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PERFORMANCE EVALUATION OF EQUITY MUTUAL FUNDS IN INDIA:

AN EMPIRICAL EXPLORATION

by

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ABSTRACT

The mutual fund industry in India has registered significant growth during the past decade or so, and has emerged as a significant financial intermediary. The growing importance of Indian mutual funds may be noted, in terms of the increased mobilization of funds and the increasing number of schemes and investors in the industry. To fulfill the expectations of millions of account holders, the mutual funds are required to function as successful institutional investors. Evaluating performance for mutual fund managers vis-à-vis such a goal, is important for both the investors as well as the portfolio managers. Fund managers in India, periodically publish various performance reports using standard measures, which may not actually reflect the true investment performance of the funds. The present study evaluated the performance of the equity mutual funds in India over a period of last six years or so, using a new framework. A number of performance indicators are used for the purpose, which are not a part of the performance evaluation framework currently in vogue. We hope that our

attempt should highlight the efficiency and true competence of fund managers and augment the existing framework for identifying successful fund managers. It should benefit the investors, regulators, fund managers and other participants in the mutual fund industry in general.

It is, generally, believed that professional fund managers have expertise in managing investments as they have access to information that is normally not available to common investors. In addition, they are supposed to possess superior analytical skills for making investment decisions. Thus, they are expected to provide a relatively higher rate of return on managed portfolios. However, higher returns per say may not indicate superior performance. The higher return may arise due to higher exposure to risk on investments, or may be attributed to luck or general market boom, rather than pure skill. This aspect is particularly worrying in case of India because of the less mature capital market conditions, wild fluctuations of the equity market, and lesser awareness among common investors. So it is important to seggregate the true comptence of the fund managers from the overall performance.We try and adopt this idea throughout this study and try to look at various aspects of performance of equity mutual funds in India. With the current growing popularity of mutual funds particularly equity mutual funds in India, we think the study is appropriately timed.

The first chapter of the study begins with an overview of the mutual fund industry in India with a mention of the motive of this study. We follow it up with a chapter on literature review which discusses the contribution of around a hundred papers and research work in connection with performance of mutual funds all over the world, over the last four or five decades. The next chapter (chapter three) higlights the principal objectives,hyptheses and research framework of this study.

The analysis part of the study begins with chapter 4, wherin we discuss the performance of the equity mutual funds in our sample with respect to eight **conventional performance measures**. These measures are raw return,excess return over benchmark, information ratio,Treynor's ratio,Sharpe's ratio,Jensen's Alpha,Appraisal ratio and M^2 measure.Although we use the term 'conventional',the measures most commmonly used in India are raw return,tracking error,Treynor's ratio, Sharpe's ratio and at the most Jensen's Alpha. Our study have used additional measures like information ratio,Appraisal ratio and M^2 measure because they bring out additional information about the competence of the fund manager. It was observed that our study period from January 2000 to December 2005 could be brodly divided into two phases, the first one being a bear period while the second one being a predominantly bull period. As the starting notion for this study was to segregate the true performance of a fund manager from the performance due to overall favourable market conditions,we felt it prudent to explore the performance of the funds during the bear period and the boom period separately. We found that the equity funds not only have done poorly with respect to all the performance measures during the bear phase (P1),they were also outperformed by their benchmarks during the bear phase with respect to these measures, which should be a considerable worrying factor for the ordinary investor. However, they have done well during the bull phase (P2) in favourable market conditions. We tested the robustness of these findings by doing an out of sample analysis. We found that, during the out of sample period, which is an outright bull period, the funds have performed well on the average but their benchmarks have performed even better.

Although risk adjusted performance measures are better than raw returns or simple relative return aginst a benchmark, they may be deceptive. This is because, they are based on the assumption of a constant volatility or risk measure of the portfolio, over the period of measurement under consideration, which may not be a fact .Fund managers indulge in 'active

management' or frequent changing of the portfolio taking into consideration various factors that they feel, may affect the portfolio return. To take into account that dynamic or 'active' style of managing their portfolios by the fund managers we need to perhaps penetrate deeper into the aspect of performance evaluation. That brought us to our next area of focus in this study ---evaluation of active management skills of the fund managers, which we explored in the next chapter(Chapter 5). Two possible components of active management skills of fund managers, that enables them to generate returns superior to the general market are believed to be "**market timing**" and "**stock selection**". The pioneering works for determining the market timing and stock selection abilities of managed portfolios, were done by Treynor Mazuy(1966) and Henriksson Merton(1981), and later modified by proponents of the conditional approach(Ferson and Scadt, 1996). Globally the literature on this issue is rich and spans several decades, but not many studies exist on this, using emerging market data. Our attempt in this paper has been to find the stock selection and market timing abilities of Indian mutual fund managers using unconditional models (Treynor Mazuy model and Henriksson Merton model) as well as conditional models (Ferson and Scadt framework). Our study modified the conditional models, by incorporating one additional variable, relevant for the Indian Scenario. With a sample of 96 Indian Mutual fund schemes we observe generally, lack of market timing ability and presence of stock selection ability among Indian Funds managers in both the approaches.

Next(Chapter 6), we explore **persistence** in performance of equity mutual funds in India.Persistence refers to the ability of a fund to maintain its relative performance ranking over time . Globally numerous studies have tested the persistence of mutual fund performance and their findings have generally been mixed in nature. To the best of our knowledge no studies have been made in India, to address this important issue of persistence in mutual fund performance across time. This prompted us to explore this area. We

investigated the persistence in performance of equity mutual funds in India, using different performance proxies and time horizons, and to find out, if any, the impact of length of the time horizon on the persistence of a fund. We used a regression approach and a contingency table approach for testing the persistence and the results were further substantiated with a Spearman Rank Correlation Coefficient test. Our analysis shows moderate evidence of persistence. It is found that with shorter time horizons like three months or six months a lot of cases of 'reversals' are observed but if the time horizon is one year, persistence exhibited is quite prominent particularly for the growth funds. Again when the time horizon is increased beyond one year evidence of persistence weakens. Too many reversals occurring during a very short period (3 months or six months), before an 'equilibrium' is reached, may cause lowering of proportional persistence over such time horizons. Presence of short term (one year) persistence and absence of long term (more than thirty months) persistence give the impression of market efficiency in the long run. On the whole, the results of this analysis suggest, that the past performance of a fund is hardly a reliable guide to future performance for equity mutual funds in India, particularly over a very short or very long period of time.

We also did a **return based style analysis** of equity mutual funds in India (in Chapter 7), and investigated the relative performance of the funds with respect to their 'style benchmarks'. We used quadratic optimization of an asset class factor model proposed by William Sharpe. Our results show that the funds have not been able to beat their style benchmarks on the average. It also shows that although all the funds in our sample are equity funds, the fixed income asset classes have come out important components of their style exposures, may be due to 'sticky' returns of their component securities. The most important component of their style exposures are the mid cap stocks. This may indicate actual investment in those stocks, or in some other stocks that behaved like the mid cap index. Mutual fund performance reporting in India includes only the relative performance of funds with respect to standard

general benchmarks. To the extent our analysis pointed out the weakness of fund managers vis-à-vis the style benchmarks of the funds they manage, we hope that our attempt could augment the performance evaluation framework currently used in India.

The concept of **Value at-risk (VaR)** as a single risk measure summarizing all sources of downward risk, has gained popularity in recent years, globally among finance fraternity in general. Despite such increasing acceptance of VaR globally, it has not found adequate application in India till date. Indian mutual funds still use the age old measure of standard deviation for reporting risk. Our next attempt in this study (Chapter 8), is to use VaR as a measure of downside risk of Indian equity mutual funds .We used three parametric models(*random walk model, moving average model,* and the *exponentially weighted moving average model*) and one non parametric model(*historical simulation*) and a 'rolling window "of past weekly returns of the funds in our sample, to predict their weekly VaR and also compared the actual changes in NAV of the funds *post facto,* with the predicted VaR s to find out how frequently the actual downsides are exceeding the predicted VaRs. We tested the predictive ability of these models using two popular 'Back testing' approaches. Overall our analysis shows that the Indian equity mutual funds have considerable downside risk in terms of VaR measure and the actual downsides have exceeded the VaR, quite often particularly for some of the models. Statistical tests suggest that the *random walk* and the *moving average models* suffer from a downward bias and err by underestimating the VaR frequently. The *EWMA* and *historical simulation* models are free from that bias, but these models, particularly the historical simulation model, show a few instances of providing too conservative estimates of VaR. However ignoring the 'outliers' or extreme negative returns in the series reduces this tendency to some extent.

Chapters 9 discusses the evolution and concept behind some other downside risk measures apart from VaR like Roy's safety first, Semivariance, lower partial moment, Sortino ratio,

Upside potential ratio, Conditional VaR, Omega etc.. and applied some of these measures empirically, to gauge the downside risk of equity mutual funds in India.. The measures were found separately for the two phases (P1 and P2) of our study period. It was generally observed that the funds exhibited considerable amount of downside risk and that their performance was inferior during the bear phase (P1) compared to the bull phase (P2).

At the end of the analysis, finally in the concluding chapter, we highlighted the intrinsic weaknesses in the mutual fund industry at the moment and suggested a few measures that could be taken, to ensure good governance and investor protection and general betterment of the industry as a whole. Some of the measures suggested by us are already under consideration of the regulators. But the process needs to be hastened. In this study our principal efforts have been to empirically test the performance of Indian equity mutual funds with respect to various performance measures not in vogue in the current performance evaluation framework, with an underlying motive of presenting a case for the overall improvement of the industry. Despite our best efforts, there may be some issues which we might have missed. Also, the time and volume constraint of a single study, forced us to limit our focus only to a portion of the Indian mutual fund industry (equity mutual funds), leaving thereby the provision of future augmentation by including areas like debt funds, hedge funds etc. We welcome suggestions from all concerned in this regard so that we can work on them in future.