

FINANCIAL PERFORMANCE OF EQUITY ORIENTED MUTUAL FUNDS - EMPIRICAL EVIDENCE FROM INDIA

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Mutual funds have facilitated the mobilisation of small savings of the investors and provided avenues for investment in the securities market. Securities and Exchange Board of India (SEBI) has an elaborate Regulatory Framework for the functioning of mutual funds in India. From the investor's perspective, the return given by the mutual fund is by far the most important parameter. Evaluating returns without reckoning the risk associated with the mutual fund obviously presents only a partial picture of financial performance of the mutual fund. This paper aims at evaluation of the financial performance of sample equity oriented mutual funds in India for the period April 2007 to December 2012. An attempt has been made to examine the rates of return generated by the equity oriented mutual funds vis-à-vis risk free returns and market returns, estimate the risk associated with the selected equity based mutual funds and the returns of the selected mutual funds factoring the risk. Based on the analysis of the returns given by the mutual funds and the total risk associated with these mutual funds, a risk-return profile of selected sample equity oriented mutual funds has been developed in the study. The most notable finding of the analysis is that almost all the sample mutual funds save three yielded returns which are higher than the expected returns as per CAPM Model.

Key words: Beta, Mutual Fund, Net Asset Value, Risk, Sharpe Ratio, Treynor Ratio

Introduction

The capital markets in India have evolved over the last few decades and financial intermediaries like mutual funds have played an important role; their role has been in accelerating the capital formation process. The reason is that mutual funds provide various benefits to the investors in terms of expert professional management, diversified portfolio, continuous avenues for entry and exit and convenience of investment through sale and purchase of mutual fund units.

Mutual funds are financial institutions which act as a conduit for channelizing savings

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into investments. The mutual fund industry in India started in 1963 with the formation of Unit Trust of India, at the initiative of the Government of India and Reserve Bank of India. The history of mutual funds in India can be broadly divided into four distinct phases

- (a) Phase-I: 1964-1987; Establishment of UTI,
- (b) Phase-II: 1987-1993; Entry of Public Sector Funds,
- (c) Phase-III: 1993-2003; Entry of Private Sector and
- (d) Phase-IV: 2003 onwards; consolidation & growth.

The structure of the mutual funds in India, which are set up in the form of a trust, comprises of the Sponsor, Asset Management Company (AMC), Board of Trustees and Custodian. Mutual funds may be classified based on type and investment objectives.

- (a) Classification based on 'type' i.e., Open-ended funds or Close-ended funds
- (b) Classification based on 'investment objectives' such as Income or Debt Funds, Growth Funds, Balanced Funds, Equity Based Funds, Sector Specific Funds, Money Market or Liquid Funds.

For better exposition, the subject matter of this paper has been divided into four sections. Section I presents the objectives of the study, hypotheses, scope of study and the sources of data. Section II is devoted to literature survey. Section III deals with the analysis of returns offered by mutual funds, the market and risk free securities. Section IV deliberates on the risk analysis and the estimation of returns factoring the risk. Section V contains the concluding observations.

Section I

Objectives of the Study

The study aims at evaluation of the financial performance of equity oriented mutual funds in India vis-à-vis returns provided by the market (based on the market indices) and secured investments such as Government securities. The returns generated by the mutual funds depend upon the scheme objectives and the investment strategies followed by the fund managers. More specifically, the objectives of the study are:

- (a) To examine the rates of return generated by the equity oriented mutual funds vis-à-

vis risk free returns and market returns.

- (b) To estimate the risk associated with the selected equity based mutual funds.
- (c) To estimate the returns of the selected mutual funds duly factoring the associated risk.
- (d) To assess the performance of the selected funds in terms of returns and the risk.

Hypotheses

Given the above mentioned objectives, the major hypotheses of the study are as follows:

- (a) Hypothesis H1:

Equity oriented mutual funds have generated higher rates of return than market portfolio during the period of the study

- (b) Hypothesis H2:

Equity oriented mutual funds have generated higher rates of return than those of the conventional risk free instruments (Central Govt. Securities) during the period of the study.

Scope

The scope of the study is limited to a sample of diversified equity mutual funds in India for the period 1st April 2007 to 31st December 2012. The study is exploratory in nature and aims at providing evidence based on historical performance data about the efficacy of investment avenues available for the investors by comparing the returns provided by equity based mutual funds and those provided by risk free securities.

A convenience sample has been used for the study. Mutual funds were shortlisted based on the criterion that they have been in operation for more than 5 years (a sufficiently long period for stable operations). A total of 37 mutual funds both from Government owned and private sector mutual funds have been selected

Mutual funds offer different options for each scheme they float. These may be dividend payout, dividend re-invest and growth options. While considering the mutual funds for the study, data for the growth option of the scheme has been considered so as to obviate the need for any adjustment for dividend income. Further, as the investors themselves may have different income sources and consequential tax liabilities which may vary,

only pre-tax returns have been considered for uniformity in the analysis.

Sources of Data

Only secondary sources of data have been considered and the major sources of data are as follows:

- (a) Daily net asset values (herein after referred to as 'NAV') of the 37 sample mutual funds have been drawn from the websites of the respective mutual fund / asset management companies. The websites accessed are listed in the references at the end.
- (b) For estimating the market returns, the Bombay Stock Exchange (BSE) Sensex 30 index (a well-established index) has been used. The daily BSE Sensex values have been taken from the 'Database on Indian Economy' published by the Reserve Bank of India (RBI) on its website.
- (c) Risk free returns are based on the coupon rates on 364 days T-bills for the period of study. Data for the coupon rates has been collected as available on the website of the RBI.

Section II

Literature Review

Considering the relevance to the present study, literature survey is carried with the following objectives:

- (a) Evaluation of performance of mutual funds in terms of returns,
- (b) Risk assessment for mutual funds,
- (c) Factoring risk while evaluating the returns given by mutual funds and
- (d) Explore methods of rating the mutual funds depending on the risk-return profile.

Evaluation of Returns by Mutual Funds

Sondhi and Jain (2006) have carried out a detailed study of the financial performance of 36 sample equity mutual funds in India over the period 1993-2002. According to this study, the rate of return over a period is given by the following equation (1):

$$\text{Rate of Return} = [\text{Ending Value} - \text{Beginning Value} + \text{Cash Inflow}] / \text{Beginning Value} \quad (1)$$

Debasish (2009) discusses the performance of 23 mutual fund schemes offered by nine mutual funds (6 private sector and 3 public sector) over a period of 13 years (1996-2009). The author provides the methodology for calculation of the returns given by a mutual fund over a time period 't' and the mean returns given by the fund. The following methodology for calculation of returns is suggested by the author. The rate of return, R_{st} , by a mutual fund scheme is estimated using equation (2).

$$R_{st} = [NAV_t - NAV_{t-1}] / NAV_{t-1} \quad (2)$$

NAV_t and NAV_{t-1} are the NAVs at the respective time period.

The mean return of the mutual fund scheme over a period of time intervals (n) is given by:

$$R_s = \sum R_{st} / n \quad (3)$$

Likewise, the returns given by the benchmark index representing the market returns over a period 't' and mean return of the market index over a period of time intervals (n) are given by equations (4) and (5) respectively.

$$R_{mt} = [I_t - I_{t-1}] / I_{t-1} \quad (4)$$

Where, I_t and I_{t-1} are the index values at the respective time period.

$$R_m = \sum R_{mt} / n \quad (5)$$

Jain and Gangopadhyay (2012) have studied performance of 45 mutual funds over a period of 15 years (1997-2012). The authors have followed the methodology outlined by Debasish (2009) as given above. Bahl (2012) investigates the performance of 29 open-ended, growth-oriented equity schemes for the period from April 2005 to March 2011 (six years) of transition economy. Monthly NAV of different schemes have been used to determine the returns from the fund schemes. The BSE-Sensex Index has been used as a surrogate measure for market portfolio. Prajapati (2012) presents the performance of five sample equity diversified mutual fund schemes each from select AMCs namely, HDFC, ICICI Pru. Life, Reliance, UTI and Birla Sunlife. The BSE Sensex Index is used as a proxy for the market. The reference period for the data is taken from January 2007 to December 2011. The yield to maturity of 364 days treasury bills is taken as a proxy for risk free rate of return. Agrawal (2009) provides an overview of mutual fund activity in emerging markets and describes about their size and their asset allocation. Fund managers are not always successful in the formation of the portfolio and so the study also

focuses on the empirically testing on the basis of fund manager performance and analysing data at the fund-manager and fund-investor levels.

Risk Assessment and Factoring Risk in Evaluation of Returns

Khan and Jain (2012) have given the theoretical basis for understanding risk and the expected returns as the two key determinants of share/security prices. The concept of risk and expected returns deliberated upon in the book are generic in nature and applicable to all financial instruments in general. Risk is defined as the variability of actual return from the expected returns associated with a given asset. Standard deviation of the return is the most common statistical measure of the total risk associated with the asset and it refers to the dispersion of returns around the expected value. The total risk is estimated using the following equation (6):

$$\sigma = \text{sqrt}[\sum (R_i - R_m)^2] \quad (6)$$

Where, R_i represents the actual returns and R_m represents the mean returns.

Coefficient of variation is a measure of relative dispersion (risk). It converts the standard deviation of expected values into relative values to enable comparison of risks associated with assets having different expected values and is evaluated using equation (7).

$$CV = \sigma / R_e \quad (7)$$

Fama and French (2004) discuss the Capital Asset Pricing Model (CAPM) given by William Sharpe (1964) and John Lintner (1965). The formulation given by CAPM model for expected returns is as per equation (8) given below.

$$E(R_i) = R_f + \beta [E(R_m) - R_f] \quad (8)$$

Where, $E(R_i)$ is the expected returns, R_f is the returns from risk free instruments, $E(R_m)$ represents the returns given by the market and market risk,

$$\beta = [Cov(R_i, R_m) / \sigma^2(R_m)] \quad (9)$$

According to the author, the attraction of the CAPM is that it offers powerful predictions as well as the relation between expected return and risk. Ironically, the empirical record of the model is poor enough to invalidate the way it is used in applications. The CAPM's empirical problems are the result of many simplifying assumptions.

Sondhi and Jain (2006) have deliberated extensively on the concept of risk and risk adjusted returns. CAPM model has also been used in the work. The CAPM performance model is based on the generally accepted premise that increased expected returns are associated with higher levels of risk; the model can evaluate the risk-return performance. The work of Sondhi and Jain (2006) makes a very relevant assertion that performance evaluation without reckoning the risk exposure does not provide a true and fair picture. Treynor (1965) and Sharpe (1966) have provided the conceptual framework of relative measure of performance of equity mutual funds. While Treynor has used systematic risk, Sharpe has used the total risk to evaluate the performance in terms of risk and returns.

Treynor's Index effectively represents the portfolio return in excess of risk-free return per unit of market risk and is computed using equation (10).

$$\text{Treynor's index} = [R_p - R_f] / \beta \quad (10)$$

Where, R_p is the portfolio return over a period, R_f is the risk free return over a period and β represents the market risk

Higher value of Treynor's index indicates better performance of the portfolio and *vice-versa*. Treynor's measure of portfolio performance is a relative measure that ranks the funds in term of risk (market risk) and the returns. The index is also termed as 'reward to volatility ratio'.

Sharpe's index represents the portfolio returns in excess of risk-free returns per unit of total risk. Total risk for the portfolio, ' σ ', has two components, namely, (i) market risk (systematic risk) measured by ' β ' and (ii) portfolio specific risk (unsystematic risk). Unsystematic risk is controllable in nature whereas systematic risk is not and can only be minimised through diversification. Sharpe's index of portfolio performance can be computed using the equation (11) as given below.

$$\text{Sharpe's index} = [R_p - R_f] / \sigma \quad (11)$$

Where, R_p is the portfolio return over a period, R_f is the risk free return over a period and σ represents the total risk

Higher value of Sharpe's index indicates better performance of portfolio and *vice-versa*. Sharpe's index is also a relative measure of portfolio performance that facilitates ranking

of the funds in terms of risk (total risk) and returns. The ratio is also termed as 'reward to variability ratio'.

Jain and Gangopadhyaya (2012) have considered risk primarily represented by the market risk. The authors use the CAPM model to calculate the expected return, given the actual returns by the mutual fund, the market and the risk-free investments. According to the authors, β value more than 1 implies that the asset is more risky than the market and *vice-versa*. The difference between the expected and actual rate of returns leads to the conclusion drawn by the authors. In case, the difference is positive i.e. the actual rate of return is greater than the expected return, the asset lies above the Security market line. It implies that the mutual fund scheme has 'over-performed'. In case, the difference is negative i.e., the actual rate of return is less than the expected return, the asset lies below the security market line and thus, it has 'under-performed'.

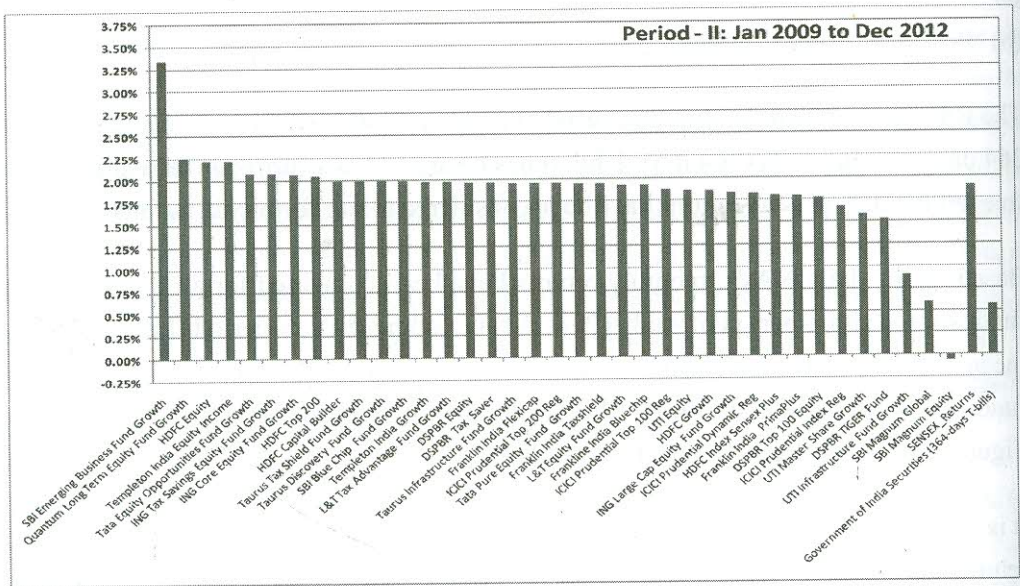
Prajapati and Patel (2012) have used both the measures, namely, total risk represented by standard deviation and market risk represented by beta for comparison of the risk associated with different schemes. The paper also evaluates and compares the Sharpe's index and the Treynor's index for the selected mutual funds. Bahl and Rani (2012) investigate the performance of 29 open-ended, growth-oriented equity schemes for the period from April 2005 to March 2011 (six years) of transition economy. Agrawal and Patidar (2009) have used standard deviation and beta to represent the total risk and market risk respectively. The authors have also used Sharp's index and Treynor's index to evaluate the relative performance of the selected mutual funds.

Section III

Rate of Returns Analysis

In the present study, daily NAVs per unit of the selected mutual funds have been taken for the period 1st April 2007 to 31st Dec 2012. Single period NAV has been computed, where the single period has been defined as one month. The selected period of study is divided into 69 single periods. The financial crisis of 2007–2008, also known as the Global Financial Crisis, is considered by many economists to be the worst financial crisis since the Great Depression of the 1930s. Indian stock markets were also impacted by this crisis, though to a limited extent. Thus the crash of BSE Sensex from levels around 15,000 to around 8,000 represents an extraordinary event in the year 2008. Hence, in order to isolate the impact of the extraordinary event of crash of markets, the returns by

Figure-2: Average Monthly Returns of Sample Equity Based Mutual Funds, Market Portfolio and 364-days T-bills for Period-II (Jan 2009 to Dec 2012)



The following are notable observations from the analysis:

- (a) During Period-I, 31 mutual funds have yielded mean monthly returns between 1% and 2% and 6 mutual funds have yielded returns below 1%.
- (b) During Period-II, one mutual funds has yielded a mean monthly return above 3%; 7 mutual funds have yielded a return between 2% and 3%; 26 mutual funds have yielded mean monthly returns between 1% and 2% and 3 mutual funds have yielded returns below 1%.
- (c) The mean monthly returns provided by the mutual funds vary in the range (0.18) % to 1.83% during Period-I and from (0.07) % to 3.34% during Period-II.

From the above results, it may be reasonable to infer that the mean returns during Period-I (which includes the period of financial crisis during 2007-08) are lower than the mean returns during Period-II. Further, Period-II may be said to be representing a normal market scenario.

The mean monthly returns yielded by the 364-days T-bills are 0.58% in Period-I and 0.55% during Period-II. The returns on the risk free securities vary in the range 0.30% to 0.78% during Period-I and 0.30% to 0.72% during Period-II. These results also validate

the popular belief that equity based mutual fund investments *albeit* riskier than 364-days T-bills, earn higher returns. The mean monthly returns on the market portfolio are 0.86% during Period-I and 1.90% during Period-II. The market portfolio returns have also been negative depending on the market conditions. Negative returns imply erosion of the wealth of the investors.

Median monthly return by the mutual funds during Period-I (1.19%) indicates that 50% of the mutual funds have given mean monthly returns higher than 1.19% which is higher than the median monthly return of 0.63% for 364-days T-bills. During Period-II, the median monthly return (1.95%) by the mutual funds indicates that 50% of the mutual funds have given mean monthly returns higher than 1.95% which is higher than the median monthly return of 0.62% for 364-days T-bills.

Thus, during Period-I, 33 mutual funds have yielded a monthly return higher than market returns and 35 mutual funds have yielded a return higher than risk-free T-bills. During Period-II, 23 mutual funds have yielded a monthly return higher than market returns and 36 mutual funds have yielded a return higher than risk-free T-bills. In sum, the empirical evidence suggests that the investments in equity based mutual funds have been, in general, more rewarding.

Thus, from the results it is reasonable to conclude that

- (a) Equity oriented mutual funds have generated higher returns than market portfolio during the period of the study. Thus, the first hypothesis in the study is validated and accepted.
- (b) Equity oriented mutual funds have generated higher returns than risk-free instruments (364-days T-bills). Hence, the second hypothesis in the study is validated and accepted.

Section IV

Risk Analysis

In order to have a more holistic and credible picture about the financial performance of the mutual fund, it is essential to study the risk associated with the fund. This aspect is well recognized in the literature; Treynor (1965) and Sharpe (1966) have provided the methodology for evaluation of the financial performance of portfolios having different

risk profiles. To assess the risk-return profile, following measures of risk and risk adjusted returns have been considered in this study:

- (a) R-squared, signifying the relationship between the mutual fund returns and the benchmark index returns.
- (b) Total risk measured by the standard deviation (σ) of the mutual fund returns.
- (c) Market risk representing the systematic risk associated with the fund returns, measured by beta (β) coefficient.
- (d) Sharpe's Index
- (e) Treynor's Index.

Further, given the market returns, risk-free returns and β for the mutual funds, Capital Asset Pricing Model (CAPM) has also been applied to determine the expected returns for each of the selected sample mutual fund. The expected returns are then compared with the actual returns to ascertain whether the fund performance has exceeded the expected performance or not.

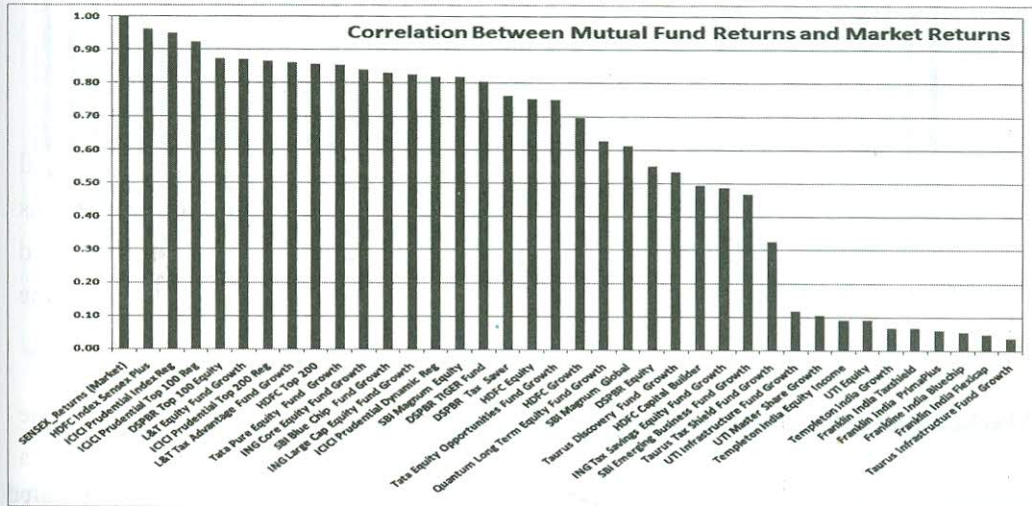
R-squared is a statistical measure of the relationship between the fund and the benchmark index (BSE Sensex 30 in the present study). It represents the percentage of a fund or security's movements that can be explained by movements in a benchmark index. R-squared is not a measure of the performance of a portfolio and is simply a measure of the correlation of the portfolio's returns to the benchmark's returns. R-squared value of 1 indicates that all movements of a portfolio can be explained by movements in the benchmark. Thus, index funds that invest only in the index stocks will have R-squared very close to 1. Conversely, a low R-squared indicates that very few of the portfolio's movements can be explained by movements in its benchmark index. R-squared can be used to ascertain the significance of beta value of the fund. Generally, a higher R-squared will indicate a more significant beta figure; in case, the R-squared is lower, then the beta is less relevant to the fund's performance.

Correlation between Mutual Fund Returns and Market Returns

The correlation between the sample equity based mutual fund returns and the market returns is given by r-squared. Figure-3 shows the results pertaining to all 37 sample mutual funds. It may be observed from the results that 18 mutual funds have a mean r-squared value which is more than 0.7 (maximum is 1 for market returns). The returns

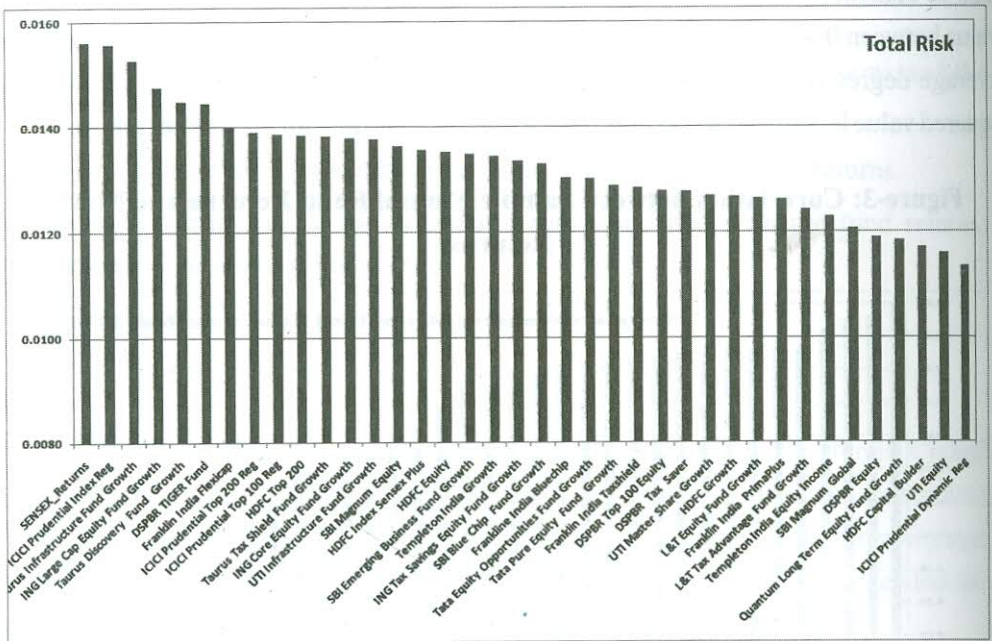
yielded by these funds show a high degree of correlation with the market returns and may thus be considered to be carrying a higher risk. Eight (8) funds have a mean r-squared value between 0.4 and 0.7. The returns given by these funds may be said to be having an average degree of correlation with market returns. Eleven (11) funds have a mean r-squared value less than 0.4 and thus have a low correlation with the market returns.

Figure-3: Correlation between Sample Mutual Fund Returns and Market Returns



Total Risk of Equity Based Mutual Fund Returns

The total risk refers to the variability of the mutual fund returns from the mean value of the returns. It is the sum of the systematic risk (non-diversifiable risk) and the unsystematic risk (diversifiable risk) and mathematically, it is represented by the standard deviation of the returns. Figure-4 shows the total risk pertaining to all 37 sample mutual funds. The standard deviation of the market returns is observed to be 0.0156; it is also the maximum standard deviation of returns obtained in the results. One mutual fund, ICICI Prudential Index Fund, carries the same total risk as the market as it is an index fund which tracks the benchmark index. Six (6) mutual funds carry a mean total risk of 0.0140 or higher, thereby signifying high total risk. Twenty six (26) mutual funds carry a mean total risk between 0.0120 and 0.0140, thereby signifying a moderate total risk. Five (5) mutual funds carry a mean total risk below 0.0120 and may thus be said to be carrying lower total risk.

Figure-4: Total Risk of Sample Equity Based Mutual Funds

Market Risk of Equity Based Mutual Fund Returns

Market risk represents the systematic risk, which is not diversifiable and is represented by the beta (β) coefficient. Figure-5 shows the market risk for the sample equity based mutual funds. Figure-6 shows the r-squared values along with the beta values which is useful from the viewpoint of determination of the usefulness of the beta (β) coefficient. From the results, it is observed that the highest β value obtained is 0.9979 for HDFC Sensex Plus fund. Generally, if a security has a $\beta > 1$, it is considered riskier than the market. Debasish (2009) has suggested that empirically $\beta > 0.8$ may be considered to denote high market risk and those with $\beta < 0.8$ may be considered to denote moderate or lower market risk. Based on this, it is observed from the results that two mutual funds, namely, HDFC Index Sensex Plus and HDFC Top 200 have β of 0.9979 and 0.8229 respectively thus denoting high market risk associated with these funds. The r-squared value for these funds is also high signifying a strong correlation between the fund returns and the market returns. The balance 35 mutual funds have $\beta < 0.8$ which may be considered to denote moderate or lower market risk.

Figure-5: Market Risk of Sample Equity Based Mutual Funds

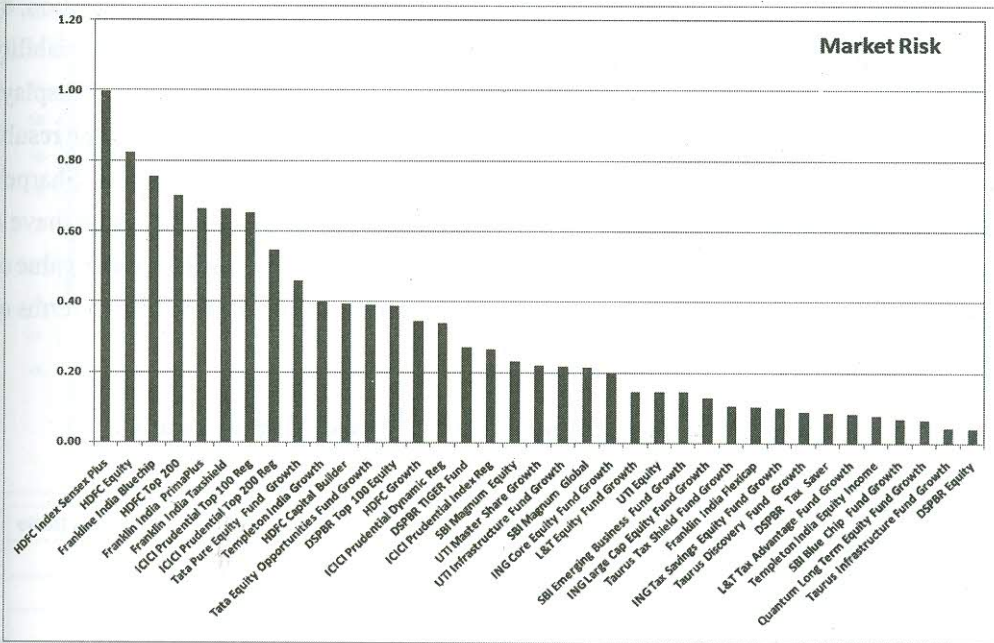
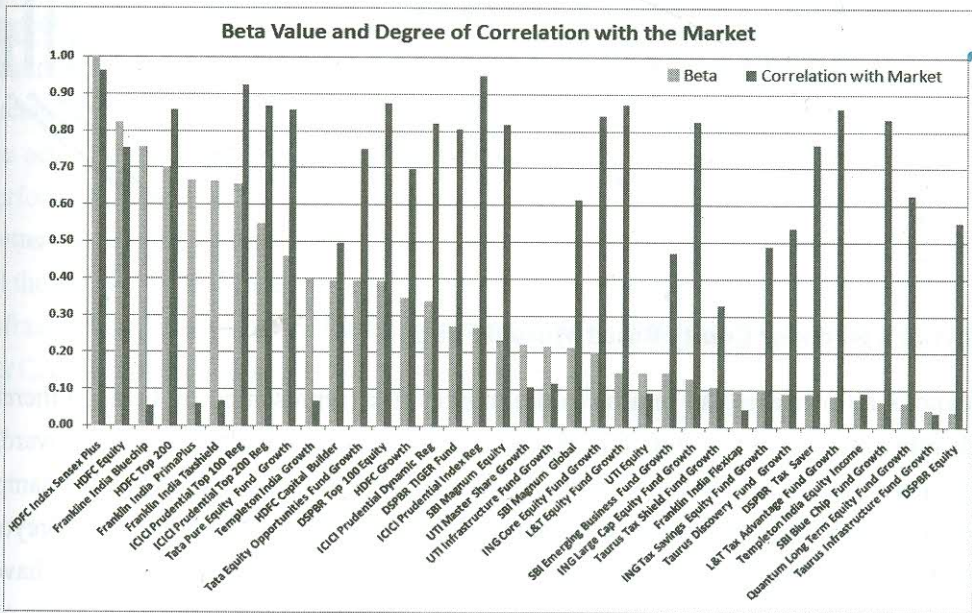


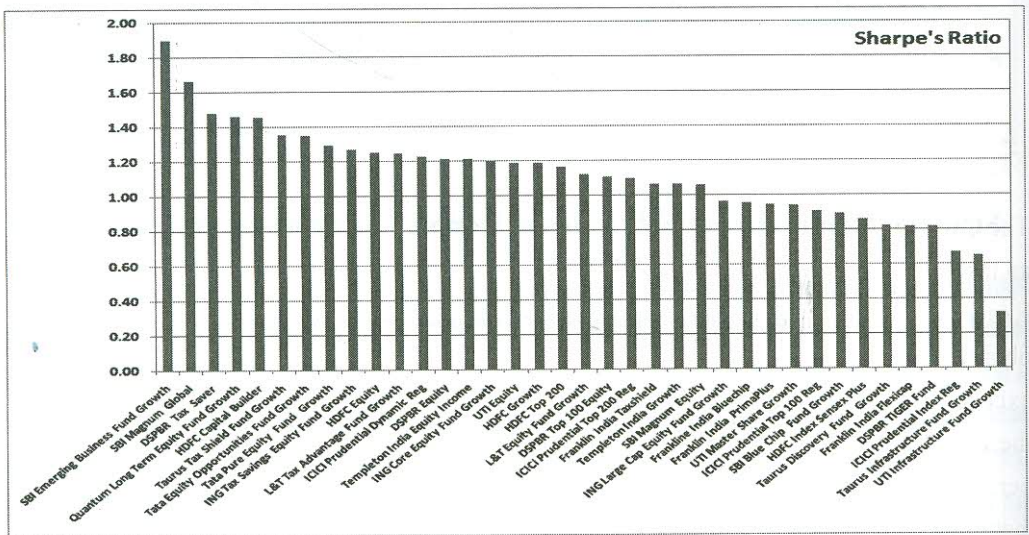
Figure-6: Significance of Beta Value of Sample Equity Based Mutual Funds



Sharpe's Ratio for Equity Based Mutual Funds

Sharpe's ratio relates the returns to the total risk (represented by standard deviation, σ) thereby giving the returns per unit of total risk and is also known as reward to variability ratio. Sharpe's ratio for all sample 37 mutual funds has been evaluated; Figure-7 displays the results for Sharpe's ratio for the sample mutual funds. It is observed from the results that 24 mutual funds have a Sharpe's ratio between 1 and 2. Higher value of Sharpe's ratio indicates better performance of portfolio. The balance 13 mutual funds have a Sharpe's ratio below 1, which may be considered to be on the lower side. Lower value of Sharpe's ratio indicates moderate or low financial performance of portfolio in terms of risk and returns.

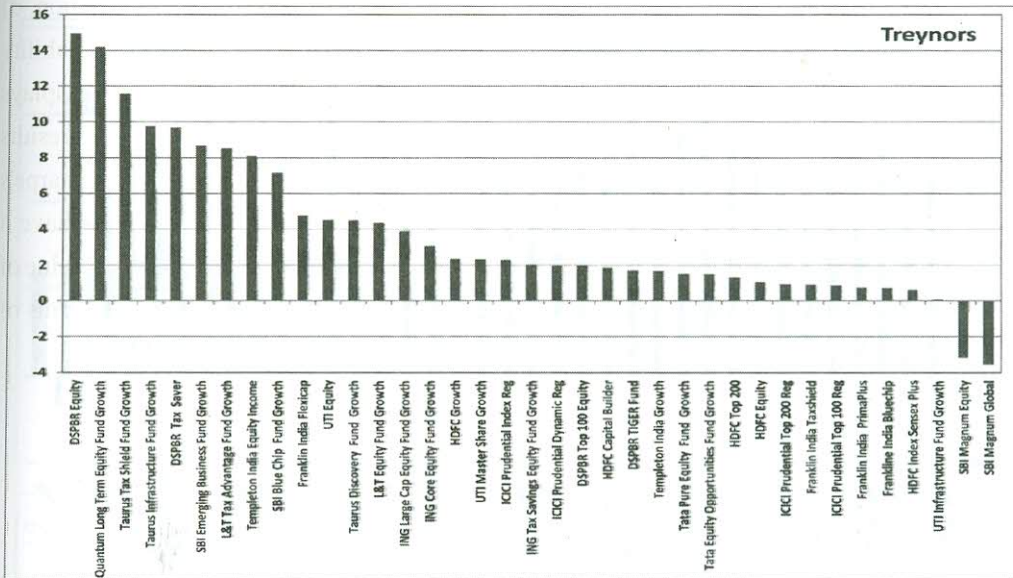
Figure-7: Sharpe's Ratio for Equity Based Mutual Funds



Treynor's Ratio for Equity Based Mutual Fund

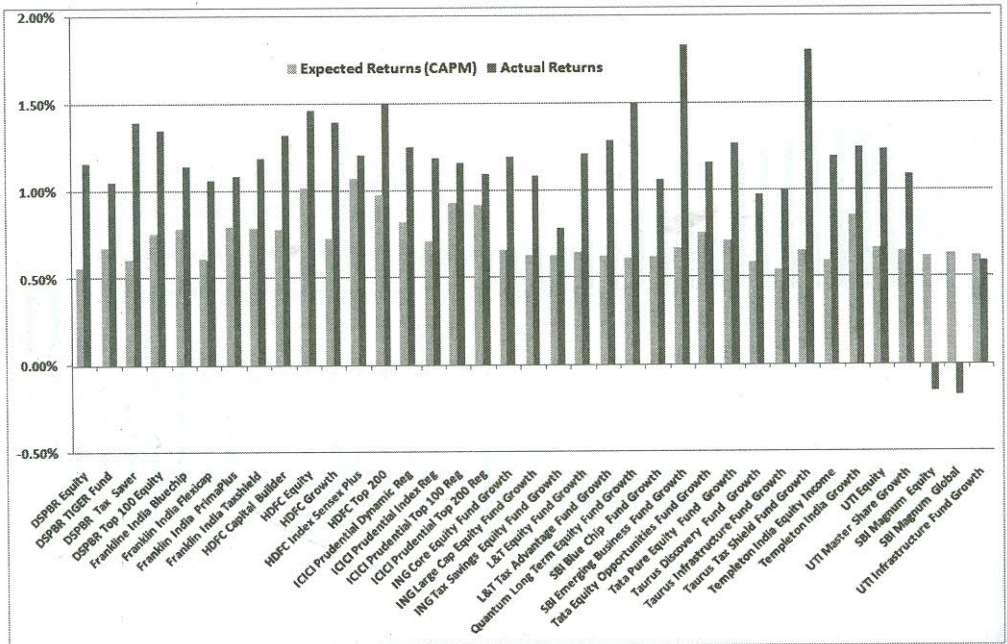
Treynor's ratio relates the returns to the market risk (represented by beta, β) thereby indicating the returns per unit of market (systematic) risk and is also known as reward to systematic risk ratio. Figure-8 displays the results for Treynor's ratio for the sample mutual funds. From the results, it is observed that nine mutual funds exhibit a Treynor's ratio more than 6, nine funds have a ratio between 2 and 6 and the rest of the funds have a Treynor's ratio below 2. Negative values of the Treynor's index could be because of a downturn in the market or the investment strategies adopted by the fund manager.

Figure-8: Treynor's Ratio for Equity Based Mutual Funds



Expected Returns based on Capital Asset Pricing Model

The Capital Asset Pricing Model (CAPM) is used to determine the expected returns from an investment, given the expected market returns, risk-free returns and the market risk. Expected returns from the sample mutual funds are compared with the actual returns obtained for each of the sample mutual funds. Evidently, in case the actual returns exceed the expected returns, the fund is said to have performed better. Likewise, in case the actual returns are less than the expected returns, the fund is said to have under-performed. Based on this approach, each of the mutual funds has been qualified as 'better-performed' or 'under-performed'. The most notable finding of the analysis is that all the sample mutual funds save 3 (SBI Magnum Equity, SBI Magnum Global and UTI Infrastructure Fund) have yielded returns which are higher than the expected returns as per CAPM model (Figure-9).

Figure-9: Expected Returns and Actual Returns for Equity Based Mutual Funds

Risk-Return Profile of Sample Equity Based Mutual Funds

Hitherto, the analysis has covered two important aspects of financial performance of equity mutual funds, i.e., rate of return and the total risk of the fund returns. Returns earned by mutual funds are expected to provide a risk premium commensurate with the level of risk it is exposed to. Hence, there is a need for a composite rating of the sample equity based mutual funds. In this study, none of the sample funds selected has shown a total risk which is higher than the market risk. Funds which have a total risk higher than the market risk are considered to be high risk funds. In order to develop a risk-return profile of the equity funds selected for this study, the following framework is used.

- In case, the total risk associated with the fund is more than the mean total risk of the selected mutual funds (0.132), then the fund is carrying a moderate risk.
- In case, the total risk associated with the fund is less than the mean total risk of the selected mutual funds (0.132), then the fund is carrying a low risk.
- In case, the fund returns are higher than the market returns, it is considered to be high returns.
- In case, the fund returns are higher than the market returns, it is considered to be high returns.

The above framework is applied to the selected mutual funds and results obtained are presented in Table-1 and the grid-diagram in Figure-10 below.

Table-1: Risk-Return Profile of Sample Equity Mutual Funds

Sr. No.	Mutual Fund/Instrument	Total	Fund	Risk - Return
		Risk	Returns	Profile
1	ICICI Prudential Index Reg	0.0156	1.19%	Moderate Risk - High Return
2	Taurus Infrastructure Fund Growth	0.0153	1.00%	Moderate Risk - High Return
3	ING Large Cap Equity Fund Growth	0.0148	1.08%	Moderate Risk - High Return
4	Taurus Discovery Fund Growth	0.0145	0.97%	Moderate Risk - High Return
5	DSPBR TIGER Fund	0.0145	1.05%	Moderate Risk - High Return
6	Franklin India Flexicap	0.0140	1.06%	Moderate Risk - High Return
7	ICICI Prudential Top 200 Reg	0.0139	1.09%	Moderate Risk - High Return
8	ICICI Prudential Top 100 Reg	0.0139	1.16%	Moderate Risk - High Return
9	HDFC Top 200	0.0139	1.50%	Moderate Risk - High Return
10	Taurus Tax Shield Fund Growth	0.0138	1.81%	Moderate Risk - High Return
11	ING Core Equity Fund Growth	0.0138	1.19%	Moderate Risk - High Return
12	UTI Infrastructure Fund Growth	0.0138	0.60%	Moderate Risk - Low Return
13	SBI Magnum Equity	0.0136	-0.15%	Moderate Risk - Low Return
14	HDFC Index Sensex Plus	0.0136	1.20%	Moderate Risk - High Return
15	HDFC Equity	0.0135	1.46%	Moderate Risk - High Return
16	SBI Emerging Business Fund Growth	0.0135	1.83%	Moderate Risk - High Return
17	Templeton India Growth	0.0135	1.24%	Moderate Risk - High Return
18	ING Tax Savings Equity Fund Growth	0.0134	0.78%	Moderate Risk - Low Return
19	SBI Blue Chip Fund Growth	0.0133	1.06%	Moderate Risk - High Return
20	Frankline India Bluechip	0.0130	1.14%	Low Risk - High Return
21	Tata Equity Opportunities Fund Growth	0.0130	1.16%	Low Risk - High Return
22	Tata Pure Equity Fund Growth	0.0129	1.27%	Low Risk - High Return
23	Franklin India Taxshield	0.0128	1.19%	Low Risk - High Return
24	DSPBR Top 100 Equity	0.0128	1.35%	Low Risk - High Return
25	DSPBR Tax Saver	0.0128	1.40%	Low Risk - High Return
26	UTI Master Share Growth	0.0127	1.09%	Low Risk - High Return
27	HDFC Growth	0.0127	1.40%	Low Risk - High Return
28	L&T Equity Fund Growth	0.0126	1.21%	Low Risk - High Return
29	Franklin India PrimaPlus	0.0126	1.08%	Low Risk - High Return
30	L&T Tax Advantage Fund Growth	0.0124	1.28%	Low Risk - High Return
31	Templeton India Equity Income	0.0123	1.19%	Low Risk - High Return
32	SBI Magnum Global	0.0121	-0.18%	Low Risk - Low Return
33	DSPBR Equity	0.0119	1.16%	Low Risk - High Return
34	Quantum Long Term Equity Fund Growth	0.0118	1.50%	Low Risk - High Return
35	HDFC Capital Builder	0.0117	1.32%	Low Risk - High Return
36	UTI Equity	0.0116	1.23%	Low Risk - High Return
37	ICICI Prudential Dynamic Reg	0.0113	1.25%	Low Risk - High Return
38	SENSEX_Returns	0.0156	0.86%	Low Risk - High Return
	Mean Returns by Mutual Funds	0.0132	0.0114	
	Median of Returns by Mutual Funds	0.0133	0.0119	

Figure-10: Risk-Return Profile of Sample Equity Mutual Funds

Moderate Risk	Moderate Risk – Low Returns $(\sigma_p > \sigma_m \text{ and } R_p < R_m)$ No. of equity funds: 3	Moderate Risk – High Returns $(\sigma_p > \sigma_m \text{ and } R_p > R_m)$ No. of equity funds: 16
	Low Risk	Low Risk – Low Returns $(\sigma_p < \sigma_m \text{ and } R_p < R_m)$ No. of equity funds: 1
	Low Returns	High Returns

σ_p = Total risk of the fund

R_p = Returns given by the mutual fund

σ_m = Mean risk of the selected sample equity funds

R_m = Market returns

Section V

Major Findings and Concluding Observations

- (a) The period of study from April 2007 to December 2012 includes the period of financial crisis during 2007-2008, when, stock markets crashed worldwide. India was also affected by the crisis and the movement of the benchmark index used in the study (BSE Sensex 30) captures the event. The study of the sample equity based mutual funds over the period reveals that the returns yielded were lower because of the crash due to the financial crisis. The returns were higher in the period after the financial crisis (January 2009 to December 2012), a period representative of normal market conditions.
- (b) During the entire period of the study, nearly nine-tenths (89%) of the sample equity based mutual funds have yielded a return higher than market returns. During the period after the financial crisis (January 2009 to December 2012), it has been observed that nearly two-thirds (62%) of the sample equity based mutual funds have yielded a return higher than market returns. Thus, it is reasonable to conclude that equity based mutual funds yield higher returns than the market returns.
- © It is observed from the results that almost all (95% during Period-I and 97% during Period-II) of the sample equity based mutual funds have yielded a return higher than risk-free 364-days T-bills during the period of study. Thus, the evidence suggests that

equity based mutual funds yield higher returns than the risk-free 364-days T-bills.

- (d) Generally, if a security has a $\beta > 1$, it is considered riskier than the market. From the results, it is observed that an overwhelming majority (95%) of the sample equity based mutual funds exhibit a $\beta < 0.8$ which may be considered to denote moderate or lower market risk component.
- (e) Sharpe's ratio and Treynor's ratio have been evaluated and these assess the financial performance as 'return per unit of risk', where 'risk' is taken as total risk for Sharpe's ratio and market risk for Treynor's ratio. Higher value of Sharpe's ratio and Treynor's ratio indicate better performance of the portfolio. Negative values of the Treynor's index could be because of a downturn in the market or the investment strategies adopted by the fund manager.
- (f) The most notable finding of the analysis is that almost all the sample mutual funds save 3 (SBI Magnum Equity, SBI Magnum Global and UTI Infrastructure Fund) yielded returns which are higher than the expected returns as per CAPM Model.

The empirical evidence thus strongly suggests that the investments in equity oriented mutual funds have, in general, provided superior returns to the investors. Returns offered by equity based mutual funds are high enough to motivate the investors to assume the risk associated with the equity based mutual funds and consider mutual funds as a viable investment option. As compared to direct investment in stocks, mutual funds act as instruments of diversified investment. Further, considering the high volatility of stock market which entails a higher risk, mutual funds offer adequate returns on the investment, provided a prudent selection of mutual funds is made.

Returns provided by equity oriented mutual funds have been consistently better than returns on investment instruments such as bank fixed-deposits (which are perceived as virtually risk-free) and risk-free RBI Bonds, both of which yield returns of the order of approximately 8 – 9%. In view of the above statistical evidence, we venture to suggest that investors should reckon investment in mutual funds as one of the major investment component in their portfolio as it would improve the overall yield on the total investment at a virtually insignificant additional risk.

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