CHAPTER II
REVIEW OF LITERATURE

REVIEW OF LITERATURE

It is a matter of concern for the investing community that so far no active research has been carried out on the evaluation of performance persistency of Indian mutual funds. The researcher has made a pioneering attempt to evaluate the performance persistency of Indian mutual funds. Since mutual funds have made a strong progress in U.S.A. from 1920 onwards many authors have contributed their thoughts for the evaluation of such funds. Though there are a few Indian studies which made an attempt to rank the performance of schemes floated by different mutual fund organisations, they have failed to give any definite clues based on strong statistical significance. And further those studies have used data only for a period of two years or less. In this context, it is relevant to recall the different notions held by various authors of research papers pertaining to US mutual funds.

STUDIES ON MUTUAL FUND – THE USA EXPERIENCE

The USA is the pace-setter for the mutual funds industries world wide. The first mutual fund in the USA, Massachusetts Investors' Trust, was set up in 1924. The US mutual funds have enjoyed different levels of popularity over the past 30 years. Since the mutual funds movement in India is a relatively recent phenomenon, it will be educative for us to review the studies made by many researchers from developed countries such as the USA, the UK and Japan. During the late 60's, mutual funds were a popular investment choice. But during the 70's investor redemptions were greater than sales. However, in the 80's net sales of mutual funds made a dramatic comeback. Over this time period mutual funds have been studied in great detail.
Most of these studies have been concerned with measuring mutual fund performance, with management’s ability to “time” the market, or with management’s ability to select under-priced securities. Studies in these categories include those by Treynor and Mazuy (1966), Jensen (1968), Kon and Jen (1979), Henriksson and Merton (1981), Chang and Lewellen (1984), Henriksson (1984), and Jagannathan and Korajczyk (1986), to name but a few. These studies have generally concluded that mutual fund managers cannot consistently time the market or select under-priced securities. This has led to the conclusion that long-term individual mutual fund performance can best be described as random. Very few studies have attempted to explain the flow of money into and out of mutual funds. The remaining pages of this chapter are devoted to a review of the studies related to this topic.

Harry Markowitz (1952)\(^1\) provides a theory about how investors should select securities for their investment portfolio given beliefs about future performance. He claims that rational investors consider higher expected return as good and high variability of those returns as bad. From this simple construct, he says that the decision rule should be to diversify among all securities, securities which give the maximum expected returns. His rule recommends the portfolio with the highest return is not the one with the lowest variance of returns and that there is a rate at which an investor can increase return by increasing variance. This is the cornerstone of portfolio theory as we know it.

His portfolio theory shows that an investor has a choice of combinations of return and variance depending on the percentage of wealth invested in various combinations of risky assets. From this, he shows that a plot of all possible

combinations of wealth divided among possible combinations of securities will result in a circle. This circle will be plotted on an xy grid with return plotted on one axis and risk, as measured by variance on the other axis. The notion that investors desire to maximize return for a given risk gives rise to some combinations of securities dominating others in terms of risk and return characteristic. These dominant portfolios are said to lie on the “efficient frontier”. When an asset with no risk is added as an investment option, it shows that investors can divide their wealth between the risk free asset and a portfolio of the risky assets.

If return is plotted on the vertical axis, variance on the horizontal axis, and the circle of all possible combinations of risky assets is plotted in return and variance space to obtain the efficient frontier, a point can be plotted where the vertical distance represents the return on the risk-less asset and the horizontal distance represents the risk (which is zero). A straight line can be drawn from this point so that it touches the highest point of the efficient frontier. This line is termed the “Capital Market Line” (CML). If investors can both borrow and lend money at the risk free rate of interest, they can select any level of return and variance they are most satisfied with on that line. Any point on that line will provide a higher return for the selected level of variance. The CML attracted a lot of criticisms by the authors of Late 60’s.

The Wharton (1962) study investigated mutual fund performance in period t and the net inflow of money, or growth, in period t+1. The study found only a weak positive relationship for common stock funds. The methodology used was a two-by-two contingency table that compared the lower half of a particular sample in

performance with the lower half in growth, and conversely. This particular methodology has been criticized. Smith (1978) called it "coarse" on the ground that it does not use the data in the most efficient manner and is therefore not a strong test of the performance-growth relationship.

William Sharpe (1964) and John Lintner (1965) separately extend the work of Markowitz. They show that the theory implies that the rates of return from efficient combinations of risky assets move together perfectly (will be perfectly correlated). This could result from their common dependence on general economic activity. If this is so, diversification among risky assets enables investors to escape from all risks except the risk resulting from changes in economic activity. Therefore, only the responsiveness of an asset return to changes in economic activity is relevant in assessing its risk. Investors only need to be concerned with systematic risk $[\beta]$, not the total risk proposed by Markowitz. This gave birth to the "Security Market Line" (SML). The difference between the Capital Market Line (CML) and SML is the measure of risk used for the horizontal axis. The CML uses the variance of returns, whereas the SML uses the systematic risk termed beta. Beta is defined as the covariance between a security (or portfolio of securities) and the market as a whole, divided by the variance of the market. The market as a whole is considered the point of tangency between the SML and the efficient frontier. This is the foundation for the Capital Asset Pricing Model (CAPM).

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The CAPM is

\[ R_i = \alpha_i + \beta_i [R_m - R_f] + \epsilon_i \]  

(II.1)

Where \( R_i \) is the return of security \( i \), \( R_f \) is the return of the riskless asset, \( R_m \) is the return of the market, \( \beta \) is the systematic risk, and \( \epsilon \) is the random error term.

These pieces of seminal work have created a research industry for finance empiricists. Three separate measures of portfolio performance are derived directly from the preceding theories. They are the Treynor, Sharpe, and Jensen measures.

The Treynor Measure\(^1\) (1965) is

\[ T_p = \frac{E(r_p) - r_f}{\beta_p} \]  

(II.2)

Where, \( T_p \) is the Treynor measure, \( E(r_p) \) is the expected return on the portfolio under investigation, \( r_f \) is the risk free rate of interest, and \( \beta_p \) is the beta of the portfolio calculated against the market proxy.

The Sharpe Measure\(^2\) (1964) is

\[ S_p = \frac{E(r_p) - r_f}{\sigma_p} \]  

(II.3)

Where, \( S_p \) is the Sharpe measure, \( E(r_p) \) is the expected return on the portfolio under investigation, \( r_f \) is the risk free rate of interest, and \( \sigma_p \) is the variance of the portfolio.

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The Jensen measure\(^1\) is derived by subtracting \( R_1 \) from both sides of the CAPM equation to get

\[
E(R_i - R_f) = \beta_i \left[ E(R_m - R_f) \right] + e_i \quad \ldots \quad (II.4)
\]

Where \( E(R_i) \) is the expected return on portfolio \( i \), \( R_f \) is the risk free asset. \( \beta \) is the systematic risk defined as the covariance of the portfolio with the market divided by the variance of the market, and \( E(R_m) \) is the expected return on the market portfolio. If the intercept is not constrained to be zero, the equation can be written as

\[
E(R_i - R_f) = \alpha + \beta_i \left[ E(R_m - R_f) \right] + e_i \quad \ldots \quad (II.5)
\]

This formulation allows ordinary least squares regression techniques (OLS) to be used to examine performance. This work is treated as the pioneer attempt in this field for all the capital market theories advented subsequently.

Spitz (1970)\(^2\) related mutual growth to performance. Growth was measured by net cash inflows which was defined as sales of capital shares less the redemption of capital shares. A shortcoming of this growth variable is that it includes investment returns (dividends and capital gains) that are automatically reinvested. This procedure is incorrect because additional shares purchased in this manner do not meet the definition of new money because some of the shares purchased simply compensate for payments. performance was measured by adding realized and unrealized capital gains with gross income minus expenses (which included management expenses). The data was on a yearly basis and consisted of only 20 mutual funds over the time period from


1960 to 1967. Using time series correlations, Spitz tested two models. The first was a contemporaneous model that related performance and growth in the same period. The second model related growth in time period \( t \) with performance in period \( t+1 \). The author concluded that the results were generally insignificant.

Fama and McBeth (1973)\(^1\) examine the return of securities, using OLS techniques and find that the CAPM, or market model, explains returns well. They examined three testable implications of the market model, (1) the relationship between risk and return is linear, (2) beta is a complete measure of risk, and (3) higher risk should be associated with higher returns. They conclude that none of the three testable implications can be rejected. The results are consistent with efficient markets and a sound asset pricing model, however, the estimated intercept was somewhat higher than \( R_f \).

A study by Smith (1978)\(^2\) related mutual fund growth to fund performance and found some positive relationships after adjusting for risk using Jensen's Alpha. In carrying out the study, Smith tested two hypotheses. The first was "Mutual funds that "improve" their performance in a given period, experience a growth rate in assets under its management during the next period that is no different from that of mutual funds that did not improve their performances..." However, Smith correctly recognized that the growth of a mutual fund's assets may be the result of both new money flowing into the fund and to successful investment performance. Smith accounted for this in his second hypothesis by defining the growth in mutual funds in


terms of “outstanding shares” instead of “assets.” However, using the growth in outstanding shares incurs the same criticism as it did in Spitz’s study, that is, it incorrectly includes the reinvestment of dividends as new money. Also, Smith used the “improvement” in investment performance as the measurement variable affecting mutual fund money flows. The problem with measuring the “improvement” in performance is that it ignores the total, or overall, performance position of a fund relative to other funds. To illustrate, the return, or investment performance of a fund may have increased dramatically, but the fund may still have a total return that is well behind other funds. A large amount of new money may not flow into such a fund despite its recent performance improvement. Yet, Smith’s methodology examined exactly that aspect of the question.

To test his hypotheses Smith selected as performance variables the non-risk-adjusted performance measure developed by Jensen (1968) known as Jensen’s Alpha which was estimated over the previous five-year period. Growth periods of six and twelve months were examined subsequent to the performance estimates. The methodology consisted of rank correlations relating the “change” in performance to the “change” in growth in subsequent periods. The data used to test the first hypothesis comprised of 74 common stock mutual funds for the time period 1964 to 1975. The second data set comprised 50 funds from 1960 to 1973. In his analysis, Smith found no significant relationship when the Forbes rating was related to either the growth in assets or the growth in shares. When Jensen’s Alpha was used as the explanatory variable, some significance was found, but not enough to reject the null hypothesis. In addition to the problems mentioned above, Smith himself noted that

his study had two basic shortcomings. The first was the small data base and the second was that money flows may depend on variables other than the Forbes rating or Jensen’s Alpha.

Roll (1978)\(^1\) shows there is ambiguity when performance is measured by the SML. The difficulty is that different market indices provide different rankings. While previous work was mathematically, theoretically, and intellectually rigorous, the author not only defined this market portfolio but made an attempt to estimate a covariance matrix with it. Theoretically, the market portfolio is the composition of all investible assets. In practice, since this is not measurable, some proxy must be used for the true market portfolio. The trouble is that even an equally weighted and value weighted index of the same securities can produce conflicting performance results when used as the proxy for the market portfolio. The ambiguity of the SML arises because a different beta can be generated for assets and portfolios by using different indices. Therefore, beta is not an attribute of the individual asset. Beta is a measure of the risk of an asset if included in a portfolio of risky assets consisting of the market portfolio and a risk-less asset. Therefore, differences in portfolio selection ability cannot be measured by the SML criterion. If the index is ex-ante mean variance efficient, it is impossible to discriminate between winners and losers. If the index is not ex-ante mean-variance efficient, designating winners and losers is possible, but another index can designate different winners and losers and there is no way to determine which one is correct.

Therefore, Roll criticises CAPM by saying that (1) the only valid test is if the index is efficient, (2) if an index that is ex-post efficient is chosen, every security will plot on a straight line, and (3) if the index is inefficient ex-post, abnormal returns can be detected and ranking is possible. Despite Roll's critique, research using CAPM continued. Since both the Jensen and Treynor measure use a beta for the market portfolio, they are both subject to this problem of determining the true market portfolio and measuring it's returns. This criticism is now far more troubling. Many anomalies to CAPM have been documented since the mid-1970's.

Basu (1977)\(^1\) shows that low price to earnings ratio portfolios have greater risk adjusted returns than high P/E ratio portfolios. Banz (1981)\(^2\) finds that returns on common stocks with low market equity have greater risk adjusted returns than those stocks with high market equity. However, the "size effect" is not a linear explanatory variable. Copeland and Mayers (1982)\(^3\) show that a portfolio of stocks denoted as "buy" by "Value Line" outperform a portfolio of "sell" stocks. Basu (1983)\(^4\) shows that the P/E ratio effect that presented in 1977 also existed after adjusting for the size effect reported by Banz (1981). Stickel (1985)\(^5\) shows that changes in "Value Line" rankings are followed by abnormal returns and this effect is greater for smaller firms. De Bondt and Thaler (1985)\(^6\) test the "Overreaction Hypothesis" which claims

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investors overreact to news and overweight recent information. They conclude "loser" portfolio outperform "winner" portfolios by approximately 25 per cent. Reinganum (1988)\(^1\) finds that price/book ratios explain stock returns. Further, portfolios of stocks with price/book ratios of less than one significantly outperform the S&P 500 index. Fama and French (1988)\(^2\) show that dividend yields can forecast future returns Lehmann (1990)\(^3\) finds that "winners" and "losers" one week experience significant reversals the next week and that significant excess returns can be generated by buying "losers". Jegadeesh (1990)\(^4\) examines the return on individual securities and provides evidence of stock return predictability through a mean reversion process. Stocks that perform exceptionally well in one year perform poorly in the next year, whereas poorly performing stocks improve performance in the following year. Lo and MacKinley (1990)\(^5\) also find contrarian trading rule profits.

In 1984,\(^6\) Chang and Eric Chieh developed an investment performance evaluation model in the multi-factor arbitrage pricing theory framework and then empirically compared and applied; Three investment performance evaluation methodologies examined are the multi-factor selectivity model, the single-factor selectivity model, and the single-factor selectivity and timing model. Several criteria for comparison are developed and the results are reported. The actual investment performance of a sample of mutual funds are evaluated according to these three

methodologies. In general, they have provided evidences to show that both the multi-factor selectivity model and the single-factor selectivity and timing model are superior to the single-factor selectivity model. However, the major conclusion about the non-superiority of mutual funds investment performance drawn from the tests based on the single-factor selectivity model have not been altered when more sophisticated models are applied.

Woerheide (1982)\textsuperscript{1} used a somewhat different approach in attempting to explain mutual fund money flows. The major objective of his study was to identify the selection criteria investors seem to use in buying and selling mutual fund shares once an investment objective had been selected. Woerheide defined success as the selection by investors of a given mutual fund, as measured by the net sales ratio. The net sales ratio was defined as gross sales, less redemptions, divided by total assets at the start of the year. Woerheide's definition of success contains the same error as the Spitz and Smith studies described above, that is, the sales figures include reinvested dividends which should not be included as new money. The selection criteria evaluated included two groups. The first group was called "efficient market criteria," and the second group "other factors." The rationale for the efficient market criteria was that investors would prefer funds that were managed so as to maximize the fund's return while minimizing its risk. The return-sensitive variables were whether or not there was a load charge, the management expense ratio, the portfolio turnover ratio, and the brokerage expense ratio. The risk reducing variable was the number of different securities within the mutual fund portfolio. This variable was

selected on the basis that the risk of a portfolio has been shown to decrease as the number of securities in it increases. The “other” category of explanatory variables included items that may influence an investor’s selection of a particular mutual fund, but were not directly related to the risk and return characteristics of the fund. These variables included marketing strategy, mutual fund size, and prior performance as measured by non-risk-adjusted rates of return.

To test his selection criteria, Woerheide confined his data to one objective classification as defined by the 1977 edition of the “Investment Companies” publication. The funds used in his study were classified as “long-term growth, income secondary.” The data used for each variable tested depended on data availability, but covered the time period from 1972 to 1976 for 15 to 44 funds. The test intervals were one and three year time periods. The methodologies varied according to the variables being tested, but included correlation analysis, regression analysis, and a comparison of means and standard deviations.

Woerheide found no statistical significance for any of the efficient market variables, and only weak statistical support for two of the “other” variables, specifically, mutual fund size and prior return performance. The marketing program variable was insignificant. Concerning the direction of the relationship, Woerheide found that the absence of a load charge was generally negatively related to his performance variable while the management expense ratio had a positive sign. Woerheide concluded that these relationships were incorrect. The turnover ratio, the brokerage ratio, and the marketing program variables has a positive relationship. These relationships were considered appropriate by woerheide. The variable representing the size of the mutual fund produce conflicting results with respect to the
direction of the relationship. Woerheide's approach was sound in that he attempted to determine whether investors use risk and return variables or "other" variables in selecting mutual funds. But, his performance measures are not risk adjusted, and he considered too few "other" explanatory variables. Overall, woerheide's conclusions must be questioned because the data base was small both in terms of the number of funds and the time span.

Jegadeesh and Narasimhan (1990)\(^1\) have developed a new approach for testing asset pricing model. The principal advantage with the approach is that it does not require specification of a particular form for the alternate hypothesis. It allows use of individual for the alternate hypothesis. It allows use of individual security data without aggregation into portfolios which in general should increase the power of the tests. A method for comparing the specifications of different asset pricing models, which could be non-tested, is also proposed. This approach is used to test the capital asset pricing model, a size based returns model and the arbitrage pricing theory. In all these tests, the joint hypothesis of the adequacy of the asset pricing model and market efficiency are rejected. All of these tests indicate pronounced short term return reversal effect which appears to be related to asset specific returns. Additional tests further support such a conclusion.

Santini, Donald Louis (1990)\(^2\) made an attempt to measure the competitive success the mutual funds by assessing the ability to attract new money. The main objective of this study is to identify those factors that will explain the flow of new money into and out of common stock mutual funds. This current research investigates

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\(^2\) Donald Louis, "An Analysis of the Flow of New Money to Open-ended Mutual Funds", Dissertation submitted in Boston University, Graduate School of Management, May 1990.
the flow of new money on three levels. The first level analyzes the flow of new money to the entire mutual fund industry. The second level analyzes the flow of new money after the mutual funds have been grouped according to their risk and return characteristics. The third level analyzes the flow of new money to individual mutual funds. The analysis is conducted on three levels because the factors that are helpful in explaining the flow of funds on one level may not be helpful on one, or both, of the other levels. The variables included to explain the flow of new money are characterised as follows: general environmental variables; risk objective classification variables; and fund specific variables.

Previous research in this area is comprised of studies by Spitz (1970)\(^1\), Smith (1978)\(^2\), and Woerheide (1982). Although these studies have contributed to understanding of mutual fund performance, they pose interpretation problems due to the use of weak statistical techniques, incorrect logic, or a questionable choice of variables used to measure mutual fund performance and success. This is distinguished from these previous works by using the flow of new money as the measure of success of a mutual fund. The flow of new money refers to the change in a mutual fund's asset level net of the internally generated return. Additional improvements include a large current data base with daily return data comprising its foundation, the use of regression analysis to determine explanatory relationships, and a more comprehensive list of explanatory variables.


In 1992 Pinto and Jerald have incorporated three empirical studies investigating the informational efficiency of the U.S. capital markets. The evidence of each study is consistent with a traditional view of market efficiency. The first paper examines forecasting ability and performance of balanced mutual funds contemporaneously available to investors, between 1965 and 1985, using quarterly asset composition information in Wiesenberger Management Results. This first study to apply asset information directly to mutual fund performance evaluation finds that (1) asset allocation decisions exhibited insignificantly positive success overall in forecasting the sign of the stock-bond relative return; the distribution of successes over time did not exhibit clustering (contra Hendricks et al. (1988))2; (2) macro forecasting performance was natural for funds as a group; ability to forecast interest rates was outweighed by inferior forecasting with respect to common stocks; (3) the typical fund did not present the opportunity for a marginal mean-variance improvement over a buy-and-hold investment in any of several benchmark portfolios.

The second study relates the returns on 236 domestic equity mutual funds over a period of 10 years between 1972 and 1982. To a return generating equation incorporating the set of macroeconomic factors developed by Burmeister and Wall (1986)3 and Burmeister, Wall and Hamilton (1986)4. The focus is on the attribution of performance to information about specific economic factors. This is of interest to efficient markets theory as mutual fund managements expend substantial resources in macroeconomic forecasting. Using transmitted effects (Mundlak (1978))5 regressions,

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we conclude that (1) adjustments in factor exposure typically did not contain information about future factor values; (2) the non-stock factors, in particular unanticipated inflation, are more important than the market factor in explaining fund returns.

Possibly the most compelling evidence is presented by Fama and French (1992). They find that book-to-market equity is the most significant explanatory variable for predicting security returns, and that portfolios with a low market-to-book value ratio have higher returns than predicted by CAPM. They find that the combination of market-to-book value and size explains returns and that beta is insignificant in a regression that includes all three variables. This multi-beta approach is somewhat related to the work or Ross (1976) who developed the Arbitrage Pricing Theory (APT). They use the statistical procedure of factor analysis to determine the relationship between factors thought to effect security returns and actual returns APT is a rival CAPM and its treatment is beyond the scope of this study. However, there is increasing support for theories other than a single factor CAPM. The issue of whether non-fundamental factors such as investor fads or sentiment affect stock prices has long been a contentious issue in financial economics. Recently, it has been proposed that the closed-end fund discount puzzle and the small firm effect may be related to the actions of individual investors who trade based on sentiment. Empirical studies that show that movements in closed-end fund discounts and small firm prices are correlated have been interpreted as evidence that investor sentiment affects stock prices.


Swaminathan and Bhaskaran (1994) made an attempt to focus on the implications of individual investor behavior for the pricing of close-ended funds and small firms. Specifically, they developed a two-security, noisy rational expectations model of closed-end funds and compare its predictions to that of a model of investor sentiment. The rational model shows that the estimation errors of rational but imperfectly informed small, individual investors can give rise to average discounts. However, discounts cannot track time variation in expected returns induced by mean reversion in small investor estimation errors. In contrast, in a model of investor sentiment, discounts can track time variation in expected returns induced by mean reversion in small investor sentiment. This implies that discounts can forecast stock returns either if they are a proxy of investor sentiment or if they are a proxy of some fundamental factor.

Their empirical tests examine the time series implications of the two models. The results indicate that discounts forecast small firm returns. They also show that the forecasting power of discounts is not related to that of any known fundamental forecasting variable. This evidence provides support for the investor sentiment explanation of the pricing of closed-end funds and small firms, and suggests that there may be sentiment related variation in small firm expected returns.

The study by Lee, Sungsoon in (1995) makes three contributions to the literature on the evaluation of mutual fund performance. First, it evaluates various empirical models of the bond return generating process and suggests new benchmarks.

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that are the most appropriate for evaluating the performance of managed bond portfolios. Second, it provides thorough empirical evidence concerning the performance of bond mutual funds and examines the sensitivity of performance inferences to benchmark choice. Third, it analyzes the cross-sectional and inter-temporal behavior of performance measures to determine the relationship between performance and various fund characteristics. The appropriateness of benchmarks is tested in both the specialized context of mean-variance efficiency and in the more general context of goodness-of-fit comparison. Among the six proposed benchmarks, the two-factor model, consisting of the composite bond index and six-month Treasury bill index, and the three-factor model, consisting of the composite bond index, are the most appropriate for performance evaluation of bond mutual funds. They find little evidence that the managers of bond fund as a class provide superior performance after accounting for expenses relative to various benchmark returns. While the average Jensen alphas across benchmarks are predominantly negative in both the full sample period and in the first sub-period, bond mutual funds exhibit better performance with a considerable decrease in the number of funds with significantly negative Jensen alphas during the second sub-period spanning from 1984 to 1989.

Another study by Prather and Larry Joseph (1995) reexamines performance evaluation of managed portfolios. Past measures of portfolio evaluation such as the Sharpe, Treynor, and Jensen measures are subject either to the inability to rank performance based on statistical significance, or are dependent on both a single factor CAPM return generating process and the selected market portfolio. Recent studies

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show performance ranking is sensitive to the selection of the market proxy when the security market line is used to evaluate performance. Additionally, CAPM based measures that appeared to work well in the 1960's no longer appear to function effectively. Many anomalies to CAPM have been documented since the 1970's and recently, Fama and French (1992)\(^1\) declared the CAPM beta to be dead.

Zheng, Lu, (1999)\(^2\) Yale university Contributed three essays on Investment cash flows regarding mutual funds, Stock prices. These essays study cashflow-related behavior of different classes of investors and examine possible market impact of these investment cash-flows. The first essay looks into open-end equity mutual fund shareholders' fund selection ability by analyzing the performance predictability of investors' cash-flows. Using a large sample of equity funds, The researcher could notice that funds that receive more money subsequently perform significantly better than those that lose money. This effect is short-lived and is largely but not completely explained by a strategy of betting on winners. In the aggregate, there is only marginal evidence that funds that receive more money subsequently beat the market. However, it is possible to earn significant positive abnormal returns by using the cash-flows information for small funds. The second essay examines the relation between stock prices and cash-flows from different investment sectors. Using long-term data on stock market and investment cash-flows, It was identified that there are some investment sectors which can effectively set stock prices. These sectors include mutual funds, foreign investors, and pension funds. Further, the study examined the economic significance of the possible market impact of these sector cash-flows by


studying the contemporaneous relation between stock market returns and the sector cash-flows. The researcher found no Granger-causality between quarterly stock market returns and the sector cash-flows in either direction. By studying the response of the sector cash-flows to shocks in stock returns over time, the researcher observed a much longer memory for the mutual fund sector than for any other sectors in the economy. The third essay examines the relation between stock market volatility and cash-flows from different investment sectors. It is observed that cash inflows of close-end funds are positively related to contemporaneous upward volatility, and that cash outflows of foreign investors and mutual funds are positively related to both upward and downward volatility. The VAR analysis indicates that unexpected cash outflows of foreign investors and mutual funds are positively correlated with contemporaneous downward volatility of the stock market. In the long run, household investors pursue a volatile upward market while mutual funds and other institutional investors are averse to high volatility in a downward market.

Eric C. Chang and Wilbur G. Lwellen (1984)\(^1\) made an attempt to compare market timing abilities of the Fund managers and Investment performance. There are some studies in the past which made an attempt to rate the market timing and selection of portfolios skill of mutual fund managers. A number of studies, including those by Kon and Jen (1978, 1979)\(^2\), Fabbozzi and Francis (1979)\(^3\), Alexander and Stover (1980)\(^4\) and Milter and Gressis (1980)\(^5\) have made an attempt to find out


whether the portfolio managers might, however, achieve differential return performance by engaging in successful “micro” market-timing activities as well as careful, “micro” security selection effort.

Henriksson and Merton (1981)\(^1\) portray the market-timing portfolio manager as having an asset allocation policy involving investment divided among the market portfolio of equities and riskless bonds according to the following rule: At the beginning of time period \(t\), if the managers forecast is that bonds will outperform stocks during the period, then 100\(\eta_1\) per cent of the managed assets will be invested in the market portfolio and 100(1-\(\eta_2\)) per cent in bonds: Conversely, if the forecast is that stocks will outperform bonds, the allocation will be 100\(\eta_2\) per cent to the market portfolio and 100(1-\(\eta_2\)) per cent to bonds. Accordingly, the systematic risk level of the portfolio, \(\beta(t)\) is a decision variable \(\eta_1\) and \(\eta_2\) are its respective predicted down-market and up-market values, and we would expect that \(\eta_1 - \eta_2\) for a rational forecaster.

Ravi Jagannathan and Robert A. Korajczyk (1986)\(^2\) made an attempt to assess the market timing performance of mutual funds. The authors employed only parametric techniques which only assume knowledge of the managed portfolios returns and hence do not require direct observation of the manager’s market forecasts or portfolio composition. The authors used the parametric tests proposed by Henriksson and Merton (1981) as their performance measurement technique. This method was chosen by them because it is a widely known and tested technique: Their

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results were calculated for the 56 year period Jan, 1926 – Dec, 1981. In addition, they found out results for four 14-year sub-periods. In this paper, the authors demonstrated that it is possible to create artificial market timing, as measured by commonly used parametric models of timing, by investing in option-like securities. This artificial timing ability was obtained at the cost of poorer measured security selectivity.

Veit and Cheney (1982) investigated the ability of mutual funds managers to adjust the risk level of funds to leverage the ability to time the market. They test the null hypothesis that alphas and betas are the same in bull and bear market using annual data for 74 funds over the 1944-78 period. The sample was sub-divided into balanced funds, income and growth to examine differential effects by investment objective.

Market timing can arise from the manager changing the risk level through a change in the mix of security types such as from cash, bonds or preferred stock to common stock, or from increasing the riskiness of securities within a specific group as securities.

Empirical tests are conducted using the market model and the S&P 500 as the market proxy. This generated estimates of alpha and beta for bull market periods, bear market periods, and the complete period. Results suggest funds in general do not change their risk level to time the market. They conclude that inability to forecast market returns, high transactions costs to change portfolio composition, or unwillingness to change the risk class of the fund are possible explanations for the lack of timing.

REVIEW OF LITERATURE – INDIAN STUDIES

Some of the research projects undertaken in India made an attempt to analyse the performance of Indian mutual funds. The Rates of return and risk constitute an important measure to evaluate the performance of any mutual fund. Mostly, these studies have made an attempt to analyse the risk and return aspects of the mutual fund schemes.

The Dalal Street Journal (1993)\(^1\) carried out an analysis published performance ranking of 122 mutual fund schemes floated by different mutual fund organisations taking 26 schemes from growth category, 28 schemes from income category, 35 schemes from income and growth category and 33 schemes from the tax planning category.

The study used the following formula to measure the relative performance:

\[
\text{Relative Performance Index} = \left( \frac{\text{Percentage Growth in NAV}}{\text{Percentage change in National Index}} \right)
\]

It also used Compounded Annual Rate of Growth (CRAG) as a measure to evaluate the performance of these schemes. Based on this methodology, the schemes which are having high relative performance index and high percentage of CARG are rated as top performers and Vice Versa.

The Capital Market Research Bureau (1993)\(^2\) made a research presentation explaining how different mutual funds and their various schemes fared during 1992, the turbulent period. For comparing fund wise performances, only those schemes

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which closed on or before March 1992, had been considered. The schemes were classified into Income, Growth, Income-cum-Growth, and Tax planning schemes. Each category has a different investment objective and hence, a different level of risk. Hence a comparison has been made of performance of different schemes within each category, and how the mutual funds in that category performed on the whole. The analysis also evaluated the change based on BSE National Index during the period April 1993 – June 1993. Further an investment strategy has been suggested to the prospective investors based on the overall performance.

In calculating the Fund wise change in net assets and computing all the tables the study adopted the following methodology.

\[
\text{Net Assets as of June 1993} - 1 \times 100 \\
\text{Net Assets as of March 1992}
\]

Net Assets is the summation of

\[
\frac{\text{Average Limit Capital}}{\text{Face Value}} \times \text{NAV}
\]

For all Schemes in the Category

According to the study performance, the combined returns of all mutual funds worked out to 14 per cent.

In the growth category, All schemes of Punjab National Bank (PNB) mutual funds performed well and all schemes and the Canbank mutual Fund were the worst performance (-57 per cent).

In the Income category BOI mutual funds with 5 per cent rise in NAV was the top performer and the PNB mutual fund with -22 per cent was the worst performer. Under tax planning category BOI mutual funds with -7 per cent fall in NAV was the
best performer and the Indian Bank mutual funds with -66 per cent was the Worst performer. With regard to Income-cum-Growth category LIC mutual fund was the top performer with -12 per cent fall in NAV and the Canbank mutual funds was the worst performer with -31 per cent fall in combined NAV of all schemes. Further, the study suggested Ten top Schemes based on its analysis. In that list the first five places were plucked by the schemes floated by UTI mutual funds. The schemes are Mastergain 92, UGS 5000, Mastergrowth, UGS 2000 and Masterplus-91.

The Express Investment Week (1994)\(^1\) underwent a survey and assessed the performance of 113 schemes of different mutual fund organisations. Of which 34 schemes are from growth category, 23 are from income category, 24 are from income-cum-growth category and 32 schemes from tax planning category. They utilised NRF as a performance indicator. \([\text{NRF means BSE National Index Relative Factor.}]\) It is a measure of the percentage change in NAV of a particular scheme over a specific period of time vis-a-vis the percentage change in the 100-share BSE National Index over the same period.

With regard to 6 month performance in the growth category BOI mutual funds schemes FBGS-1991 fared well with +25 points. The worst performer in that category was UTI’s Mastershare with 75 points. In the Income category, the best performer was Canbank mutual fund’s Canstar – (80L) with +2 points and the worst performer was LIC mutual fund’s Dhanaraksha 89. With regard to Income-cum-growth category Canbank mutual fund’s Canstock was the best performer with +2 points and the worst performer was LIC MF Dhanasahayog with -49 points. In the tax planning category the Best performer was PNB mutual funds Equity growth Fund

93 with 417 points and the worst performer was IndBank mutual fund's India Tax shield (A) with -40 points.

The study by Shome (1994)\(^1\) is based on growth schemes which had completed at least one year before April 1993. At the time of the study 17 such schemes were in operation in India, Six of UTI, three of Canbank mutual funds, three of Indian Bank mutual funds, two of SBI mutual fund, two of BOI mutual fund and one of LIC mutual fund. The performance of the mutual funds industry during the period 1993 to March 1994 was examined in relation to the market using BSE Sensitive index. The study revealed that the average rate of return of the industry was 5.16 per cent as against market returns of 5.78 per cent.

The World bank Survey (1995) conducted a survey with the help of data obtained from 68 close-ended mutual funds of so emerging markets and listed these markets as per their performance results. According to its report published in the May 95\(^2\). The total returns fell to 11.2 per cent after dropping by 13.4 per cent in the fourth quarter of 1994. The returns of Indian mutual funds also fell, but the average returns of 13 close-ended funds was better than the returns of mutual funds of Latin America (16), Thailand (13), Indonesia (10), Phillipines (5) and Brazil (3), in Asia, the performance of mutual funds of south korea (3), Malasia (14), China (13), and Vietnam (5), was better than that of India.

Kale and Uma (1995)\(^3\) of the National Insurance Academy, Pune, India, employing risk-return relationship technique conducted a study, on the performance

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\(^1\)Shome quoted H. Sadhak.
\(^3\)Kale, Sunitra and Uma, A study of the Evaluation of the Performance of mutual funds in India, National Bank Institute, Pune, 1995.
of Indian mutual funds their study of reveals that the schemes on an average proved true to their objectives. According to the findings, the growth schemes yielded an average of 47 per cent CARG, Tax-pluming schemes gave an average of 30 per cent CARG, followed by balanced schemes with 28 per cent CARG and Income schemes with 18 per cent CARG.

Value Research India (1996)\(^1\) conducted a survey covering the bearish phase of Indian stock markets from 30 June 1994 to 31 December 1995, when BSE Sensex fell from 4,086.70 to 3,110.50 and the National Index fell from 1937.7 to 1480.80. The survey examined 83 mutual fund schemes, 15 income schemes and 15 balanced schemes. The findings of the survey reveal that Indian mutual funds are generally safe avenues for investment. While Income and balanced schemes are absolutely risk free, even a large number of growth schemes are quite safe for investors. The findings suggested that there is a scope for improving portfolio structure and portfolio readjustment, keeping in view the scheme fundamentals and investment objectives. In November 1995, Micropal, U.K.-based fund Monitor conducted a survey and placed the Indian mutual fund schemes among the top 100 emerging market funds. The survey observed that the total assets of these 100 funds amounted to US $65,105.9 million (as on June 195) and 65 per cent of the total assets were accounted for by open-ended funds. The Indian schemes placed in the list of Top 100 funds were: Master gain 1992, Masterplus, Master Equity plan-92, Institutional Investors special fund-93, Master equity plan-95 of UTI, Indian Magnum fund of SBI fund 93, Canstar of Canbank mutual fund. Master gain 1992 was ranked among the top five funds of the 100 funds surveyed. Among the top 10 close-ended funds were three

Indian funds, namely MasterGain 1992, Mastershare and Masterplus of UTI. It was further stated in the Micropal survey that the most popular country funds included Indian funds, which accounted for US $6.4 billion. In the ranking of investment management, UTI of India ranked third, after Capital International (USA) and Templeton Investment Management (USA).

The financial express investment magazine, (1997)\(^1\) conducted a study jointly with Value Research, a pioneer in tracking mutual funds in India shows that the bond funds have emerged as winners, while equity funds plunged deeper into red. According to the performance analysis, the best performing bond funds gained an average return of 16.31 per cent while the average growth fund lost 14.31 per cent. During January to April 1997, the average bond fund delivered a return of 3.92 per cent against an average equity fund gain of 2.28 per cent. As many as 14 of the 28 funds, ranked on the basis of return during one year, are above average performers. Since these income funds, which invested more than 50 per cent of their resources in equities against its objective, have hit the rock bottom. The Canstock scheme suffered the maximum and its NAV gone down by over 50 per cent. The study reveals that the steeper falls among equity funds was mainly on account of their portfolio spread in small and mid-cap stocks. These stocks have suffered more than the heavy weighted indices. Only four of the 51 growth funds ranked for the one-year period have posted positive gains.

In a bear market the balanced funds have certainly made their presence felt and successfully guarded investor’s money. The average balanced funds posted the

highest gain, among all objective categories. With the exception of Dhanashree 90' and Cangaga all other schemes fared better.

This project employed the following methodology for ranking the performance of different categories of mutual fund schemes. The ranks are based on the returns as on April 30, 1997. The March 31, 1997 returns were not considered as the sensex crashed by 300 points that day. Total return is calculated by taking the change in NAV, assuming the reinvestment of all dividends, issue of bonus and rights units, and dividing it by the initial NAV. Returns for periods longer than one year are expressed in terms of their compounded average annual returns.

The Fund's performances were compared with various benchmarks over different time periods. The indices used for growth funds are the 30-scrips Mumbai Stock exchange Sensex and the 100-scrips BSE National Index (Natex); for income funds, I-Bex total return Index and I-Bex Principal return Index and for Balanced funds, I-Bex total return index is combined with BSE Natex.

The Business Today (1998),¹ a leading business journal and Value Research jointly made the rating for the different schemes of Indian mutual funds. The study prepared the mutual fund score board by evaluating mutual fund schemes on the basis of their risk-adjusted performance. Having adjusted for risk, this score board assessed the performance in comparison to a representative basket of stocks, such as the 100-scrip BSE National Index. This risk adjusted return; was compared to those of its peers balanced is and the rating was made board. Ratings have been made only to

scheme which were in operation for at least 18 months before March 31, 1998 the cut-off date for the scoreboard.

The schemes have been classified into five categories based on statistical distribution. Superior schemes with five stars meant for schemes falling within the top 10 per cent of the performance scale. Above average schemes with four stars for the schemes falling between the top 10 per cent and the top 32 per cent of the performance scale. Average schemes with three stars falling within the middle, 35 per cent of the performance scale. Below average with two stars for schemes falling between the bottom 10 per cent and the bottom 32.50 per cent of the performance scale. Poor with a single star for schemes falling within the bottom 10 per cent of the performance scale.

Based on their Risk of loss (ROL), the schemes have also been classified as High-risk category, Average risk category and Low risk category.

Each schemes ROL factor – (Its Potential for losing Money) has been computed. To find out ROL = (Monthly return generated by the scheme – Risk free return (12 per cent)).

Whenever a schemes returns were lower than this risk free return the difference has been noted as a negative figure, the sum of all negative numbers has been averaged over its life in months to arrive at the ROL. In the same way, the ROL of the 100 scrip index-against whose performance each scheme has been rated – has been collected as well. Next, the risk adjusted performance of the scheme and of the index have been calculated by subtracting the ROL of each scheme from its compounded monthly returns, Finally, the Risk Adjusted performance (RAP) of the
index was subtracted from the RAP of the scheme to arrive at the figure on the basis of which the scheme’s star rating has been calculated.

The study reveals that the risk adjusted equity funds have been improving consistently. But the average risk-adjusted return of the 113 growth schemes remains negative. As per the study, the risk adjusted returns of the 39 income funds declined from 26.28 per cent on December 31, 1997 to 24.88 per cent on March 31, 1998. But the picture has changed dramatically in May 1999. The annualised returns of the income schemes have plummeted to just 7.20 per cent.

Further, the study reveals that, as the equity market staging a come back and debt beginning to drag, the balanced composition of these balanced schemes continue to retain their position at the top in terms of both risk-adjusted and absolute terms. The 32 balanced schemes logged up annual gain of 15.15 per cent and a risk-adjusted return of 27.12 per cent as on March 31, 1998.

The Intelligent Investor (2000)\(^1\) a leading business magazine conducted a Comprehensive survey of mutual fund performance 1999 to help the investors to choose the funds that best suits their needs. The survey is based on data source from credence, the Mumbai - based monitor of mutual fund performance, with a cut off date for the survey of December 31, 1999. The methodology and the performance parameters they used are; The three months return and one-year return is calculated by taking the percentage change in net asset values, adjusted for rights, bonuses and dividends, if any in the interim. The three-year and five-year returns are likewise adjusted and annualised.

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They have ranked the schemes based on their returns. The rankings apply to the specific peer group, like open-ended growth funds. But to make comparison possible within the broad investment objective, they have also used a measure of risk-adjusted return, called the Sharpe Ratio.

According to the study, in a list of 85 equity funds that has seen a rise in their NAVs, only 33 managed to beat the S&P CNX 500. The sector funds are generally a better way to ride the bull market; they can be risky at the top of the market. In this category UTI software grew by 52 per cent, Magnum IT fund grew over 109 per cent and Kothari Pioneer Infotech went up by 475 per cent. Sector funds are inherently riskier than funds with broader objectives like growth or income.

Among the close-ended funds, bond funds, returns have been nothing short of spectacular. The returns of the bond fund exceeded the traditional bond returns by a margins of over 10 per cent. Since some open-ended balanced funds have their portfolios strongly tilted towards equities, in excess of 65 per cent, the average returns in the top five balanced funds have been in excess of 120 per cent last year.

The finding reveals that, the tax-savings funds actually and the equity funds did well. The average return of a close-ended tax saving fund has been around 81 per cent. A vital tax break under see 88 according to which the investors can avail 20 per cent tax rebate of the funds invested subject to a maximum of Rs. 10,000 of investment, has helped the funds. Despite the strong performance from this segment, only 29 funds from the total of 65 close-ended funds managed to beat the S&P 500 index.
Gilt funds are fairly new. The study points out that of the 42 schemes, 18 have been around for less than 3 months, of the remaining 24, only Kotak Mahindra’s K-gilt Scheme has been around for over a year. So the ranking will not give much clues for the prospective investors. Hence they are not considered for the analysis purpose.