The Conditional Performance of Indian Mutual Fund Managers: A New look

SUBRATA ROY
Rabindra Mahavidyalaya, University of Burdwan, Champadanga, West Bengal.

This study seeks to examine the market-timing performance of the selected open-ended mutual fund schemes of Unit Trust of India (UTI) based on traditional as well as conditional measures. It is assumed that use of predetermined public information variables and capture of time variation in Treynor & Mazuy (1966) measure produces better market-timing performance than the traditional measures. Here, the expectation of market-timing performance is conditioned on public information variables. In conditional model, beta is a function of a set of predetermined public information. Similarly, the term gamma in Treynor & Mazuy (1966) model is also a function of the vector of public information variables, which is discussed and finally, modified the conditional model. The study reports that after conditioning public information variables in Treynor & Mazuy (1966) measure the market-timing performance looks better than the traditional model.

Key Words: *Mutual Fund, Treynor& Mazuy, Ferson & Schadt, Market-Timing*

INTRODUCTION

The analysis of investment performance has been a source of academic interest for many years. Generally, the investment performance concerns with three dimensions namely 1. Successful prediction of security prices, 2. Efficient estimation of market movement and 3. the ability of the portfolio manager to minimise the degree of diversifiable risk through the activities of portfolio diversification (see. Jensen 1968). The present study confines into the second issue. A considerable study is dealt with the problem of market-timing performance by employing the well known measures of Treynor & Mazuy (1966) and Henrikson & Merton (1981). However, the traditional measures suffer from a number of problems in practice when stock selection or market timing ability is measured. In particular, the traditional measures implicitly assume that risk and expected returns are constant overtime through the evaluation period and hence, the problem of unconditional measures do not take into consideration the fact that risk and expected returns vary with the change of time and therefore, such an unconditional approach is likely to be untrustworthy. Most of the past performance studies have encountered with many problems that ultimately disclosed inability to capture the dynamic behaviour of market returns. As a consequence, Ferson & Schadt (1996) developed an approach to address this problem. They believed that conditional approach is especially popular in investment

performance for two reasons. One is discussed above and the other is trading behaviour of the managers that results in more complex and interesting dynamics than even those of the underlying assets they trade.

In conditional approach, a mechanical market timing rule using such as lagged interest rate data does not add value. Only managers who efficiently use more information than is generally publicly available are considered to have potentially superior investment ability. Some recent studies have documented that the returns and risk of stocks and bonds can be predicted with the change of time, using the relevant information variables like dividend yields, interest rates and many others. If this estimation reflects changing the required returns in equilibrium, then measures of investment performance should capture the time variation.

The present study examines the market-timing performance of the selected mutual fund managers based on traditional measure of Treynor & Mazuy (1966) and the same is examined by conditioning relevant public information variables by applying conditional approach, which is developed by Ferson & Schadt (1996) and finally disclosed the possible explanations for the difference in outcomes, which are derived from the traditional as well as conditional approaches.

The remaining study is organised as follows: section II reviews the existing literature. Section III describes the objectives of the study. Section IV deals with the data and study period. Section V explains about the methodology and hypothesis formulation. Section VI presents the empirical results and analysis. At the end section VII recommends concluding remarks.

LITERATURE REVIEW

The investors have always been willing to invest in mutual funds with the expectation of earning satisfactory return with a minimum degree of expected risk. The performance of the managers must be examined in the light of the results. However, this seemingly straightforward endeavour is deceptively difficult owing to two foremost issues 1. the choice of benchmark, and 2. the choice of appropriate model. Regarding these two issues no strong consensus has been reached. Although, the issue related to performance evaluation of investment has received serious attention after the establishment of portfolio selection model developed by Markowitz (1952). His contribution has completely revolutionized the way of thinking on that particular issue. Other prominent contributors include Sharpe (1964 &1966), Linter (1965), Treynor (1965), Jensen (1968), Fama (1972) and Modigiliani & Modigiliani (1997) etc whose contributions in investment performance have still been considered as path breaking. With regard to mutual fund performance whose contribution comes first is J. Close (1952). He analyses the differences between the closed-ended and open-ended mutual funds. He reports that the open-ended portion of the industry passes closed-ended funds by the end of 1943. He argues that the growth of open-ended fund is primarily related to the continuous, and well-compensated, sales effort via loads that is undertaken by these funds. After Markowitz, some economists develop normative models dealing with asset choice under condition of risk. In 1958 James Tobin shows that under certain conditions Markowits's model implies that the process of investment of choice can be attributed to two phases: one is the choice of a unique optimum combination of risky assets and the other is a separate choice concerning with the allocation of funds between such a combination of assets and single risk less asset. After a few years, Hicks (1962) develops a model, which is similar to Tobin's measure, which is able to derive corresponding conclusions about the individual investor behaviour, dealing somewhat more openly with the nature of the conditions under which the process of investment choice can be dichotomized. In line with this, Gordon & Gangolli (1962) have elaborately discussed the Hick's process including a rigorous proof in the context of a choice among lotteries. However, the above discussion is related to behavioural finance (see. Grossman 1976, Kahneman & Tversky 1979 and Kahneman & Tversky 1979 etc). But, it is true that Markowitz has shown the way of thinking on the issue relating to portfolio selection on which the CAPM is based. The subsequent studies have crystallized discussion on the subject with added refinement, up-gradation and extension of the dimension of the earlier contributions. Since then, various improvements and innovations have been taking place.

The performance evaluation of investment fund has got considerable momentum after the development of CAPM independently by Sharpe (1964), Linter (1965) and Mossin (1966), which is a set of predictors concerning equilibrium expected return on risky assets. This gives birth to security market line (SML). The central difference between the CML and SML is the measure of risk. It is observed from the CAPM that the expected return on a risky asset should be proportional to its sensitivity to the market. This implication is made among others by the assumption that asset prices fully reflect available public information, which is commonly known as efficient market hypothesis (EMH).

In the area of mutual fund performance J.L. Treynor (1965) develops a risk-adjusted performance measure that shows firstly the direction of future researches of mutual fund performance. Sharpe's (1966) article is among the earliest research to evaluate the performance of mutual funds using some of the concepts from modern portfolio theory. He posits that if sound mutual fund management requires the selection of incorrectly priced securities, effective diversification and selection of a portfolio in a given risk class, then there is ample room for major and persistent difference in fund returns. Large number of studies have evaluated portfolio performance by taking into consideration the relative measures of performance and mainly confined into ranking of portfolios. In this very situation Jensen (1968) proposes an absolute measure of portfolio performance that is able to examine the efficiency of the portfolio managers and provides adequate control over the risk component. His model is a practical application of the theoretical results of the CAPM which is independently developed by Sharpe (1964), Linter (1965) and Mossin (1966). After the establishment of Jensen measure in the perspective of stock selection and market timing, a large number of researchers have empirically examined the above issues. The evidences of those studies in some cases are consistent with the result of Jensen and many of them are contradictory with the Jensen's evidence (see Kon & Jen 1978, Chang & Lewellen 1984, Lee & Rahman 1990, Coggin et al 1993, Moreno et al 2003, Kader & Kuang 2007, Koulis 2011 and Roy & Ghosh 2013 etc).

A large number of studies have focused on the problem of market-timing performance of the mutual fund managers, which is a long standing issue. There are some studies in the past that have attempted to identify the market timing and stock-selection skills of the mutual fund managers. Most of the recent empirical studies of investment performance have focused on selectivity which is based on a mean-variance CAPM framework. Treynor & Mazuy (1966) discuss the fund manager-investor relationship wherein the investors frequently expect that the managers are able to predict the market volatility, and the dilemma of whether or not the managers should attempt to market time. To address the issue, the authors devise a test of mutual fund historical success in predicting major moves in the market by adding a quadratic term in the CAPM. They explain the way that a fund can translate ability to outguess the market into higher return which results in an upwardly concave characteristic line and they report that there is no curvature in characteristic lines for any of the mutual funds and conclude that none of the managers have outguessed the market and the managers should not be held responsible for failing to foresee changes in market direction. Jensen in 1972 reformulates the

The Conditional Performance of
Indian Mutual Fund Managers: A New look

model (Jensen 1968) and corrects the results in Jensen (1968) for a portfolio manager's performance when he engages in forecasting the prices of individual securities (stock selection) and for forecasting the general behaviour of the security prices (timing). The analysis indicates that managers who successfully engage in timing activities are penalized by downward biased estimates of performance when using OLS regression. In 1978, Kon & Jen evaluate mutual fund performance by taking into consideration four issues. One of them is the formulation of an econometric model to evaluate an investment manager when he explicitly engages in forecasting the prices of individual securities and in forecasting the future realizations of market factors. They design their performance model in the context of the SLM, Black (1972) and Jensen (1972) models. Although, they develop estimation procedure with the help of switching regression model, which is proposed by Quandt (1972) by including a new identifiably condition. Their empirical evidence regarding their sample mutual funds indicate that a large number of funds have significantly changed their risks pattern during the measurement intervals and the behaviour regarding change in risk level reveals significantly different selectivity, market-timing and diversification performances. To test the market-timing performance of the managers, Merton (1981) develops an equilibrium theory where the predictor guesses the market movement when stocks will outperform the bonds and consequently, bonds will outperform the stocks. But, the model does not predict the magnitude of the superior market-timing performance. Therefore, Henrikson & Merton (1981) extend the work of Merton (1981) to solve the above problem that is highlighted in the Merton's model. They exhibit that the pattern of returns from successful market timing has an isomorphic correspondence to the pattern of returns from certain option investment strategies where the implicit prices paid for the options are less than their fair or market values. They derive an equilibrium theory of value for market skills by using this isomorphic correspondence. They opine that investment managers can effectively break up events related to security analysis from those related to market timing. They also depict that the market timing performance of the portfolio managers depends on the asset allocation policy regarding investment in the market portfolio of equities and risk less bonds. Similarly, Henrikson (1984) also analyzes the market timing performance of the mutual fund managers based on CAPM. The study reports absence of market-timing performance. He argues that the managers have no valuable information by which they can generate higher returns because the market is informationally efficient, which supports EMH. Jagannathan & Korajczyk (1986) examine the market timing performance of the mutual funds based on parametric test that is proposed by Henrikson & Merton (1981). Similarly, Chang & Lewellen (1984) also examine the market timing performance of the investment managers by using parametric statistical procedure that is proposed by Henrikson & Merton (1984). They report that the managers are inefficient to time the market. Most of the earlier studies use traditional measures of market-timing performances and reports inefficient market-timing activities, which is consistent with the assumptions of EMH (see, Lee & Rahman 1990, Filippas & Psoma 2001, Athanassakas et al 2002, Ibrahim, M.M., 2004, Artikis, G., 2004, Drew, Veeraghvan & Wilson 2005, Santos, Costa et al 2005, Kader & Kuang 2007, Thanou 2008, Koulis et al 2011, M. Joydev 1996, Rao & Venkateswarlu 2000, Amitava Gupta 2002, Irissappane et al 2003, etc). However, some of the earlier studies, which are conducted by using the unconditional measures, have shown positive and sometimes significant market-timing performances (see, Bollen et al 2001, Comer 2006, Jiang et al 2007, Mansor et al 2011, Dhar 2005 etc).

The efficiency of traditional mutual fund performance measures (Treynor 1965, Sharpe 1966, Jensen 1968) does not provide satisfactory results because criticisms are pointed out both at conceptual and econometric level. The main drawback of those measures is that the assumption of risk and return are constant overtime. But practically it is not applicable. In fact, these measures represent an unconditional approach to performance evaluation in the sense that they do not consider publicly available information about the state of the economy in the estimation of expected returns and risk, assuming that these are constant over time (Leite & Cortez 2005). Practically, both expected return and risk are changed with the change of time. Under these state of affairs, traditional measures (Unconditional) cannot produce the correct performance estimates, since the earlier studies are run off speechless in the normal variation in risk and risk premiums with manager's performance. In piece of evidence, it is well known that the traditional measures are unbiased when portfolio managers exhibit macro-forecasting (market-timing) skills or pursue some vibrant investment strategies resulting in time-varying risk (see Jensen 1972, Grant 1977, Dybvig & Ross 1985, Grinblatt & Titman 1989 etc.).

Studies (see Fama & French 1989, Ilmanen 1995, Pesaran & Timmermann 1995, Silva., Cortez & Armada 2003 etc) have shown that some important public information like dividend yields of index or exchange rates or interest rates if included in the CAPM based performance evaluation model, then stock and bond returns are improved. The findings of those studies have led to significant improvement in the asset-pricing model as well as performance appraisal measures. As, these types of information are publicly available and allow for an assessment of the state of the economy, the investors can frequently use them and keep updating about the expected returns. The conditional measures evaluates the managers' performance after consideration of publicly available information at the time of return creation process (Farnsworth 1997). It is observed from the empirical analysis (see Ferson & Schadt 1996, Ferson & Warther 1996, Chen & Knez 1996, Christopherson, Ferson & Glassman 1998, Christopherson, Ferson & Turner 1999, Ferson & Qian 2004 etc) that the conditional measure appear to provide better estimates as compared to the traditional measures. According to the arguments of some studies, it is said that conditional model may produce better performance estimates and the model is relevant from an economic point of view because of its ability to detect blueprints in fund betas and sometime allow the investors to scrutinize the dynamic behaviour of the mutual fund managers (Otten & Bams 2004).

USA has widely studied the fund managers performances based on conditional measures. The performance evaluation of the investment managers by using conditional model in the Asian markets particularly in India remains unexplored. A limited numbers of studies have examined mutual fund performances based on conditional model (see Roy & Sovan 2000, and Shanmugham & Zabiulla 2011 etc). The findings of those studies in relation to the majority of other empirical studies are in fact that conditional performance measures look better than those of the unconditional measures.

OBJECTIVES OF THE STUDY

The performance evaluation of mutual fund by using traditional measures has been widely questioned in the literature, as criticism, both at the conceptual and econometric level prevails. One of the most important limitations of these measures is the assumption of existence of a constant risk measure over the evaluation period and the traditional measures do not also consider the publicly available information about the state of the economy changing overtime. But in reality, both expected returns and risk are changed with the state of the economy. Therefore, the unconditional measures tend to produce incorrect performance estimates. In fact, it is well recognised that these measures are biased when portfolio managers exhibit market- timing skills or follow some vibrant investment strategies resulting in time varying risk. Conditional measures evaluate portfolio managers'

performance by taking into consideration the relevant available public information variables, which are available to the investors at the time of generating returns. It is assumed that risk and returns are changed in conditional framework as public information changes with the state of the economy that allows for better estimation of performance coefficients. Practically, it is empirically examined that conditional model provides more reliable estimates in terms of statistical significance. In particular, the objectives of the study are given below:

1. To examine the market timing performance of the open-ended mutual fund schemes based on traditional measure.
2. To analyse the same performance of the open-ended mutual fund scheme based on conditional measure.
3. To make a comparison among such performance based on two measures.

DATA & STUDY PERIOD

Different types of data & their sources:

The objective of the study is to examine the mutual fund performance in relation to end result variables in the form of ex-post returns. Therefore, it is necessary to evaluate mutual fund performance with regard to their adequacy and effectiveness in terms of ex-post returns. The study intends to accumulate required familiarity to make new insights into mutual fund performance based on conditional framework. Accordingly, an attempt is made to analyse managers' performances of sampled open-ended mutual fund schemes and commented on the adequacy of this performances by attributing it to the market timing activities of the managers. Hence, the market timing activities of the mutual fund managers are examined, based on the results of a sample of open-ended mutual fund schemes of Unit Trust of India (UTI). The secondary data is used to examine and evaluate the market timing performance of the open-ended mutual fund schemes. For the empirical examination of market outguessing, the study primarily considers all the open-ended equity mutual fund schemes, which are solely provided by UTI. Although, the study considers those schemes, which are having at least three years existence in the mutual fund market. It is highlighted that some of the schemes that had stopped their operation during the study period, were also taken into consideration. Hence, the study is not free from survivorship bias. However, some of the authors have addressed this issue that there is no consensus as to the magnitude and significance of this bias and also suggested that its impact is very negligible and / or not statistically significant (see Grinblatt & Titman 1989a, Brown et al 1992, Brown & Goetzmann 1995 and Romacho & Cortez 2006 etc). The study considers the monthly closing net asset values (NAVs) of the individual equity mutual fund schemes. The preference for using such data over price data is guided by the consideration that these are not affected by the double incidence of market volatilities. The information of NAV obtains from the secondary sources like the website of AMFI (www.amfiindia.com) and other sources which provide mutual fund data. The respective sources are crossed checked with other sources that to ensure validity of the data and observed no differences.

Selection of Benchmark Index:

In order to evaluate the investment performance of sample mutual fund schemes it must be compared with the selected benchmark portfolio. As, the sample schemes are having greater equity exposure hence, the study uses BSE sensex as a benchmark portfolio, which is considered an appropriate measure of market proxy for the comparison of investment performance. The choice in favour of BSE sensex over other sensexes existence in India is primarily on account its superiority for a larger standing points apart from the following other considerations favouring its choice:

- As, the large section of mutual fund investors are small and their minds psychologically favour to BSE sensex.

- BSE sensex is the most preferred indicator in the securities market and regarded as the sensitivity of the capital market barometer.
- About 60% of market capitalisation is accounted for by the BSE sensex and hence, it gets greater weightage.
- A majority of mutual fund resources are invested in equities and the growth funds are however, excessively invested therein.
- BSE sensex being an all equity benchmark is based on blue chip equities of high profile companies, which yields regular return in the form of dividend and also has good potential for capital appreciation.
- It is registered as the pulse of domestic stock market in India.
- Foreign investors heavily rely on BSE sensex.

The monthly information with regard to monthly closing index value is obtained from the website of Bombay Stock Exchange (www.bseindia.org).

The predetermined Information Variables:

The study uses a set of public information variables, which are used by the previous studies for predicting security returns and risk with the change of time with more accuracy. This study uses a set of information variables with the assumption that these information vectors will produce better performance estimates with the change of the state of the Indian economy. The performance evaluation of mutual fund by using conditional measures is scanty in Indian context and the studies have used a very limited number of information variables for the estimation of performance coefficients under the assumption that risk and expected returns are time variant with the state of the economy. This study uses a set of relevant publicly available information which is expected to produce the estimated coefficients with more accuracy under the assumption that risk and expected returns are time variant with the change of the economy. The one month lagged information variables are 1. Monthly 91-day Treasury bill yield of Govt. of India obtained from the website of RBI that carries a fixed rate of return and enjoys a high rate of liquidity and safety since they are backed by the Govt. 2. Monthly Rupee-dollar exchange rates that obtained from the website, www.xrates.com, 3. Monthly Inflation rate that is obtained from the Centre of Statistical Organisation, 4. Monthly Dividend yield of the BSE sensex obtained from the website of Bombay Stock Exchange, 5. Monthly Sales volume of mutual fund schemes obtained from the Association of Mutual Funds of India (AMFI), 6. Monthly Repurchase / Redemptions of mutual fund schemes also obtained from the Association of Mutual Funds in India (AMFI) and 7. Monthly total assets under management of the mutual fund companies that is also obtained from the Association of Mutual Funds of India (AMFI). As Ferson & Schadt (1996), these information variables are demeaned in the conditional test in order to avoid biases in the regression and to allow an easier interpretation of the estimated coefficients.

Study Period:

With a view to examine the conditional performance of the open-ended mutual fund schemes, a period of twelve calendar years (1st January 2001 December 2012) is taken into consideration, which is long enough to have seen a variety of ups and downs in the stock market and recent enough to reflect the complete picture about mutual fund performance. This is because the mutual fund industry in India is newly developed.

RESEARCH METHODOLOGY

The methodology is the tool which is used to attend the purpose of an investigation, a way of solving problems and creating knowledge. It is usually divided into two forms namely qualitative and quantitative methods, which are distinguished in the way the researchers analyse and treat information (Holme & Solvang 1997). Quantitative research is used to describe, explain and aim to

generate validity. Likewise, qualitative research is characterised by the investigators who trying to understand how people experience themselves, their existence and environment (Lundahl & Skarvard 1999).

This study deals with quantitative in nature. A huge number of data is obtained and processed for the estimation of required coefficients. In a quantitative method information is converted into figures and quantities from which statistical inference is drawn. The advantage of quantitative method is its efficiency and it is easier to process a large quantity of figures (Holme & Solvang 1997).

Several research techniques can be adopted when mutual fund performance is evaluated. An explorative study can be used when the area of interest is not yet fully covered. If there already exists a considerable research within the area of interest and the purpose of the study is to explain or describe some parts of the subject, a descriptive research technique can be used. In cases when extensive information is available for the subject in mind and when theories and models have already been formulated, the study is said to be hypothesis verifying. This technique concentrates on tests of given assumptions to examine their accuracy (Davidson & Patel 2003).

Traditional performance measure:

The performance evaluation of a risky investment is the central problem in Finance. Basically, the evaluation of investment performance is mainly concerned with three important issues: 1. Maximisation of investment return through prediction of security prices, 2. Minimisation of the extent of diversifiable risk through the strategy of diversification activities and 3. Maximisation of portfolio return through successful prediction of market movement. In the literature, a lot of studies have dealt with these issues but encountered with the problems of nature and measurement of risk. The past evidences have suggested predominance of risk in the capital market and the investors perceived that higher return is caused by higher risk. In this respect Sharpe (1964), Linter (1965) and Mossin (1966) have independently developed the CAPM as previously proposed by Markowitz in 1952 to measure the portfolio performance of the risky investment. In 1968, Jensen has proposed an absolute measure of portfolio performance by specifying with the problems of evaluating the predictive abilities of the portfolio managers. Jensen's (1968) differential return measure is based on the assumption of CAPM framework where the risk premium of a mutual fund scheme i (excess return of mutual fund scheme i over the risk free rate) is a linear function of the systematic risk (beta) of the scheme and market risk premium (R_m-R_f). The CAPM based Jensen's model is as under:

$$R_{it} = \alpha_i + \beta_i(R_{mt}) + e_{it} \quad (1)$$

Where, R_{it} is the excess return of the i^{th} mutual fund scheme at time period t, R_{mt} is the excess return on the market portfolio at time period t, β_i is the index of systematic risk of scheme i, α_i is the unconditional alpha coefficient and e_{it} is the random error term of the scheme i at time period t that has zero mean and constant standard deviation with the following properties: $E(e_{it}) = 0$, $Var(e_{it}) = \sigma 2e_{it}$ and $Cov(e_{it}, e_{ij}) = 0$. The statistical significance of alpha may be judged by the t statistic, which is measured by the estimated value of the alpha divided by its variances. If the values of alphas are assumed to be normally distributed then the t statistic greater than 2 implies that the probability of having obtained the result through luck, and not through expertise, is strictly less than at 5% level of significance and thus, the average alpha is significantly different from zero. It is assumed that in unconditional model both alpha and beta are constant over time. Like Treynor measure, the Jensen measure also considers systematic risk. Unlike Sharpe and Treynor measures, Jensen measure does not permit portfolios with different level of risk to be compared. Here, the value of alpha is actually proportional to the level of risk taken that is measured by beta. However, the unconditional Jensen measure is subject to same criticism like Treynor measure in respect of choice of reference benchmark. Even if, at the time of market timing activity that involves changing beta as per anticipated movements in the stock market, Jensen alpha often becomes negative and that time the Jensen alpha does not reveal the real efficiency of the portfolio managers. Although, performance measures often try to distinguish security selection, or stock picking ability, from market-timing (ability to predict the future direction of the market). But it is true that Jensen alpha be a sign of both types of ability (selectivity and market-timing). Subsequent, market-timing models have tried to take apart these two facets of performances.

Treynor & Mazuy (1966) is the first who have tried to enumerate the timing component of stock return in a meticulous way and so, they just insert a quadratic term in the CAPM based regression model, which is become a standard for measuring market timing ability of the investment managers. The unconditional measure of timing-ability is given below:

$$R_{it} = \alpha_i + \beta_i(R_{mt}) + \gamma_i(R_{mt})^2 + e_{it} \quad (2)$$

Where, R_{it} is the excess return of the mutual fund scheme i at time period t, R_{mt} is the excess return of the market at time period t, α_i, β_i and γ_i are the coefficients of the mutual fund scheme i and e_{it} is the error term with zero mean and constant standard deviation. A cursory look into the above measure would reveal that the return of the mutual fund scheme i and that of the market are in the excess return forms. Treynor & Mazuy (1966) argue that if the managers are able to predict the market return efficiently then they will clutch a greater proportion of the market portfolio when the return of the market is high and hold a smaller proportion when the return of the market is low or in other words, adjust the portfolio's beta according to the market condition. Thus, the portfolio return is a non-linear (convex) function of the market return that is captured by the coefficient of the parabolic term (gamma, γ_i). Treynor & Mazuy (1966) report evidence in favour of market-timing for only 1 out of 57 mutual funds. Most of the studies have empirically examined the timing performance by using the measure of Treynor & Mazuy (1966) have shown similar evidence of no market-timing or vicious timing-ability (see Lehman & Modest 1987, Lee & Rahman 1990, Cumby & Glen 1990, Cogging et al 1993, Grinblatt & Titman 1994 etc).

Conditional Performance Measure:

Market-timing ability can only be accurately measured under the assumptions of highly stylized models (Ferson & Schadt 1996). The traditional market timing models, in addition to their strong assumptions about how managers' use their abilities have taken the view that any information correlated with future market returns is said to be superior information. Yet any ability to predict the market that can be matched using the public information should not be considered to truly reflect market timing ability on the part of fund managers beyond that of the funds' investors. Ferson & Schadt (1996) use basically the same simplifying assumptions as the traditional models, but to assume semi-strong-form of market efficiency. The idea is to distinguish market timing based on public information from market timing information that is superior to the lagged information variables.

However, this approach is based on the conditional version of the CAPM that is consistent with the semi-strong-form of market efficiency where the influence of public information for the estimation of returns present a little that is interpreted earlier by Fama (1970). According to the conditional version of the CAPM, the return of a mutual fund scheme i can be written as follows:

$$R_{it} = \beta_{im}(A_{t-1})R_{mt} + e_{it} \quad (3a)$$

$$\text{With } E(e_{it} / A_{t-1}) = 0 \quad (3b)$$

$$\text{And } E(e_{it} R_{mt} / A_{t-1}) = 0 \quad (3c)$$

Where, R_{it} is the excess return of mutual fund scheme i between the time period t and t-1, R_{mt} is the excess return of the benchmark index over the risk free asset and A_{t-1} denotes a vector of instruments for the information available at time period t-1. The beta of the regression equation $\beta_{im}(A_{t-1})$ is the conditional market beta of excess return of the mutual fund scheme i at time period t-1 that depends on the information vector A_{t-1}. Thus, beta varies over time due to certain number of factors. The conditional market beta of excess return of the mutual fund scheme i can be defined as follows:

$$\beta_{it-1} = Cov(R_{it}, R_{mt} / A_{t-1}) / Var(R_{mt} / A_{t-1}) \quad (3d)$$

The equation 3a does not provide the alpha term because it uses information variables A_{t-1} when the latter is null. The error term in the above regression equation is independent as per equation 3b that leads to the assumption of efficient market hypothesis (EMH) and equation 3c tells that the $\beta_{im}(A_{t-1})$ is the conditional regression coefficient.

Equation 3 entails that any unbiased forecast of the difference between the return of a scheme and the product of its beta and the excess return on the market factor which differs from zero must be based on an information set that is more informative than A_{t-1} (Ferson & Schadt 1996). Hence, the forecast of this difference will be zero if only information A_{t-1} is used. Then, the portfolio return relationship can be established by using the asset return relationship with the assumption that the investors use no information other than the public information. So, it may be said that the investors' portfolio beta β_{pm} depends on public information At-1 or in other words $\beta_{pm}(A_{t-1})$ is a function of A_{t-1}. Then, beta can be approximated of a mutual fund scheme i through a linear function by using a development from Taylor series following Shanken (1990) as under:

$$\beta_{im}(A_{t-1}) = b_{oi} + B'_i a_{t-1} \quad (4)$$

This relationship can be interpreted as an average beta i.e. that corresponds to the unconditional mean of the conditional beta that can be defined as under:

$$b_{oi} = E(\beta_{im}(A_{t-1})) \quad (5)$$

The elements of vector B_i are the response coefficients of the conditional beta with respect to the information variables A_{t-1}. a_{t-1} denotes a vector of the differentials of A_{t-1} from the unconditional means that can be written as follows:

$$a_{t-1} = A_{t-1} - E(A_{t-1}) \quad (6)$$

Now, it is possible to formulate a conditional measure of managed portfolio return by combining the above equations as under:

$$R_{it} = b_{oi}R_{mt} - B'_i(at_{-1})R_{mt} + e_{it} \quad (7)$$

$$\text{Where, } E(e_{it} / A_{t-1}) = E(e_{it}R_{mt} / A_{t-1}) = 0 \quad (8)$$

The stochastic factor of the above measure is a linear function of the market return in excess of the risk free rate (R_f). Where, the coefficients of the above measure are conditional on public information A_{t-1}.

The model thereby developed enables the traditional performance measures, which came from the CAPM to be applied by incorporating a time component and only then the risk and return of a mutual fund scheme can be predicted with more accuracy by using the CAPM version of conditional performance measure which is proposed by Ferson & Schadt (1996).

Application to Performance Measure:

The traditional unconditional measures do not draw a distinction between the skill in using public information, which is available to everybody and a manager's specific stock picking ability. The conditional approach allows these to be separated. Therefore, to evaluate mutual fund performance the empirically developed model (Ferson & Schadt 1996) incorporates a conditional term in the Treynor

& Mazuy model (1966). Where, the classical market-timing regression model when there is no conditioning publicly available information as follows:

$$R_{it} = \alpha_i + \beta_i(R_{mt}) + \gamma_i(R_{mt})2 + e_{it} \quad (9)$$

The conditional model of Ferson & Schadt (1996) is as under:

$$R_{it} = \alpha_{ci} + b_{0i}R_{mt} + B'_i(a_{t-1}R_{mt}) + \gamma_i(R_{mt})2 + e_{it} \quad (10)$$

Where, the coefficient vector Bi captures the linear response of the manager's beta to the public information variables A_{t-1}. The set of information vector a_{t-1} represents information available at time t-1 for estimating schemes' returns that indicates changing nature of the state of the economy that finally changes the beta coefficient. The term $B'_i(R_{mt}a_{t-1})$ controls public information effect, which would bias the coefficients in the original Treynor & Mazuy (1966) model. By capturing information available to managers at time t-1, the set of vector $(R_{mt}a_{t-1})$ precludes strategies that can be replicated using public information from being ascribed with superior selectivity or market-timing ability on the basis of this information. Here, the interaction term measure the covariance between conditional beta and the expected value of the market return using lagged instruments. The coefficient of γci measures the sensitivity of the manager's beta to the private market timing signal. The study does not consider the impact of conditioning alpha because the study is exclusively devoted to examine market timing performance. Although, the conditional alpha is a linear function of the conditional public information a_{t-1} that can be shown as under:

$$\alpha_i(a_{t-1}) = \alpha_{0i} + \theta'_i(a_{t-1}) \quad (11)$$

At the beginning it is very much important to determine the kind of information variables to be used. This is almost same as using explanatory variables. Ferson & Schadt (1996) propose a link to the portfolio risk to market indicators, such as dividend yield of market index and the return on short term T-Bills lagged by one period compared to the estimation period. This study uses a set of one month lagged publicly available information which is assumed to be reliable and important market indicators in the Indian context at the time of examine conditional market timing performance. The one month lagged information variables are dividend yield of market index (DY_{t-1}), the return on 91-day T-Bills (TB_{t-1}), the monthly inflation rate (FL_{t-1}), monthly rupee-dollar exchange rates (EX_{t-1}), monthly sales of mutual fund schemes (SK_{t-1}), monthly redemption / Repurchase of mutual fund schemes (MV_{t-1}) and monthly total assets under management of the mutual fund companies (UM_{t-1}) respectively. The last three information variables are assumed to be relevant to measure mutual fund prospect and also helpful to the managers as well as investors to measure stock selection and market timing performances with the prediction of future returns and risk as per the state of the economy.

Currently, dy_{t-1}, tb_{t-1}, fl_{t-1}, ex_{t-1}, sk_{t-1}, mv_{t-1} and um_{t-1} represent the differentials compared to the average of the variables DY_{t-1}, TB_{t-1}, FL_{t-1}, EX_{t-1}, SK_{t-1}, MV_{t-1} and UM_{t-1} that can be written as follows:

$$Dy_{t-1} = DY_{t-1} \;\; E(DY_t),\; tb_{t-1} = TB_{t-1} \;\; E(TB_t),\; fl_{t-1} = FL_{t-1} \;\; E(FL_t),\; ex_{t-1} = EX_{t-1} \;\; E(EX_t),\; sk_{t-1} = SK_{t-1} \;\; E(SK_t),\; mv_{t-1} = MV_{t-1} \; E(MV_t) \text{ and } um_{t-1} = UM_{t-1} \; E(UM_t) \quad (12)$$

Then, the relationship can be written as under:

$$a_{t-1}\begin{bmatrix} dy_{t-1} \\ tb_{t-1} \\ fl_{t-1} \\ ex_{t-1} \\ sk_{t-1} \\ mv_{t-1} \\ um_{t-1} \end{bmatrix} \text{ and } B_i\begin{bmatrix} b_{1i} \\ b_{2i} \\ b_{3i} \\ b_{4i} \\ b_{5i} \\ b_{6i} \\ b_{7i} \end{bmatrix} \quad (13)$$

Hence, the conditional beta is the function of a set of information vector. The conditional beta can be interpreted by using the approach of Rosenberg & Mckibben (1973) and Rosenberg & Marathe (1975) as under:

The Conditional Performance of
Indian Mutual Fund Managers: A New look

$$b_i = b_0 + b_{1i}dy_{t-1} + b_{2i}tb_{t-1} + b_{3i}fl_{t-1} + b_{4i}ex_{t-1} + b_{5i}sk_{t-1} + b_{6i}mv_{t-1} + b_{7i}um_{t-1} + e_{it} \quad (14)$$

Hence, the conditional measure of market timing can be formulated as follows:

$$R_{it} = \alpha_{ci} + b_{0i}R_{mt} + b_{1i}dy_{t-1}R_{mt} + b_{2i}tb_{t-1}R_{mt} + b_{3i}fl_{t-1}R_{mt} + b_{4i}ex_{t-1}R_{mt} + b_{5i}sk_{t-1}R_{mt} + b_{6i}mv_{t-1}R_{mt} + b_{7i}um_{t-1}R_{mt} + \gamma_{ci}(R_{mt})^2 + e_{it} \quad (15)$$

Where, α_{ci} represents the conditional alpha. In other words it is the difference between a scheme's excess return and the excess return to the particular combination of market index and the set of information variables that replicates the scheme's time varying risk exposure. The term b0i represents the conditional beta, however, it no longer represents the systematic risk of the scheme with respect to the market, nor should one assume that it takes the same value because of the multiplicative nature in the way the market indicators enter into the model. In other words, it can only be viewed as the separate influence of the market after taking into consideration the influence of public information variables. The coefficients b_1, b_2, b_3, b_4, b_5, b_6 and b_7 measure the variations of the conditional beta to the lagged information variables.

The coefficient γ_{ci} measures the sensitivity of the scheme's beta to any private market timing signals above and beyond the information about the future shape of the market return, which is contained in the above described information variables. Hence, the gamma coefficient also changes like the changes of beta. As, the set of information variables assists to the investment managers to take at most possible decision on stock selection or market-timing or combination of them and that's why the expected future return is maximum. If the strategy of the investment managers is to change the beta composition of the risky portfolio according to the changing nature of the market with respect to the information variables At-1 then, the market-timing strategy may provide successful outcome, which is measured by the gamma coefficient. Where, the sensitivity of the gamma coefficient depends on the sensitivity of the beta coefficient. The conditional beta coefficient is measured by the average beta (b0i) and the response of conditional beta to the lagged information variables B'_i ($R_m ta_{t-1}$). Therefore, the shape of expected future portfolio return is a convex function of the market return that is captured by the conditional gamma coefficient. Hence, the gamma coefficient is also a non-linear function of beta sensitivity and the expected value of the future market return with the lagged instruments that can be written as follows:

$$\gamma_{ci} = f(\varphi'_i R^2_{mt} a_{t-1}) \quad (16)$$

Therefore, the conditional CAPM for each mutual fund scheme i for each period t will be as follows:

$$E(R_{it}/\, a_{t-1}) = \alpha_{ci} + b_{0i}R_{mt} + B'_i(a_{t-1}R_{mt}) + \varphi_{0i}R^2_{mt} + \Omega'_i(a_{t-1}R^2_{mt}) + e_{it} \quad (17)$$

Where, the coefficient φ0i measures the sensitivity of the scheme's beta or the average sensitivity of the scheme's beta. Where, the term $\Omega'_i(a_{t-1}R^2_{mt})$ manages the effect of the parabolic term that is attributed to the lagged public information variables. Consequently, the conditional gamma coefficient in equation 15 can be written as under:

$$\gamma_{ci} = \varphi_{0i} + \varphi_{1i}dy_{t-1} + \varphi_{2i}tb_{t-1} + \varphi_{3i}fl_{t-1} + \varphi_{4i}ex_{t-1} + \varphi_{5i}sk_{t-1} + \varphi_{6i}mv_{t-1} + \varphi_{7i}um_{t-1} \quad (18)$$

Then the relationship between the conditional gamma coefficients and the set of lagged information variables can be written as under:

$$\varphi_i = \begin{bmatrix} \varphi_{1i} \\ \varphi_{2i} \\ \varphi_{3i} \\ \varphi_{4i} \\ \varphi_{5i} \\ \varphi_{6i} \\ \varphi_{7i} \end{bmatrix} \text{ and } a_{t-1} = \begin{bmatrix} dy_{t-1} \\ tb_{t-1} \\ fl_{t-1} \\ ex_{t-1} \\ sk_{t-1} \\ mv_{t-1} \\ um_{t-1} \end{bmatrix} \quad (19)$$

Finally, the traditional model of Treynor & Mazuy (1966) can be presented in the conditional framework following the model of Ferson & Schadt (1996) as under:

$$R_{it} = \alpha_{ci} + b_{0i}R_{mt} + b_{1i}dy_{t-1}R_{mt} + b_{2i}tb_{t-1}R_{mt} + b_{3i}fl_{t-1}R_{mt} + b_{4i}ex_{t-1}R_{mt} + b_{5i}sk_{t-1}R_{mt} + b_{6i}mv_{t-1}R_{mt} + b_{7i}um_{t-1}R_{mt} + \varphi_{0i}R^2_{mt} + \varphi_{1i}dy_{t-1}R^2_{mt} + \varphi_{2i}tb_{t-1}R^2_{mt} + \varphi_{3i}fl_{t-1}R^2_{mt} + \varphi_{4i}ex_{t-1}R^2_{mt} + \varphi_{5i}sk_{t-1}R^2_{mt} + \varphi_{6i}mv_{t-1}R^2_{mt} + \varphi_{7i}um_{t-1}R^2_{mt} + e_{it} \quad (20)$$

Where, the coefficients φ_0, φ_1, φ_2, φ_3, φ_4, φ_5, φ_6 and φ_7 capture the non-linear variations of the conditional gamma in respect of sensitivity of scheme's beta that attributed to the lagged information variables about the future shape of the expected market return. The coefficients of the above model (equation 20) are estimated through the regression equation.

The monthly rate of return of each mutual fund schemes and the market index (BSE Sensex) are computed as follows:

$$R_{i,t} = \log \frac{NAV_{i,t}}{NAV_{i,t-1}} \quad (21)$$

$$R_{m,t} = \log \frac{Market\ Index_t}{\text{Market Index}_{t-1}} \quad (22)$$

Where, R_{it} is the logarithm return of the i^{th} mutual fund scheme at the end of time (month) t. $NAV_{i,t}$ is the net asset value of the i^{th} mutual fund scheme at time (month) t and $NAV_{i,t-1}$ is the net asset value of the i^{th} mutual fund scheme at the end of the previous time (month) period 't-1'. Similarly, R_{mt} is the logarithm return of the market.

Hypothesis Formulation

The traditional market-timing model of Treynor & Mazuy (1966) cannot estimate the quadratic term properly when risk and future expected return are constant over time. But, the use of conditional measure of Treynor & Mazuy (1966), which is later developed by Ferson & Schadt (1996) assume that risk and expected future return are time variant with the change of the state of the economy. Thus, the present study also examines the superiority of the gamma coefficient which is derived from the application of two measures and hence, the following hypothesis is formulated and tested:

Hypothesis:

H_0: Traditional market timing performance = Conditional market timing performance

H_a: Conditional market timing performance is superior

Distribution of data:

To observe the pattern of the time series data Jarque-Bera test of normality is applied. The skewness and kurtosis are measured of the return distribution of each scheme as well as the information variables. The skewness measures the symmetry of the distribution whereas the kurtosis implies the peaked ness of the distribution. A distribution with equal kurtosis is called mesokurtic whereas, a distribution with small tail is platykurtic and a distribution with a large tail implies leptokurtic. The J-B statistic can be computed as under:

$$JB = n\left[\frac{S^2}{6} + \frac{(K-3)^2}{24}\right] \quad (23)$$

Where, n = number of observations, S = Skewness of the residuals, K = Kurtosis of the residuals. The distribution is said to be normal if the values of S and K are zero (0) and three (3) respectively so that JB becomes equal to zero.

Unit Root Test:

A test of stationarity (or non-stationarity) that has become widely popular over the past several years is the unit root problem. It can be started with this regression equation

$$\Delta R_{i(t)} = \delta R_{i(t-1)} + \mu_t \quad (24)$$

Where, $\delta = (\rho-1)$ and Δ, as usual, is the first-difference operator. Generally, in practice, it is tested that the (null) hypothesis δ = zero. If δ is equal to zero (0), then ρ is one (1) that is a unit root which, means the time series under consideration is non-stationary. Now let us turn to the estimation of the above regression equation. This is simple enough, first takes the first differences of $R_{i(t)}$ and regress them on $R_{i(t-1)}$ and observe if the estimated slope of the coefficient in this regression (=δ) is 0 or not. If it is zero, then $R_{i(t)}$ is non-stationary. But, if it is negative, then $R_{i(t)}$ is stationary. Here, the only question is which test should we use to find out if the estimated coefficient of $R_{i(t-1)}$ in the above regression equation is zero or not. Dickey & Fuller have shown that under the null hypothesis that δ = zero (0), the estimated t value of the coefficient of $R_{i(t-1)}$ in the above regression equation follows the τ (tau) statistic. The critical value of tau statistic is computed based on Monte Carlo simulations. In the literature, the tau statistic or test is known as Dickey-Fuller (DF) test. The actual procedure of implementing the DF test involves several decisions. Here, random walk model with drift is considered as under:

$R_{i(t)}$ is a random walk with drift: $\Delta R_{i(t)}) = \alpha_i + \delta R_{i(t-1)} + \mu_t$ (25)

Where, t is the time or trend variable. The null hypothesis is that δ = zero (0), which means there is a unit root and the time series is non-stationary. The alternative hypothesis is that δ is less than zero that means the time series is stationary. If the null hypothesis is rejected, then $R_{i(t)}$ is stationary with a nonzero mean [$= \alpha_i / (1-\rho)$]. It is extremely important to note that the critical value of the tau test to test the hypothesis that δ = zero (0), is different of the above specification of the DF test. The actual estimation procedure is as follows: Estimate the above equation (with drift) by OLS; then, divide the estimated coefficient of $R_{i(t-1)}$ by its standard error to compute the tau statistic and refer to the DF table (or any statistical package). If the computed absolute value of the tau statistic (| τ|) exceeds the DF, then reject the hypothesis that δ = zero (0), in which case the time series is stationary. On the other hand, if the computed tau statistic (| τ|) does not exceed the critical tau value, then do not reject the null hypothesis, in which case the time series is stationary.

Test of Autocorrelation:

The Autocorrelation problem is common in any regression-based model. In this study Durbin-Watson (d) test is applied to correct the above problem. The d statistic can be computed as under:

$$d = \frac{\sum_{t=2}^{t=n} (\hat{\mu}_t - \hat{\mu}_{t-1})^2}{\sum_{t=1}^{t=n} \hat{\mu}^2_t} \quad (26)$$

Test of Heteroscedasticity:

An important assumption of any regression-based model is that the disturbances are homoscedastic that means they all have the same variances. Inversely, the disturbances in the regression equation do not have the same variances, which mean the disturbances are heteroscedacticity. There are several methods to test this problem. The study uses White's (1980) general heteroscedasticity test that does not rely on the normality assumption. Hence, the residuals are estimated from the original regression model and then the residuals are squared and regressed on the original independent variables, their squared values, and the cross product(s) of the regressors and find out the R^2 value, which is 'n' times of the sample size obtained from the auxiliary regression asymptotically follows the Chi-square distribution with degree of freedom equal to the number of regressors (excluding the constant term), which is as under:

$$n.R^2 \underset{asy}{\sim} \chi^2 df \quad (27)$$

If the value of chi-square, which is obtained from the auxiliary regression exceeds the critical chi-square value at the chosen level of significance then heteroscedasticity exist and if opposite is happened then there is no heteroscedasticity that may be shown as $\alpha^2 = \alpha^2 = \alpha^2 = \alpha^2$..........= 0

Test of Multicollinearity:

The term multicollinearity is due to Ragnar Frisch. Generally it means the existence of a perfect or exact, linear relationship among some or all independent variables of a regression model. The study examines the problem of multicollinearity to observe the individual effect of independent variable on market timing activities. Earlier research studies have used the techniques like simple correlation, R^2, and VIF for examining the presence of multicollinearity among the independent variables. In addition to R^2 value and VIF, the present study also uses the tolerance value to test the problem of multicollinearity.

RESULT AND ANALYSIS

Table.1 represents the summary statistic for monthly raw returns of the individual open-ended equity mutual fund schemes of Unit Trust of India (UTI). The computed J-B statistic of the individual return series of the mutual fund schemes is far from zero (J-B>0) which confirms rejection of null hypothesis of a normal distribution.

Similarly, Table.2 shows the summary statistic of the pre-determined information variables namely market index R_m, dividend yield DY, 91-day treasury bill rate TB, inflation rate FL, Ruppe-Dollar exchange rate EX, monthly sales volume of mutual fund schemes SK, monthly redemption / repurchase of mutual fund schemes MV and monthly total asset under management UM. The computed J-B statistic of the information variables is different from zero which indicates rejection of null hypothesis of a normal distribution.

The empirical work based on time series data assumes that the underlying time series is stationary that means its mean, variance and auto-covariance (at various lags) remain the same. In this study Dickey-Fuller (DF) test is used to test stationarity of the individual time series data. Table.3 presents the summary statistic of the individual time-series data. It is observed from the table that the computed absolute tau statistic (IτI) of fourteen (14) individual time series return data exceed the DF critical absolute tau values at 5% significance level which indicates rejection of null hypothesis that means that the time series return data of 14 schemes is stationary. In case of the remaining individual time series return data the computed tau statistic is lower than the DF critical absolute tau statistic at 5% significance level which means acceptance of the null hypothesis. Hence, in this case, the return data is seen to be non-stationary.

An important assumption of any regression based model is that the disturbances are homoscedastic, which means they all have same variances. Practically, it is also recognised that the disturbances may not have the same variances or in other words they are heteroscedacticity. To test this problem, White's (1980) general heteroscedasticity test is applied. Table.4 presents the individual regression based test statistic of heteroscedasticity. The table shows that the computed chi-square values of the individual regression are lower than the critical chi-square value at 5% level of significance and hence, it may be argued that there is no existence.

The problem of multicolinearity in the explanatory variables of a regression equation is a matter of thought. This type of problem is diagnosed through the techniques like analysis of R^2, tolerance value (TOL) and variable inflation factor (VIF). The test statistic of multicolinearity is presented in Table.5. The R^2 value higher that 0.800 is considered to be harmful because of the presence of multicolinearity problem. The computed R^2 values of the individual schemes' are lower than the cut-off point (0.800), which necessarily proves that the explanatory

variables in the regression model is free from the problem of multicolinearity. VIF is another popular measure of multicolinearity. It is generally held that the value of VIF higher than ten (10) is likely to cause a multicolinearity problem. In the present study the values range between 1.0471 and 1.9685 (i,e. less than 10) that means absence of multicolinearity problem. Tolerance may also be used as a measure of examine multicolinearity problem. The tolerance value more than 0.20 may be used as a criterion for considering the influence of explanatory variables in the regression model being free from the problem of multicolinearity. Here, the computed tolerance value ranges between 0.508 and 0.955 which clearly demonstrates the fact that the individual regression models are free from the problem of multicolinearity of the explanatory variables.

Finally, the paper analyses the market-timing performance of the open-ended mutual fund schemes of UTI based on both approaches (unconditional & conditional). It is observed from Tab.1 that the average return performance of the schemes is positive. Generally, the positive return performance is caused by two reasons. One is manager's ability to select the under priced securities (stock-selection) and the other is prediction of market movement (market-timing). The present study deals with market-timing performance of the mutual fund managers. The prediction of market movement requires specialised knowledge of the managers that ensure higher rate of return. It is assumed that positive gamma value adds extra return to the mutual fund portfolios. It is also assumed that statistically significant positive gamma value adjoin abnormal return to the mutual fund portfolios, which is delivered by the superior managers. Most of the past studies reveal that the mutual fund managers are not successful in market-timing activities. Few of them are superior by providing significant gamma values (abnormal return) and some of them are average performers by providing positive gamma values (normal return) and many of them are very poor in market-timing activities by providing negative gamma values.

Table.6 represents the market-timing performance of the open-ended mutual fund schemes based on un-conditional model developed by Treynor & Mazuy (1966). It is observed that the gamma values of six schemes are positive and the remaining is negative. The cause of probable reason of obtaining negative market-timing performance may be considered as the reflection of inability of the managers to predict the market movement. Therefore, those managers have failed to earn extra return from the activities of market-timing. Although, six schemes have offered extra return from the activities of market-timing. The earlier researchers have shown poor performance and in most of the cases negative performance in this regard. But, in un-conditional model, the managers cannot earn abnormal return by capturing the activities of market movement and hence, the mangers have failed to generate statistically significant gamma values.

Table.6 also presents the test statistic of autocorrelation problem. Here, the most celebrated test of D-W (1951) is used. According to this test if the value of 'd' is found to be '2' one may assume that there is no first order autocorrelation in the regression model. The observed 'd' values of all the schemes are more or less are two (2) that indicates the returns data are free from the problem of first order autocorrelation.

The main issue of this paper is to examine the market-timing performance of the selected open-ended mutual fund managers based on conditional approach proposed by Ferson & Schadt (1996) and then to make a comparison between the market-timing performances of the selected schemes using the results derived from un-conditional model and conditional model. Ferson & Schadt argue that conditional model provides better market-timing performance than the un-conditional model. Now, come to the result, which is depicted in Table.7. It is observed from the table that the gamma values of seven schemes are positive and the remaining schemes have provided negative gamma values. Hence, the managers of those schemes (7 schemes) have provided to the investors a better return. If we compare the results about positive gamma values which are derived from both the approaches could be found that the number of positive performers in conditional model is more than the un-conditional model. Although, it may not be said a radical improvement in market-timing performance. In conditional model the number of positive market timers is only seven as compared to the traditional approach where the positive market timers are only six. Here, the difference is only one after the inclusion of available public information variables. It may be said that the managers cannot properly predict the market movement at right time. Only then the managers are said to be superior when they predict the market movement correctly as a result they generate statistically positive significant gamma values. In conditional approach two schemes have provided statistically significant gamma values where in un-conditional model such statistically significant performance is absent. So, it may be said that after incorporation of publicly available information variables in the un-conditional model (Treynor & Mazuy 1966) the managers have been able to generate statistically significant positive gamma values and thus the evidence is similar to the evidences of Ferson & Schadt 1996, Ferson & Warther 1996, Chen & Knez 1996, Christopherson et al 1998, Christopherson et al 1999 and Ferson & Qian 2004 etc.

Finally, it is observed from the above analysis that the market-timing performance based on conditional measure is better than that of un-conditional approach. But, without any further enquiry with the help of statistical testing it may not be concluded that conditional market-timing performance is superior to un-conditional market-timing performance. The hypothesis in this regard is formulated in methodology section. The computed value of the test statistic is 1.3561 which is lower than the table value of 'z' at 5% level (1.96) of significance. This prompts us to accept the null hypothesis. Based on this finding, it may be concluded in respect of market-timing performance that no significant difference is observed between the evidences offered by the two measures.

CONCLUSION

Most of the earlier research studies use traditional measures to examine the market-timing performance of the investment managers. The traditional measures assume that the variance is not changed over time and therefore, those performance measures are unable to predict the market movement correctly. Although, those models are extensively used in the measurement of investment performance before the development of conditional model. But, after the development of conditional measures, the measurement of investment performance can be possible to make more accurately. It is observed from the above analysis that six schemes have offered positive market-timing performances based on traditional model. But, the traditional measures cannot provide significant market-timing performance. Hence, it may be concluded that the managers are inefficient to provide superior market-timing performances in traditional measure. After inclusion of public information variables in the traditional model, the market-timing performance looks better. In conditional measure the number of positive market-timing performance is increased to seven from six. The conditional measure has also provided significant market-timing performance which is absent in traditional measure. Hence, it may be argued that the market-timing performance based on conditional model is better than the traditional model. But, the statistical test reveals that the market-timing performance based on two measures is same.

Tab.1 : Descriptive Statistic of the mutual fund schemes

Sl.No	OB	Mean	Median	Max	Min	SD	Skewness	Kurtosis	JB
1	53	1.4957	0.6700	13.3600	-15.10	5.8981	-0.563	0.969	11.9092
2	53	1.5865	1.3318	55.6109	-28.5257	9.9336	2.600	17.791	542.738
3	77	1.0777	0.0734	17.0146	-17.0508	4.0599	0.380	8.374	94.5094
4	64	0.9752	0.6071	13.6538	-3.8353	3.0247	2.407	7.314	111.427
5	64	1.1996	0.4901	13.7101	-2.1758	2.9803	2.579	6.991	113.421
6	64	0.9642	0.3984	26.0180	-19.4558	5.1211	1.309	13.534	314.184
7	64	1.0323	0.3303	11.9102	-2.6877	2.5794	2.670	7.513	130.354
8	64	1.1651	0.6321	16.8589	-31.3171	5.5334	-2.824	19.482	809.483
9	64	1.1534	0.7722	9.0226	-2.6769	2.1275	1.588	3.626	27.943
10	64	1.2089	0.8649	9.0226	-2.6718	2.0654	2.012	5.443	59.095
11	88	1.1987	0.3097	16.2653	-0.7813	2.8903	3.132	11.340	398.808
12	88	1.0364	0.5808	7.4351	-3.8996	1.9145	0.981	1.844	19.0145
13	88	1.1028	0.6938	10.6253	-1.7241	1.6367	2.403	11.976	380.109
14	88	1.1153	0.6684	13.5190	-2.8174	2.5517	2.689	9.692	2701.25
15	88	1.0139	0.9081	6.6657	-7.5124	2.0520	-0.620	4.072	9.8515
16	88	0.6055	0.4599	9.5172	-6.3826	2.1786	0.544	4.717	15.1501
17	88	1.0311	0.7229	7.3243	-4.8402	1.5966	1.185	6.241	59.1103
18	88	0.1790	0.5393	7.6243	-19.2277	3.3710	-2.945	14.469	609.510
19	88	0.9714	0.7024	4.4293	-0.2300	0.9097	1.743	2.970	44.5614
20	88	1.2178	0.7434	7.7535	-1.8719	1.4838	1.981	5.335	77.5488
21	88	0.6787	0.7175	5.6174	-13.8577	2.3626	-3.091	17.373	897.600
22	88	1.0674	0.7576	9.3563	-4.1256	1.7232	1.894	7.686	133.127
23	88	0.5056	0.7913	13.8023	-9.7287	3.4064	0.447	5.192	20.5484
24	88	1.4247	0.6368	37.5249	-11.2652	5.1631	4.582	29.454	2873.90
25	88	1.0864	0.6999	20.6603	-13.3468	3.0958	1.851	22.870	1497.91
26	88	0.7663	0.5799	4.7118	-13.3468	2.0154	-3.777	27.346	2382.56
27	88	0.8897	0.8012	32.0503	-26.8475	4.6964	1.035	35.818	3964.78
28	88	0.7743	0.4735	16.8589	-10.4888	2.7322	2.010	17.123	790.604
29	88	0.6193	0.5359	4.9342	-2.2624	1.0504	1.021	4.236	20.8907
30	88	1.1879	0.8228	6.9450	-3.0958	1.4325	1.038	4.238	21.4222

Source: Primary data

Tab.2 : Descriptive Statistic of the pre-determined Variables

Sl.No	OB	Mean	Median	Max	Min	SD	Skewness	Kurtosis	JB
1	144	1.4496	0.9457	49.94	-30.24	9.07	0.578	6.366	75.9978
2	144	1.5794	1.5266	2.52	0.85	0.42	0.329	-0.963	96.83
3	144	0.3739	0.6024	59.19	-39.65	9.17	0.531	15.644	965.995
4	144	2.4207	2.5333	5.60	-2.10	1.35	-0.716	1.337	28.9872
5	144	0.2019	0.5393	7.16	-6.80	2.22	0.545	2.291	1.1447
6	144	944510.20	521514.50	2669515.00	2219c1.00	879955.60	0.523	-1.225	107.104
7	144	925459.10	471821.00	2667929.00	20097.00	879900.00	0.566	-1.164	104.033
8	144	362465.20	318526.50	759452.00	79464.00	240919.30	0.254	-1.575	125.583

Tab.3 : Unit root test of the return series of the schemes

Sl.No	Estimated Coefficient	Standard Error	Tau Statistic	DF Statistic
1	0.337	0.134	2.5149	-2.89
2	-0.276	0.136	-2.0294	-2.89
3	0.288	0.112	2.5714	-2.89
4	0.427	0.119	3.5882	-2.89
5	0.398	0.120	3.3167	-2.89
6	-0.224	0.126	-1.7778	-2.89
7	0.328	0.125	2.6240	-2.89
8	0.084	0.128	0.6563	-2.89
9	0.679	0.116	5.8534	-2.89
10	0.557	0.127	4.3858	-2.89
11	0.560	0.094	5.9574	-2.89
12	0.628	0.094	6.6809	-2.89
13	0.738	0.113	6.5310	-2.89
14	0.618	0.098	6.3061	-2.89
15	0.612	0.092	6.6522	-2.89
16	0.503	0.099	5.0808	-2.89
17	-0.123	0.119	-1.0336	-2.89
18	0.114	0.111	1.0270	-2.89
19	0.339	0.107	3.1682	-2.89
20	0.231	0.093	2.4839	-2.89
21	0.292	0.104	2.8077	-2.89
22	0.449	0.114	3.9386	-2.89
23	0.381	0.106	3.5943	-2.89
24	0.228	0.107	2.1308	-2.89
25	0.104	0.108	0.9630	-2.89

Sl.No	Estimated Coefficient	Standard Error	Tau Statistic	DF Statistic
26	0.204	0.105	1.9429	-2.89
27	0.009	0.110	0.0818	-2.89
28	0.112	0.108	1.0370	-2.89
29	0.470	0.096	4.8958	-2.89
30	-0.067	0.108	-0.6204	-2.89

Tab.4 : Test of Heteroscedasticity

Sl.No	R^2	χ^2	Table Value (5% level)
1	0.065	3.445	19.6751
2	0.054	2.862	19.6751
3	0.049	3.773	19.6751
4	0.168	10.752	19.6751
5	0.028	1.792	19.6751
6	0.159	10.176	19.6751
7	0.084	5.376	19.6751
8	0.094	6.016	19.6751
9	0.094	6.016	19.6751
10	0.159	13.992	19.6751
11	0.186	16.368	19.6751
12	0.105	9.240	19.6751
13	0.105	9.240	19.6751
14	0.105	9.240	19.6751
15	0.094	8.272	19.6751
16	0.083	7.304	19.6751
17	0.059	5.192	19.6751
18	0.253	22.264	19.6751
19	0.159	13.992	19.6751
20	0.084	7.392	19.6751
21	0.062	5.456	19.6751
22	0.062	5.456	19.6751
23	0.205	18.04	19.6751
24	0.205	18.04	19.6751
25	0.159	13.992	19.6751
26	0.094	8.272	19.6751
27	0.056	4.928	19.6751
28	0.179	15.752	19.6751
29	0.084	7.392	19.6751
30	0.094	8.272	19.6751

Tab.5 : Test of Multicolinearity problem			
Sl.No	R^2	χ^2	Table Value (5% level)
1	0.492	1.9685	0.508
2	0.174	1.2107	0.826
3	0.291	1.4104	0.709
4	0.248	1.3298	0.752
5	0.350	1.5385	0.650
6	0.045	1.0471	0.955
7	0.234	1.3055	0.766
8	0.072	1.0776	0.928
9	0.421	1.7271	0.579
10	0.374	1.5974	0.626
11	0.148	1.1737	0.852
12	0.357	1.5552	0.643
13	0.340	1.5152	0.660
14	0.345	1.5267	0.655
15	0.297	1.4225	0.703
16	0.351	1.5408	0.649
17	0.115	1.1299	0.885
18	0.188	1.2315	0.812
19	0.260	1.3514	0.740
20	0.232	1.3021	0.768
21	0.062	1.0661	0.938
22	0.209	1.2642	0.791
23	0.178	1.2165	0.822
24	0.169	1.2034	0.831
25	0.192	1.2376	0.808
26	0.237	1.3106	0.763
27	0.120	1.1364	0.880
28	0.072	1.0776	0.928
29	0.332	1.4970	0.668
30	0.074	1.0799	0.926

Tab.6 : Market-timing performance based on Un-Conditional model					
Sl.No	Beta value (β)	t-Statistic	Gamma value (γ)	t-Statistic	D-W statistic
1	0.538	5.669	-0.010	-0.983	1.998
2	0.577	3.068	-0.004	0.184	2.873
3	0.200	3.923	-0.002	-0.718	1.808
4	0.094	2.176	0.003	-1.043	1.885
5	0.077	1.781	-0.004	0.349	1.852
6	0.004	0.053	-0.001	-0.840	2.444
7	0.054	1.419	-0.001	-0.446	14.956
8	0.120	1.471	-0.003	-0.204	1.920
9	0.072	2.379	-0.001	0.152	1.903
10	0.054	1.785	-0.002	-0.578	1.948
11	-0.008	-0.021	-0.002	-0.589	1.891
12	0.027	1.025	-0.002	-1.364	1.830
13	0.051	2.335	-0.002	-1.423	1.759
14	0.114	3.585	0.004	1.807	1.874
15	0.068	2.509	-0.003	-1.495	1.987
16	0.051	1.771	-0.004	-2.019	2.131
17	-0.014	-0.657	0.005	0.030	2.036
18	0.004	0.088	0.002	0.712	1.747
19	-0.015	-1.180	-0.001	-0.600	2.294
20	0.010	0.480	-0.002	-1.430	2.326
21	-0.016	-0.483	-0.001	-0.449	1.894
22	0.011	0.466	-0.001	-0.743	2.070
23	0.028	0.607	-0.004	-1.252	2.341
24	0.108	1.543	-0.002	-0.500	1.681
25	0.048	1.139	-0.001	-0.149	1.865
26	-0.006	-0.203	-0.001	-0.424	1.683
27	0.049	0.757	-0.001	-0.130	1.986
28	0.061	1.633	-0.002	-0.693	1.809
29	0.000	3.224	-0.004	-1.623	1.809
30	0.003	0.147	0.001	0.947	2.113

Tab.7 : Market-timing performance based on Conditional model

Sl.No	Name of the Scheme	Beta (β)	t-Statistic	Gamma (γ)	t-Statistic
1	UTI-Grand Master 1993	-4.720	-1.555	2.056	0.161
2	UTI-PEF 95	-2.673	-0.560	-0.642	-0.043
3	UTI-Sunder	3.714	2.457	-1.981	-0.738
4	UTI-Dynamic Equity Fund-Dividend	3.655	2.374	-4.138	-0.568
5	UTI-Dynamic Equity Fund-Growth	5.030	3.025	-0.187	-1.157
6	UTI-Growth&Value Fund- Annual Dividend	6.478	1.923	-0.105	-0.320
7	UTI-Growth&Value Fund-Growth	3.872	2.737	-0.001	-0.007
8	UTI-Gr&Value Fund-Semi Annual Dividend	5.165	1.513	-0.403	-1.213
9	UTI-India Advantage equity Fund-Dividend	2.889	2.748	0.027	0.261
10	UTI-India Advantage equity fund-Growth	3.008	2.810	-0.020	-0.193
11	UTI-Equity fund-Growth Option	1.191	0.988	0.036	0.326
12	UTI-Equity fund-Income Option	1.125	1.543	-0.126	-1.879
13	UTI-Master index fund-Growth Option	0.030	0.056	-0.056	-1.118
14	UTI-Master index fund-Income Option	1.008	1.148	-0.055	-0.676
15	UTI-Master plus unit scheme-Growth Option	2.213	2.895	-0.253	-3.595
16	UTI-Master plus unit scheme-Income Option	0.455	0.537	-0.022	-0.281
17	UTI-Master Share-Growth Option	-1.652	-2.749	0.156	2.813
18	UTI-Master share-Income Option	-0.854	-0.606	-0.024	-0.184
19	UTI-Master Value Fund-Growth Option	0.220	0.645	-0.079	-2.498
20	UTI-MNC fund (UGS 10000)-Growth Option	0.176	0.280	-0.048	-0.835
21	UTI-MNC fund (UGS 10000)-Income Option	-0.799	-0.875	0.197	2.345
22	UTI-Nifty index fund-Growth Option	0.034	0.049	0.005	0.083
23	UTI-Banking sector fund-Income Option	2.952	2.284	-0.331	-2.779
24	UTI-Banking sector fund-Income Option	-0.080	-0.038	-0.267	-1.390
25	UTI gr sector funds-UTI-GSF-pharma-Gr Op	1.702	1.360	-0.199	-1.726
26	UTI-Gr sector funds-UTI-GSF-Pharma-Inc Op	0.991	1.184	-0.102	-1.320
27	UTI-Gr sector funds-UTI-GSF-Service-Gr Op	0.933	0.491	-0.154	-0.878
28	UTI infrastructure fund-Growth Option	1.424	1.222	-0.103	-0.958
29	UTI Mid cap fund-Growth Option	0.481	1.261	-0.102	-2.892
30	UTI opportunities fund-Growth Option	0.076	0.127	0.018	0.328

The Conditional Performance of
Indian Mutual Fund Managers: A New look

REFERENCES

Artikis, G. (2004), "Bond mutual fund managers performance in Greece", Journal of Managerial Finance, Vol. 30(10), pp. 1-6.

Athanassakas., Carayannopoulos, & Racine. (2002), "How effective is aggressive portfolio management? Canadian Investment Review, pp. 39-49.

Black, F (1972), "Capital market equilibrium with restricted borrowing", Journal of Business, Vol. 45(3), pp. 444-454.

Brown, Stephen, Goetzmann, Ibbotson, & Ross, A. (1992), "Survivorship bias in performance studies", Review of Financial studies, Vol. 5, pp. 553-325.

Brown., & Goetzmann, W. (1995), "Performance persistence", Journal of Finance, Vol. 50, pp. 679-698.

Bollen, N; & Busse, J.A. (2001), "On the timing ability of mutual fund manager", Journal of Finance, Vol. 56, pp. 1075-1094.

Close, J. (1952), "Investment companies: Closed end versus open-end", Harvard Business Review, Vol. (29), pp. 79-88.

Coggin., Fabozzi, & Rahman. (1993), "The investment performance of US equity pension fund managers: An empirical investigation", Journal of Finance, pp. 1039-1055.

Chang., & Lewellen. (1984), "Market-timing and mutual fund investment performance", Journal of Business, Vol. 57, pp. 57-72.

Cumby, R., & Glen, J. (1990), "Evaluating the performance of international mutual funds", Journal of Finance, Vol. 45, pp. 497-521.

Christopherson, Jon., Ferson, Wayne, & Glassman, Debra. (1998), "Conditioning manager alphas on economic information: Another look at the persistence of performance", Review of Financial Studies, Vol. 11(1), pp. 111-142.

Christopherson, Jon., Ferson, Wayne, & Turner, Andrew. (1999), "Performance evaluation using conditional alphas and betas", Journal of Portfolio Management, Vol. 26(1), pp. 59-72.

Chen, Zhiwu., & Knez, Peter. (1996), "Portfolio performance measurement: Theory and applications", Review of Financial Studies, Vol. 9(2), pp. 511-555.

Comer, G; (2006), "Hybrid mutual funds and market timing performance", Journal of Business, Vol. 79, pp. 771-797.

Dybvig, Philip., & Ross, Stephen. (1985), "Differential information and performance measurement using a security market line", Journal of Finance, Vol. 40(2), pp. 383-399.

Drew, E. M. Veeraraghavan, M., & Wilson, V. (2005), "Market-timing, selectivity and alpha generation: Evidence from Australian equity superannuation funds", Investment Management and Financial Innovations, Vol. 2, pp. 111-127.

Dhar, J. (2005), "Investment Management of Mutual Funds: Evidence of timing and selectivity from India during 1997-2003", UGC sponsored minor research project, pp. 1-28.

Fama, E. F. (1970), "Efficient capital markets: A review of theory and empirical work", Journal of Finance, Vol. 25(2), pp. 383-417.

Fama, E. F. (1972), "Components of investment performance", The Journal of Finance, Vol. XXVII(3), pp. 551-567.

Ferson, W., & Schadt, R. (1996), "Measuring fund strategy and performance in changing economic conditions", Journal of Finance, Vol. 51(6), pp. 425-461.

Fama, Eugene., & French, K. (1989), "Business conditions and expected returns on stocks and bonds", Journal of Financial Economics, Vol. 25(1), pp. 23-49.

Franswort h, H. (1997), "Conditional performance Evaluation", In paxson, D., Wood, D. (eds), Blackwell Encyclopedic Dictionary of Finance, Blackwell Business, pp. 23-24.

Ferson, W., & Warther, V. (1996), "Evaluating fund performance in a dynamic market", Financial Analysts Journal, Vol. 52(6), pp. 20-28.

Ferson, W., & Qian, M. (2004), "Conditional performance evaluation, revisited", Working Paper, Boston College-EUA.

Filippas N.D. & Christine Psoma. (2001), "Equity mutual fund managers performance in Greece", Journal of managerial finance, Vol. 27(6), pp. 68-74.

Grossman, S. (1975), "On the efficiency of competitive stock markets where trades have diverse information", The Journal of Finance, vol. 31 (2), pp. 572-585.

Grossman, S., & Stiglitz, E. J. (1980), "On the impossibility of informationally efficient markets", The American Economic Review, vol. 70 (3), pp. 393-408.

Grinblatt, M., & Titman, S. (1989), "Portfolio performance evaluation: Old issues and new insights", Review of Financial Studies, Vol. 2(3), pp. 393-422.

Grinblatt, M., & Titman, S. (1989a), "Mutual fund performance: An analysis of quarterly holdings", Journal of Business, Vol. 62, pp. 393-416.

Grant, D. (1977), "Portfolio performance and the cost of timing decisions", Journal of Finance, Vol. 32(3), pp. 837-846.

Gordon, M.J., & Gangoli, R. (1962), "Choice among and scale of play on lottery type alternatives", College of Business Administration, University of Rochester, pp. 1-25.

Gupta, A. (April 2002), "Market timing abilities of Indian mutual fund manager" The ICFAI Journal of applied Finance, Vol. 6(2), pp. 1243-1250.

Hicks, J.R. (1962), "Liquidity", The Economic Journal, Vol. LXXII, pp. 787-802.

Henrikson, R., & Merton, R.C. (1981), "On market timing and investment performance II. Statistical procedures for evaluating forecasting skills", The Journal of Business, Vol. 44, pp. 513-533.

Holme, I.M., & Solvang, B.K., 91997), "Forskningsme todik- am kvalitativa och kvantitativa me toder. Lund: studentliterature.

Henrikson, R. (1984), "Market timing and mutual fund performance: An empirical investigation", Journal of Business, Vol. 57(1), pp. 73-96.

Ilmanen, A. (1995), "Time-varying expected returns in international bond markets", Journal of Finance, Vol. 50(2), pp. 481-506.

Ibrahim, M. (2004), "Performance evaluation of mutual fund industry in Nigeria: 1990-2002", Working paper, http/ / papers.ssrn.com, 1-25.

Irissappane., Murugaesan, & Chandrasekara. (2003), "Portfolio selection skill and timing abilities of fund managers: An empirical evidence on Indian mutual funds", www.uticam.com. Pdf, pp. 1-18.

Jensen, M. C. (1968), "The performance of mutual funds in the period 1945-1964", The Journal of Finance, Vol. 23, pp. 389-416.

Jensen, M. (1972), "Optimal utilization of market forecasts and the evaluation of investment performance", In Szego, G; Shell, K. (eds), Mathematical methods in Investment an d Finance, North-Holland, pp. 310-335.

Jagannathan., & Korajczyk. (1986), "Assessing the market timing performance of managed portfolios", Journal of Business, Vol. 59, pp. 217-235.

Jiang, G.J., Yao, T., & Yu, T. (2007), "Do mutual funds time the market? Evidence from portfolio holdings", Journal of Financial Economics, Vol. 86, pp. 724-758.

Jaydev, M. (March 1996), "Mutual fund performance: An analysis of monthly returns", Finance India, Vol. X(1), pp. 73-84.

Kahneman, D., & Tversky, A. (1979), "Prospect theory: An analysis of decision under risk", Econometrica,

Kader, M., & Kuang, Y. (2007), "Risk-adjusted performance, selectivity, timing ability and performance persistence of Hong Kong mutual funds", Journal of Asia-Pacific Business, Vol. 8(2), pp. 25-28.

Kon, & Jen. (1978), "The investment performance of mutual funds: An empirical investigation of timing, selectivity and market efficiency", Journal of Business, Vol. 52, pp. 263-289.

Koulis., Beneki., Adam, & Botsaris. (2011), "An assessment of the performance of Greek mutual equity funds selectivity and market-timing", Applied Mathematical Science, Vol. 5(4), pp. 159-171.

Linter, J. (1965), "Security prices, risk and maximal gains from diversification", The Journal of Finance, Vol. XX(4), pp. 587-615.

Lehmann, B. N., & Modest, D. M, (1987), "Mutual fund performance evaluation: A comparison of benchmarks and benchmark comparisons", Journal of Finance, Vol. 42, pp. 233-266.

Lee, C.F., & Rahman, S. (1990), "Market-timing, selectivity and mutual fund performance: An empirical investigation", Journal of Business, Vol. 63, pp. 261-278.

Leite, A.P. & Cortez, C.M. (2005), "Conditional performance evaluation: Evidence for the Portuguese mutual fund market", www.ssrn.com.pdf, pp. 1-24.

Lundhal, U., & Skarvard, P.H. (1999), "Utredningsmetodik for samhallvetare och economer (3ed). Lund: Student literature.

Mossin, J. (1966), "Equilibrium in a capital asset market", Econometrica, Vol. 34, pp. 141-183.

Markowitz, H. M. (1952), "Portfolio selection", Journal of Finance, Vol. 12, pp. 77-91.

Merton, R.C. (1981), "On market timing and investment II an equilibrium theory of value for market forecast" Journal of Business, Vol. 54(3), pp. 363-406.

Modigliani, F. & L. Modigliani (1997), "risk-Adjusted performance", The Journal of Portfolio Management, Vol. 23(2), pp. 45-54.

Mansor., & Bhatti. (2011), "The Islamic mutual fund performance: New evidence on market-timing and stock selectivity", International conference on Economics and Finance Research, IPEDR, 4, ACSIT press, Singapore, pp. 477-484.

Otten, R., & Bams, D. (2004), "How to measure mutual fund performance: Economic versus Statistical relevance", Journal of Accounting and Finance, Vol. 44(2), pp. 203-222.

Pesaran, M.H., & Timmermann, A. (1995), "Predictability of stick returns: Robustness and economic significance", Journal of Finance, Vol. 50(4), pp. 1201-1228.

Rosenberg, B., & Mckibben, W. (1973), "The prediction of systematic and specific risk in common stocks", Journal of Financial and Quantitative Analysis, Vol. 8(2), pp. 317-333.

Rosenberg, B., & Marathe, V. (1975), "Common factors in security returns: Microeconomic determinants and macroeconomic correlates", Research Programme in Finance, Working Paper, pp. 1-57.

Rao., & Venkateswarlu. (2000), "Market timing abilities of fund managers: A case study of unit trust of India", Indian capital markets, Vol. 55-66.

Romacho, J. & Cortez, M.C. (2006), "Timing and selectivity in Portuguese mutual fund performance", Research in International Business and Finance, Vol. 20(3), pp. 275-374.

Roy., & Ghosh, (2013), "Market-timing performance of the open-ended income and growth mutual fund schemes: An empirical study", International Journal of Financial Management, Vol.3, Issue.3, pp. 47-50.

Sharpe, W. F. (1964), "A simplified model for portfolio analysis", Management Science, pp. 277-293.

Sharpe, W. F. (1966), "Mutual fund performance", Journal of Business, Vol. 39, pp. 119-138.

Shanken, J. (1990), "Intertemporal asset pricing models: An empirical investigation", Journal of Econometrics, Vol. 45, pp. 99-120.

The Conditional Performance of
Indian Mutual Fund Managers: A New look

Santos., Tusi., Costa, & Silva. (2005), "Evaluating Brazilian mutual funds with stochastic frontiers", www.economicsbulletin.com / volume13/ EB-05M20002A.pdf, pp. 1-37.

Silva, Florinda., Cortez, M. & Armada, M. (2003), "Conditioning information and European bonds fund performance", European Financial Management, Vol. 9(2), pp. 201-230.

Shanmughan., & Zabiulla. (2011), "Stock selection strategies of equity mutual fund managers in India", Middle Eastern Finance and Economics, Vol. 11, pp. 19-27

Treynor, J. L. (1965), "How to rate management of investment funds", Harvard Business Review, Vol. 43(1), pp. 63-75.

Treynor, J. L., & Mazuy, J. (1966), "Can mutual fund outguess the market", Harvard Business Review, Vol. 43(1), pp. 63-75.

Tobin. J. (1958), "Liquidity preference as behaviour towards risk", The Review of Economic studies, Vol. XXV, pp. 65-86.

Thanou, E. L. (2008), "Mutual fund performance evaluation during up and down market condition: The case of Greek equity mutual funds", International research Journal of Finance and Economics, Vol. 13, pp. 84-93.

BIOGRAPHY

Subrata Roy, Ph.D is currently Assistant Professor in the Department of Commerce, Rabindra Mahavidyalaya, Champadanga, Hooghly, affiliated to the University of Burdwan, West Bengal.

He did Ph.D on "Performance Appraisal of mutual fund in India: An empirical Study" from the Department of Commerce, University of Burdwan, West Bengal, India. He served as Assistant Finance Manager in Elegant company. He has done several research works which have been published in different national and international journals like KCA journal of business management, International journal of Financial Management, Global Business review, International journal of commerce and accounting research, Annamalai International journal of business studies, Global journal of finance and economics etc. He has research interest on CAPM, Conditional CAPM, asset pricing and sustainable investment performance etc. Currently, he is working on sustainable investment in emerging markets.