needed on conditional models. 

The study entitled, “*Competitive Advantage for Players in Mutual Funds Industry: A Study Based on the Perceptions of Mutual Funds*”, by Thenmozhi. M and Fareed Jama. J (2002), made an attempt to examine the competitive advantage for players in Mutual Funds based on the perception of Mutual Funds. The study analyzed the key competitive advantage factors, namely, brand name, risk management ability, customer service, expertise in portfolio management and strong research base.

An empirical study entitled, “*Selectivity and Timing Skills of Mutual Funds in India: An Empirical Analysis*”, by Biswadeep Mishra (2002), analyzed the timing and selectivity skills of Mutual Funds from April 1992 to December 1996. In this article, the author used the generalized varying parameter regression procedure to examine mutual fund’s selectivity, beta stationarity and timing skills. The study found that about 25% of the scheme posses timing skills and 29% had negative timing ability.

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The study concluded that the selected mutual fund schemes had no timing ability parameter.\(^{10}\)

A research book entitled, "Mutual Funds in India", written by Amitabh Gupta (2002), evaluated the performance of 73 Indian mutual fund schemes and examined the market abilities of mutual fund managers for the study period form 1994 to 1999. The book explained the growth and development of mutual fund industry in India during the period of 1987 to 2001. The author concluded that Indian fund managers did not seem to have generated excess returns during the study period. It is found that Indian Mutual Funds, particularly the private sector fund, had also taken the initiative to improve their investors services and distribution network.\(^{11}\)

A paper entitled, "An Intertemporal CAPM Approach to Evaluate Mutual Fund Performance", by Jow-Ran Chang, Mao-Wei Hung and Cheng-Few Lee (2003), developed the new performance measure to evaluate fund managers' hedging ability. According to the new measure, the study found that the sample of 65 U.S Mutual Funds managers were on an average credited with positive security selection and negative market timing ability.\(^{12}\)

A study entitled, "Are Mutual Fund Shareholders Compensated for Active Management “Bets”?", conducted by Russ Wermers (2003) analysed the investment returns of shareholders in U.S. domestic equity Mutual Funds over a period of 26 years. This study focused on whether fund managers, who take bigger portfolio bets, have better stock picking skills. The findings of the study showed that funds with higher level of returns volatility provided better performance during the majority of the years.\(^{13}\)

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\(^{11}\) Amitabh Gupta (2002), "Mutual Funds in India", Anmol Publications Pvt.Ltd, New Delhi


\(^{13}\) Russ Wermers (2003), "Are Mutual Fund Shareholders Compensated for Active Management “Bets”?", www.springerlink.com
In their study, Hellara Slaheddine and Snoussi Imen (2003), evaluated the implication of arbitrage strategies on performance persistence. Their study selected the sample from Tunisian Mutual Funds over a six year period from January 1994 to December 1999. The study analyzed the implication of using the multi factorial model of Carhart (94), which is based on four arbitrage strategies. The results indicated that the fund performance did not support the existence of skilled Mutual Funds portfolio managers who had particular abilities to continually outperform the benchmark used.  

Stephanos Papadamou and George Stephanides (2004), conducted a study entitled, “Evaluating the style based risk model for equity Mutual Funds investing in Europe”, to examine American equity Mutual Funds of varying investment styles investing in Europe. The empirical results showed that the particular investment style of a mutual fund must guide and determine which VaR and ETL model may be applied in order to extract accurate risk estimates. This study concluded that through ‘back testing’ procedures, provided additional evidence for the significance of testing frequency and size of tail losses in order to rank risk models.  

Nicolas P.B. Bollen and Jeffrey A. Busse (2004), in their article entitled, “Short-Term Persistence in Mutual Fund Performance”, examined the issue of determination in mutual fund performance emphasizing short measurement period. The authors have suggested that misspecification of the performance model was not driving the results. The results found no evidence of ability using the concatenated returns and isolated a negative long-term relation between factor loadings and factor returns as the source of the difference between the results of different horizons. 

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Kathryn A. Holmes and Robert W. Faff (2004), in their study entitled, "Stability, Asymmetry and Seasonality of Fund Performance: An Analysis of Australian Multi Sector Managed Funds", examined a comprehensive analysis of the conditional performance of multi-sector managed funds in Australia. The study investigated the possibility of volatility timing of fund performance. The overall analysis indicated that the majority of the funds had positive selectivity and negative market timing. Further, the study found a similar trend with volatility timing with the majority of the coefficient being negative.¹⁷

Joseph Chen, Harrison Hong, Ming Husang, and Jeffrey D. Kubik (2004), in their research paper entitled, "Does Fund Size Erode Mutual Fund Performance? The Role of Liquidity and Organization", investigated the effect of scale on performances in the active money management industry. The paper found that fund size erodes performance. The authors concluded that organizational diseconomies related to hierarchy costs may also play a role in addition to liquidity in the documented diseconomies of scale.¹⁸

Jaspal Singh and Subhash Chander (2004), in their research article entitled, "An Empirical Analysis of Perceptions of Investors towards Mutual Funds", made an attempt to analyze the perceptions of investors towards Mutual Funds that had crossed Rs 1, 20,000 Crore mark by November 2002. The research article analyzed the reasons for withdrawal and/or not investing any more in Mutual Funds. The study concluded that the funds under performed as against expectations and management had been inefficient, thereby discouraging the investors to keep their funds parked in Mutual Funds.¹⁹


Sethu G (2005), in his paper, “Market Timing: An analytical Framework”, market timing was an important instrument of active portfolio management. The author developed a simple, yet general analytical framework for the market timing component of active asset management. The described model integrated the present value formula and the Single Period Capital Asset Price Model.  

Sondhi H. J and Jain P. K. (2005), in their article, “Financial Management of Private and Public Equity Mutual Funds in India: An Analysis of Profitability”, pointed out the financial performance of equity Mutual Funds in terms of profitability for a nine year period, 1993-2002. The overall results of this study indicated that the private sector mutual fund provided better returns than the public sector funds.

Priti Pandey and Sudesh (2005), in their study, empirically evaluated the stock selection abilities of Indian fund managers. The authors carried out across the fund characteristics for a sample of 35 funds during a selected study period. Their results indicated that the UTI sponsored schemes and FIIs sponsored schemes failed to achieve matching performance. The study concluded that 43 percent of the schemes provided better returns than the market during the period under study which had primarily been a bearish period.

Muthappan.P.K and Damodharan.E (2006) in their study, Risk- Adjusted Performance Evaluation of Indian Mutual Funds Schemes, investigated the Indian mutual fund schemes in the framework of risk and returns relationship during the study period April-1-1995 to March-31, 2000. The empirical findings of that study showed that the Indian Mutual Funds were not properly diversified during the study period.

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A study entitled, “Private Sector Mutual Funds Gaining Prominence in India”, conducted by Resia Begam S (2006), analyzed the emergence and rapid growth of private sector Mutual Funds. The researcher analyzed the trends of growth of Mutual Funds during the period of 2001 to 2005. The study concluded that the impressive growth of private sector Mutual Funds provided better returns to their investors.  

Ruzbeh J. Bobhanwala, (2006) in his article entitled, “An Empirical Study on Analyzing How Fund Managers in India Analyze Financial Reports with Special Focus on Quality of Reported Earning”, empirically evaluated the portfolio formation of fund managers. It was found from the study that fund managers rely primarily on financial statement analysis and key fundamental variables, namely, Book to Market Ratio (B/M) and Price Earnings Ratio (P/E).

Eugene F. Fama and Kenneth R. French (2006), analyzed how value premiums vary with size, whether the CAPM examined value premiums and whether in general average returns compensate beta in the way predicted by the CAPM. The study selected the U.S. Stock returns for the period of 1926 to 2004. The authors concluded that the CAPM had serious problems throughout the study period.

The paper entitled, “Bayesian Alphas and Mutual Fund Persistence”, by Jeffery A. Busse and Paul J. Irvine (2006), compared the performance predictability of Bayesian estimates of Mutual Funds performance with standard frequentist measures. The paper found that daily fund returns dominated the more common monthly returns in the context of forecasting future performance.

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Ramesh Chander (2006) examined the market timing abilities of investment managers operating in the Indian capital market from 1998 to 2002. The study explains the analysis of performance outcome of 80 investment schemes from the public as well as the private sector for a selected study period. The author remarked that the negative incidence of market timing performance, on the whole, pointed to the unsuccessful market timing abilities.\(^{28}\)

Meenu Verma (2007) investigated the concept of Investment Style Analysis of Mutual Funds. The author conducted a survey among various financial advisors and fund managers from various Asset Management Companies. It was found that majority of the Mutual Funds managers adopt the security specific investment style and prefer the Bottom-Up Approach Style while selecting stocks.\(^{29}\)

Jason T. Greene, Charles W. Hodges and David A. Ranowski (2007), in their article, Daily Mutual Fund Flows and Redemption Policies, examined open ended Mutual Funds from the period of 2000 to 2003. The study analyzed the short term trading of fund shares, as manifested in daily fund flows. The study found that the redemption fee was an effective tool in controlling the volatility of fund managers.\(^{30}\)

A joint paper entitled, Do Mutual Funds Time the Market? Evidence from Portfolio holdings, by George J. Jiang, Tong Yao and Tong Yu (2007), implemented new measures of market timing based on mutual fund holdings. The authors found that actively managed U.S. domestic equity funds had positive timing ability in their study period.\(^{31}\)

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Soumya Guha Deb, Ashok Banerjee, and Chakrabarti B.B (2007), in their study entitled, "Market Timing and Stock Selection Ability of Mutual Funds in India: An Empirical Investigation", examined the market timing and stock selection ability of the Indian Mutual Funds managers with a sample of 96 Indian equity Mutual Funds schemes. The study used unconditional and conditional measures. The results of the study indicated that the Indian mutual fund managers had a lack of market timing ability and presence of stock selection ability in both models during the study period.  

A joint paper entitled, “Emerging Trends of Mutual Funds in India: A Study Across Category and Type of Schemes”, by Bodla and Sunita Bishnoi (2008), attempted to find out the recent trends in mutual fund industry in India. The results establish that both open-end and close-end schemes registered excellent growth in fund mobilization. The study found that UTI’s share in total assets under management had come down to 11.8 percent in 2006 from 82.5 percent in 1998. On the whole, Mutual Funds were adding a lot to the India Shining Story by ensuring a significant growth.  

Previous studies, conducted across the world to analyze the performance measures of Mutual Funds, analyzed different types of Mutual Funds by using various measures like VAR, ETL Variance, CAPM, GARCH, Treynor and Mazuy(TM) and Henriksson and Merton (HM) Models. An attempt has been made in the present study to analyze the market timing ability and stock selection ability of Indian Mutual Funds Managers, using the models already employed in the above studies.

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II. RESEARCH DESIGN

Statement of the Problem

The Mutual Funds Industry is one of the fast growing sectors in India since the initiation of economic reforms in 1991. However, growth of Mutual Funds have posed difficulties to investors in making a selection of suitable schemes since there are more than 600 schemes, as on December 2007. The issues related to the choice of schemes among the public and private sector funds on the one hand and high risk associated schemes such as equity funds on the other, have become highly important for every investor. It is relevant that even a single wrong decision of Fund Manager may put the investors in financial crisis, sometimes leading to their bankruptcy. Therefore a proper performance evaluation measure is required as it will remove confusion and help the small investors in selecting suitable Mutual Funds Schemes for investment. The performance evaluation of Mutual Funds and the identification of successful Fund Managers are of great interest to investors, general public and academicians. A number of studies have been conducted across the world, including India, to find out the performance of Mutual Funds by using different performance measures. The researchers have used different tools like Treynor, Sharpe, Fama and Jensen Models and Treynor and Mazuy (TM) and Henriksson and Merton (HM) under both conditional and unconditional Models. The earlier studies analysed the market timing and stock selection abilities of Fund Managers by using only variables like Forex Reserves, Interest Rate and Market Dividend Yield. But there was no comprehensive study conducted by considering variables like GOI Bonds Indices having different maturity periods. Hence the present study has been made to fill this research gap and analyze the performance of Open Ended Equity Mutual Fund Schemes and analyze the market timing and stock selection ability. Against this background, the present study entitled, “Analysis of Market Timing and Stock Selection Ability of Indian Mutual Funds”, was undertaken.

Need of the Study

It is a known fact that Mutual Fund Institutions in India have grown significantly during the last decade. These institutions certainly play a crucial role in the Indian economy. The rapid growth of Mutual Funds has compelled us to take a deeper look into the performance of Mutual Funds, taking into account the expectations
of investors, ability of Fund Managers and market timings of the Portfolio Managers. This would enable investors to assess how much returns has been generated by Portfolio Managers and what risk level was assumed in generating such funds. Similarly, Fund Managers would be able to identify their fund performance over the time. The study on performance evaluation also provides a mechanism for identifying strengths and weaknesses of Fund Managers in the investment process in different market conditions, which help them to take corrective actions. Many studies have been conducted to analyse the performance of Mutual Funds using different models and variables. Only few studies have evaluated the performance of Mutual Funds by using more variables for the purpose of predicting accurate result. Hence the present study is an attempt to analyse performance analysis taking into consideration the market timing ability and stock selection ability of Managers of Equity Mutual Fund Schemes by using different variables.

**Scope of the Study**

Mutual Fund Institutions are dynamic financial institutions which play a crucial role in an economy by mobilizing savings and investing them in the Capital Market. Mutual Funds have provided investors with alternative opportunities with benefits of diversification and professional research back up. Once the objectives of investment and associated constraints have been identified, Fund Managers could select an efficient portfolio. Fund Managers must also consider the appropriate market timing and develop a suitable fund management style. The ability of Fund Managers depends on the final performance of the funds. However, factors like nature of portfolio, classes of assets, the timing of market entry and exit and portfolio switching also determine the performance of Mutual Funds. Every type of Mutual Funds has its own objective, based on their risk profile and liquidity content. Generally Equity Mutual Funds experience more risk than other funds. Besides, only Equity Funds are more relevant to the concepts of market timing and security selection rather than Debt Fund. Hence the present study aims at analysing the performance of Open Ended Equity Funds during the period of 2002 to 2007. It is also proposed to examine the stock selection abilities and market timing abilities of Fund Managers by using six variables like 91 days Treasury Bills Returns, GOI Bonds of 1 to 3 years maturity period returns, 3 to 8 years maturity period returns,
greater than 8 years maturity period returns, Market Dividend Yield Returns and Global Market Index Returns.

Objectives of the Study
The study was undertaken with the following objectives,

1. To overview the growth and development of Mutual Fund Industry in India,
2. To evaluate the performance of sample Equity Mutual Funds Schemes based on risk and returns relationship,
3. To compare the sample Mutual Funds Returns with their respective market returns,
4. To analyze the investment performance of sample schemes with respective benchmark through the relation to their systematic risk and total variability,
5. To evaluate the market timing abilities of Mutual Fund Managers by using unconditional and conditional models,
6. To apprise the stock selection abilities of Mutual Fund Managers by using unconditional and conditional models,
7. To summarize the findings and suggestions of the study.

Hypotheses of the study
The present study is undertaken to test the following hypotheses,

1. There is no significant relation between risks and returns of the sample Equity Mutual Funds during the study period
2. There is no significant difference between the Market Returns and sample Equity Mutual Funds Returns during study period,
3. There is no significant relations between investment performance of sample schemes and their systematic risk and total variability,
4. The Mutual Fund Managers are not successful market timers during the study period under unconditional and conditional models,
5. Mutual Fund Managers are not positive stock selectors during the study period under unconditional and conditional models.
Methodology of the Study

Sample Selection

The present study is an attempt to analyze the performance of Open Ended Equity Funds in India during the period of 1st January 2002 to 31st December 2007. For this purpose of analyzing the continuous performance of Mutual Fund Companies, the sample was selected from the Mutual Fund Companies whose schemes with daily NAV and other information were available for the whole study period. As on 1 December 2002, Indian Mutual Funds Industry had 36 players in the market. Out of 36 players, the required information for this research was available only for 21 players. Hence the researcher has selected only 21 Mutual Funds Companies of different categories. The selected sample Mutual Fund Companies fall under bank sponsored institutions, private sector from foreign and Indian, joint ventures between foreign and Indian companies and UTI Mutual Funds. The details of the sample Mutual Funds Companies and Schemes are given below.

Period of the Study

The present study on the performance of sample Equity Mutual Funds schemes covered a period of six years from January 1, 2002 to December 31, 2007. For the purpose of analysis, benchmark portfolio and other macro economic factors were collected for the same period.

Source of Data

The present study mainly depends on secondary data. The secondary data regarding Open Ended Equity Mutual Funds schemes were collected and used for this study. For evaluating the performance of sample Mutual Funds, Net Asset Value (NAV) was used. The required daily NAV for sample Mutual Funds was obtained from the ALPHA Mutual Funds database software of CMIE and Association of Mutual Funds in India (AMFI). The value of benchmark portfolio S&P CNX NIFTY was collected from NSE website and global benchmark – S&P GLOBAL 1200 was collected from Standard & Poor’s website. RBI 91 days Treasury Bills’ interest rates were taken as a risk free rate. The index returns for GOI Bonds with maturity 1 to 3 years, GOI Bonds with maturity 3 to 8 years, GOI Bonds with greater than 8 years and Dividend Yield of the market index were collected from the NSE website. The other relevant information were obtained from books, journals, magazines, and various websites.
<table>
<thead>
<tr>
<th>S.No</th>
<th>Categories of Mutual Funds Companies</th>
<th>No. of Sample Schemes</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>BANK SPONSORED</td>
<td></td>
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<tr>
<td>I-a</td>
<td>Joint Ventures - Predominantly Indian</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Canara Robeco Asset Management Company Limited</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>SBI Funds Management Private Limited</td>
<td>7</td>
</tr>
<tr>
<td>I-b</td>
<td>Others</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>UTI Asset Management Company Ltd</td>
<td>8</td>
</tr>
<tr>
<td>II</td>
<td>INSTITUTIONS</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>LIC Mutual Fund Asset Management Company Limited</td>
<td>3</td>
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<tr>
<td>III</td>
<td>PRIVATE SECTOR</td>
<td></td>
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<tr>
<td>III-a</td>
<td>Indian</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Escorts Asset Management Limited</td>
<td>6</td>
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<tr>
<td>6</td>
<td>JM Financial Asset Management Private Limited</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>Kotak Mahindra Asset Management Company Limited(KMAMCL)</td>
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<tr>
<td>8</td>
<td>Reliance Capital Asset Management Ltd.</td>
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<td>9</td>
<td>Sahara Asset Management Company Private Limited</td>
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<td>10</td>
<td>Tata Asset Management Limited</td>
<td>4</td>
</tr>
<tr>
<td>11</td>
<td>Taurus Asset Management Company Limited</td>
<td>3</td>
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<td>III-a(i)</td>
<td>Joint Ventures - Predominantly Indian</td>
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<tr>
<td>12</td>
<td>Birla Sun Life Asset Management Company Limited</td>
<td>18</td>
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<td>13</td>
<td>DSP BlackRock Investment Managers Limited</td>
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<td>14</td>
<td>HDFC Asset Management Company Limited</td>
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<tr>
<td>15</td>
<td>ICICI Prudential Asset Mgmt.Company Limited</td>
<td>6</td>
</tr>
<tr>
<td>16</td>
<td>Sundaram BNP Paribas Asset Management Company Limited</td>
<td>3</td>
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<tr>
<td>III-b</td>
<td>Foreign</td>
<td></td>
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<tr>
<td>17</td>
<td>Franklin Templeton Asset Management (India) Private Limited</td>
<td>17</td>
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<td>III-b(i)</td>
<td>Joint Ventures - Predominantly Foreign</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Baroda Pioneer Asset Management Company Limited</td>
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<td>19</td>
<td>ING Investment Management (India) Pvt. Ltd.</td>
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<tr>
<td>20</td>
<td>Morgan Stanley Investment Management Pvt.Ltd.</td>
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</tr>
<tr>
<td>21</td>
<td>Principal PNB Asset Management Co. Pvt. Ltd.</td>
<td>7</td>
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<tr>
<td></td>
<td>TOTAL</td>
<td>116</td>
</tr>
</tbody>
</table>

Source: ALPHA –CMIE database
Tools used for Analysis

The study analyzed the performance of Mutual Funds during the study period. Hence the following tools were used to examine the performance of Mutual Funds.

(1) Daily NAV Returns

The daily average NAV returns of sample funds during the period were calculated by using the following formula.

\[ R_{p,t} = \left( \frac{NAV_t - NAV_{t-1}}{NAV_{t-1}} \right) \times 100 \]

Where,

- \( R_{p,t} \) = Portfolio Returns in period of \( t \)
- \( NAV_t \) = Net Asset Value in period of \( t \)
- \( NAV_{t-1} \) = Net Asset Value in period of \( t-1 \)

(2) Daily Market Returns

The Returns on Market Index was calculated by using the following equation,

Where,

- \( R_{mt} \) = Market Index Returns in period of \( t \)
- \( R_t \) = Value of Market Index in period of \( t \)
- \( R_{t-1} \) = Value of Market Index in period of \( t-1 \)

(3) Sharpe Ratio

Sharpe’s Ratio measures the excess returns per unit of total risk as measured by Standard Deviation. Thus, Sharpe Ratio for sample Mutual Funds Schemes have been estimated by using the following equation,

\[ S_p = \frac{\bar{R}_p - R_f}{\sigma_p} \]

Where,

- \( S_p \) = Sharpe Performance Measure
- \( \bar{R}_p \) = Average returns of Portfolio \( p \)
- \( R_f \) = Risk Free Rate
- \( \sigma_p \) = Total Risk of \( R_p \)

(4) Treynor Ratio

Treynor Ratio measures the excess returns per unit of market (systematic) risk. Treynor Ratios for sample funds were worked out by using the following formula.
\[ T_p = \frac{R_p - R_f}{\beta_p} \]

Where,

- \( T_p \) = Treynor Performance Measure
- \( R_p \) = Portfolio Returns
- \( R_f \) = Risk Free Rate
- \( \beta_p \) = Market Risk of \( r_p \)

Unconditional Models

Several methods have been suggested in literature to test the market timing abilities of Mutual Funds Managers. However, the two basic models selected for the study were Treynor Mazuy Model (TM) (1966) and the Henriksson Merton Model (HM) (1981) in different periods. A brief description of the models is provided below.

(5) Treynor Mazuy Model

Treynor and Mazuy (1966) have suggested that in order to identify the market timing abilities of Fund Managers, one should add a quadratic term to the excess returns version of the linear relationship model. The parameters in the above model could be estimated by using standard regression methodology. Treynor and Mazuy have argued that the estimated value of parameter \( \gamma \) in the below formulation acts as a measure of market timing skills of Fund Managers.

\[
(R_p - R_f)_t = \alpha + \beta (R_m - R_f)_t + \gamma (R_m - R_f)_t^2 + \varepsilon_{pt}
\]

Where,

- \( R_p \) = Returns on the Fund,
- \( R_f \) = Risk Free Returns,
- \( R_m \) = Returns on the Market Portfolio,
- \( \varepsilon_{pt} \) = Random or Error Term,

and \( \alpha, \beta, \) and \( \gamma \) are the parameters of the model.

(6) Henriksson and Merton Model

Henriksson and Merton (1981) proposed a similar but simpler model to test the market timing abilities of the Fund Manager. Their model took a more qualitative approach to market timing. They assumed that the market timers are required to forecast whether market returns is greater than or equal to risk free returns (up-markets) or forecast market returns is lesser than or equal to risk free rate (down markets) and
select a fund beta as a large value if the market is expected to do well. Therefore a Fund Manager, who is a successful market timer, as per this model, was required to select a high up market beta and a low down market beta. They represent such a relationship mathematically by using regression equation involving a dummy variable as follows.

\[ (R_p - R_f)_t = \alpha + \beta(R_m - R_f)_t + \gamma(D(R_m - R_f)_t) + \varepsilon_{pt} \]

Where,
- \( R_p \) = Returns on the Fund,
- \( R_f \) = Risk Free Returns,
- \( R_m \) = Returns on the Market Portfolio,
- \( \varepsilon_{pt} \) = Random or Error Term,
- \( D \) = Dummy Variable that equals 0 in up markets and -1 in down markets

and \( \alpha, \beta, \) and \( \gamma \) are the parameters of the model.

**Conditional Models**

Majority of the studies have essentially used the modified versions of two basic models, namely, Treynor Mazuy Model (TM) and the Henriksson Merton Model (HM). In this study, the Researcher has used the unconditional and the conditional form of both these models to test the market timing and the security selection abilities of the Equity Mutual Fund Managers. Ferson and Scadt (1996) proposed the conditional approach of measuring the market timing ability of Fund Managers. The general consensus was that the conditional approach did a better job to identify the true market timing and the stock selection ability of Fund Managers than the unconditional models. The conditional models presuppose that Portfolio Managers can change both their alphas and betas over time depending on the influence of publicly available information about the economy.

(7) **Treynor Mazuy Model**

This Model assesses the stock selection ability and timing ability of Fund Managers by using different macro economic factors as follows.

\[ R_{pt} = \alpha_s + \alpha_e * D\pi_{(t-1)} + \alpha_s * D\delta_{(t-1)} + \alpha_s * B1 - \alpha_s * B3 - \alpha_s * B8 - \alpha_s * Rm_{(t-1)} + \beta_s * Rm_{(t-1)} + \beta_s * Rm_{(t-1)} * D\pi_{(t-1)} + \varepsilon_{pt} \]

Where,
- \( R_{pt} \) = Returns on Fund
- \( Rm_t \) = Returns on Market Index
- \( DP_{(t-1)} \) = Dividend Yield of the Market Returns,
- \( TB_{(t-1)} \) = 91 days Treasury Bills Returns,
\[ R_{p(t-i)} = \alpha_0 + \alpha_1 \times DP_{(t-i)} + \alpha_2 \times TB_{(t-i)} + \alpha_3 \times B1-3_{(t-i)} + \alpha_4 \times B3-8_{(t-i)} + \alpha_5 \times B-8_{(t-i)} + \alpha_6 \times Rgmt_{(t-i)} + \beta_1 \times Rm_{t} + \beta_2 \times Rm_{t} \times DP_{(t-i)} + \beta_3 \times Rm_{t} \times TB_{(t-i)} + \beta_4 \times Rm_{t} \times B1-3_{(t-i)} + \beta_5 \times Rm_{t} \times B3-8_{(t-i)} + \beta_6 \times Rm_{t} \times B-8_{(t-i)} + \text{Error Term} \]

Where,

- \( R_{p(t-i)} \) = Returns on Fund
- \( Rm_{t} \) = Returns on Market Index
- \( DP_{(t-i)} \) = Dividend Yield of the Market Returns
- \( TB_{(t-i)} \) = 91 days Treasury Bills Returns
- \( B1-3_{(t-i)} \) = GOI Bonds (1 to 3 years maturity) Returns
- \( B3-8_{(t-i)} \) = GOI Bonds (3 to 8 years maturity) Returns
- \( B-8_{(t-i)} \) = GOI Bonds (greater than 8 years maturity) Returns
- \( Rgmt_{(t-i)} \) = Returns on Global Market Index
- \( D \) = Dummy Variable that equals 0 in up markets and -1 in down markets
- \( \varepsilon_{p(t-i)} \) = Error Term

and \( \alpha_0, \alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5, \alpha_6 \) are the intercept values and \( \beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6 \) are coefficient values, \( \gamma \) represents the market timing ability of Mutual Fund Managers, and \( \alpha_0 \) represents the security selection ability of Fund Managers.

### Limitations of the Study

The following are the limitations of the present study.

1. The study has covered only 21 Mutual Funds Companies because details were available only for these companies.
As the study is based mainly on secondary data, it is beset with certain limitations which are bound to arise while dealing exclusively with secondary data.

This study has analyzed only Open Ended Equity Funds.

The study period is restricted to the period of six years from 2002 to 2007.

**Terms Used**

**Equity**

Equity is the risk capital of a firm. It is that part of the long term liabilities used to fund a company to create profits after prior charges have been met. It is the residual value of the company in liquidation after paying off all creditors.

**Equity Funds**

Equity Funds are invested in equities holdings. The structure of the fund may vary for different schemes depending upon the Fund Manager's outlook on different stocks. Equity investments are meant for a longer time horizon and thus Equity Funds rank high on the risk-returns matrix.

**Net Asset Value**

Net Asset Value is the current market value of a fund's holdings, less the fund's liabilities, usually expressed as a per share amount.

**Portfolio**

Portfolio is an appropriate mix or collection of investment held by an institution or an individual.

**Risk**

Risk in a generic sense is the possibility of loss, damage, or harm. For investment, it refers to variability in the expected returns.

**Market Risk**

Market Risk refers to the risk posed by the market in itself i.e. the risk that the price of a security will rise or fall due to changing economic, political, or market conditions, or due to a company's individual situation.
**Bear Market**

It is a period in market when investors are on a selling spree and the share prices are going down.

**Bull Market**

It is a period during which the prices of stocks in the stock market keep continuously rising for a significant period of time on the back of sustained demand for the stocks.

**Market Timing Ability**

Market Timing Skills imply assessing correctly the direction of the market whether bull or bear, and positioning their portfolio accordingly.

**Stock Selection Ability**

Stock Selection Skills involve micro forecasting which generally forecasts price movements of individual stock relative to stocks and identification of individual stocks that are under or over valued relative to equities in general.

**CHAPTER SCHEME**

**Chapter –I Introduction**

The study begins with an overview of Indian Mutual Funds Industry which includes evolution of Mutual Funds in India, growth and development of the industry, types of Mutual Funds, expansion, resource mobilization of Asset Under Management, and regulatory framework of Indian Mutual Funds in India.

**Chapter –II Review of Literature and Research Design**

This chapter presents a brief review of earlier studies in order to identify the research gap. Further, it explains the significance of the study, statement of the problem, need of the study, objectives and hypotheses of the study, methodology and limitations of the study.
Chapter –III Performance Analysis of Equity Mutual Funds - Traditional Parameters (TP)

Chapter Three deals with the performance analysis of Mutual Funds. This chapter includes comparison between risks and returns and comparison of actual returns with benchmark and ranking the funds using Treynor and Sharpe Ratios.

Chapter –IV Analysis of Market Timing Ability of Fund Managers - Unconditional Methods (UM) and Conditional Methods (CM)

Chapter Four discusses the market timing ability of Mutual Fund Managers. The ability of Fund Managers has been evaluated by using conditional and unconditional models during the study period.

Chapter –V Analysis of Stock Selection Ability of Fund Managers - Unconditional Methods (UM) and Conditional Methods (CM)

The stock selection ability of Mutual Fund Managers has been examined in this chapter. The conditional and unconditional models have been used to analyze the managers’ ability during the study period.

Chapter –VI Summary of Findings, Suggestions and Conclusion

Chapter Six gives the summery of findings, suggestions and conclusion of this study.