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Financial Model Building: Risk Return Analysis and Performance Evaluation of Mutual Funds

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ABSTRACT

Growth prospects of Mutual fund is likely to improve in the coming months as measure taken by the government have contributed to arresting the rate of decline in stock index in the last few months. The two main categories i.e. equity diversified and sector specific in which all the 16 schemes have been divided for the present study. These schemes have been analysed on various parameters. Franklin Prima fund is the top ranked fund and UTI advantage is the lowest. HDFC, Reliance and ICICI funds have also faired well

Introduction

Mutual Funds: An Overview

A mutual fund is a trust that pools the savings of a number of investors who share a common financial goal. The money thus collected is invested by the fund manager in different types of securities depending upon the objective of the scheme. These could range from shares to debentures to money market instruments. The income earned through these investments and the capital appreciation realised by the scheme are shared by its unit holders in proportion to the number of units owned by them. Thus a mutual fund is the most suitable investment for the common man as it offers an opportunity to invest in a diversified, professionally managed portfolio at a relatively low cost. The small savings of all investors are put together to increase the buying power and hire a professional manager to invest and monitor the money. Anybody with an investible surplus of as little as a few thousand rupees can invest in mutual funds. Each mutual scheme has a defined investment objective and strategy.

Concept Of Mutual Fund

“Mutual fund –also called unit trust or open ended trust-a company that invest the funds of its subscribers in diversified securities and in turn issues units representing shares in those holdings. They make continuous offering of new shares at NAV determined daily by the market values of the securities they hold.”The sum up, mutual funds represent pooled savings of numerous investors invested by professional fund managers and diversified portfolio to obtain optimum return on investments with least risk of two investors.

` What is mutual fund is better understood by the functions it performs and role it plays. It is a financial intermediary. Mutual funds are mobilizers of savings particularly from the small and household sectors for investment in stock and money market. Basically, these institutions are professional fund manager, managing funds of individuals and institutions mutual funds, thus, provide an alternative to the investors who instead of making direct investment in shares or bonds through public issues or through secondary market, subscribe to the corpus of mutual funds. Investors can reap all the benefits of good investing through mutual funds. Investors can reap all the benefits of good investing through mutual funds like enjoying growth in scrip in which he could have otherwise invested; holding a balanced and diversified portfolio, better returns due to specialised and professional management of funds etc.

Growth of mutual funds internationally

USA is considered as the birthplace of mutual funds. In USA the idea took root in the beginning of 20^{th} century and there was little activity till 1924, when three investment companies were organised. Massachusetts investors trust, state street investment Corp, as US and foreign securities Corp. A major setback to mutual funds was the stock market crash of 1929, but the post world war II gave the boost to mutual culture in USA.

Subsequently, hundreds of mutual funds emerged and expanded their wings in many countries in Europe, the Far East and Latin America. In recent years, Mutual funds in Japan and Far East countries have been showing excellent performance probably as a result of growth and performances of the economics of these countries. The funds from these regions have outperformed many leaders in the industry. Countries in Pacific areas, like Hong Kong, Thailand, Singapore and Korea have also entered this field. Mauritius and Netherlands are emerging as tax heavens for offshore mutual funds. Thus mutual fund culture is global in scope. Mutual funds now represent the most appropriate investment opportunity for market investors, as financial markets become more complex; investors need an intermediary who provides the required knowledge and professional expertise on successful investing.

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Truly, mutual funds have now become an integral any financial system. They serve as an important condition of mobilising resources. Mutual funds provide an opportunity for risk adverse investors to share their risk and yet go in for higher return equities in the capital markets. Mutual funds have emerged as the dynamic financial institution, which have opened new vistas to investors all over the world. The coming few years will show the traditional saving avenues are losing out mutual fund, it is just the mutual funds are going to change the banks do the business in the future.

It is no wonder that in USA the fund industry has already overtaken the banking industry, more funds being under mutual management than deposited with funds.

Mutual Fund Industry In India

The mutual fund industry in India has come a long way since the formation of Unit Trust of India way back in 1963.During these past 40 years the industry has seen many significant structural changes.

UTI's inception and the beginning of the journey

This was for the first time ever that investors came to know about the concept of mutual funds as an investment vehicle,Unit-64,which was launched in 1964 by UTI, became the first mutual fund scheme to be launched in the country.US-64 became a huge success and made UTI a household name. According to the Association of mutual funds in India (AMFI), the period between 1964 and 1987 represents the first phase in the evolution of the mutual fund industry in India. During this period, UTI remained the only player in the industry.

` UTI enjoyed complete monopoly till 1987.It launched a slew of equity and debt schemes during this period. Its assets under management grew to Rs.4, 563 Cr. And its investor base touched the 3 million mark. The second phase, which began in 1987 and continued till 1993,marked the entry of several public sector mutual fund, launched by the State Bank Of India in 1987,because the first non-UTI mutual fund to be set in the country. This was followed by several other PSU sponsored asset management companies (AMCs) such as Canbank mutual fund, Punjab National bank mutual fund, and Indian bank mutual fund, etc.

Enter competition

A major turning point came in 1993, when private sector players opened the industry to participation for the first time. This marked the beginning of the third phase and proved to be a major milestone in the history of the Indian mutual fund industry, which until then had more or less remained synonymous with UTI. Kothari Pioneer mutual fund became the first private sector player to enter the market. Another significant step was the introduction of the mutual fund regulations, under which all mutual funds, except UTI were to be registered and governed. The third phase ended in the early 2003 with the opening of a new chapter in the UTI's history.

The fourth phase, which is on now, began in February 2003 in the aftermath of the repeal of the Unit Trust Of India Act, 1963.The restructuring was the last attempt, in the bailouts of UTI, to address its chronic problems for once and all.UTI was bifurcated into two separate entities namely, specified undertaking of the Unit Trust of India, and UTI mutual fund.

Outlook

The future looks bright for the industry in India going by a recent study conducted by the associated chamber of commerce and industry of India and AMFI. The report predicts that the mutual fund industry is expected to jump sharply from its present value of 65 in GDP to 40% in the next 10 years, provided the country's growth rate consistently exceeds at the rate of 6% per annum. The report says that by 2014, the size of Indian mutual fund industry is estimated to go up to over Rs.1.65,000 cr. It suggests that India is going to follow the pattern seen in the developed markets such as the US where the size of the industry is 70% of the GDP. The worldwide size of the industry is about 37% of GDP.

Asset Management Companies

There are 35 mutual fund houses of asset management companies (AMCs) as they are called, and the people in them keep hopping within these AMCs. These AMCs are as follows:

1. Alliance Capital Asset Management(1) Private Limited
2. Benchmark Asset Management Company Limited
3. Birla sun Life Asset Management Company Limited
4. BOB Asset Management Company Limited
5. Canbank Investment Management Services Limited
6. Cholamandalam Cazenove Asset Management Company Limited
7. Credit Capital Asset Management Company Limited
8. Deustche Asset Management Company Limited
9. DSP Merrill Lynch Asset Management Company Limited
10. Escorts Asset Management Limited
11. Franklin Templeton Investments Asset Management (India) Private Limited
12. GIC Asset Management Company Limited
13. HDFC Standard Life Funds
14. HSBC Asset Management Company Limited
15. IDBI Principal Investment Management Company Limited
16. IL & FS Asset Management Company Limited
17. ING Vysya Investment Asset Management Company Private Limited
18. JM Capital Management Limited
19. Jardine Fleming(I) Asset Management Limited
20. Kotak Mahindra Asset Management Company Limited
21. Kothari Pioneer Asset Management Company Limited
22. LIC Asset Management Company Limited
23. Morgan Stanley Asset Management Company Private Limited
24. Principal Asset Management Company Limited
25. Prudential ICICI Asset Management Company Limited
26. Reliance Capital Asset Management Company Limited
27. Sahara(First India) Asset Management Company Limited
28. SBI Funds Management Limited
29. Standard Chartered Asset Management Company Limited
30. Sun F & C Asset Management(I) Private Limited
31. Sundaram Newton Asset Management Company Limited
32. Tata Asset Management Company Limited

Statement of the problem

Indian equity markets are on a boom, barring certain sluggish periods, the company must utilize it. Equity mutual funds at present though have higher risk than debt markets, but the respective increase in returns must be considered.A small portfolio can be put into low risk equity funds like Franklin Templeton, HDFC and Reliance growth funds. In sectoral areas, pharmaceuticals and power sectors can be aimed at. UTI schemes are better for debt markets, however, SBI is performing fairly well in equity markets too. Since the company is highly conservative and risk sensitive in approach, funds which are older, have high net asset values and low risk should be preferred. An average rate of return is advisable to aim at. Though funds like Reliance and ICICI have greater returns, the risk factor is also high. Market volatility can increase the risk factor involved.

A periodic analysis of equity markets must be done to have updated indices for schemes available. The company can set up a small sub department to research on these markets and advice on investment in equity markets. Future prospects can be investing in overseas equity and commodity markets.

The current study focuses on mutual funds to know the performance of various mutual fund schemes traded in India It will provide a logical basis for measuring and linking risk and returns. Hence in the above direction, an attempt is made to measure various types of risks involved and their return and/ or performance mutual funds of various mutual fund schemes.

Research design of the study

Period of Study

The growth oriented schemes, which have been floated by the selected funds during the period Jan 1993 to Dec.2005, have been considered for the purpose of the study. Monthly net asset value (NAV) as declared by the relevant mutual funds from Jan 2003 of a particular scheme to Dec 2005 has been used for the purpose. Any missing value for the scheme and for the index series has been excluded to equalise the two.

Scheme Selection

For the purpose of this study, only growth schemes of the funds selected for which NAV values are available have been considered for studying the performance.

Source: www.mutualfunsindia.com

This table depicts the two main categories i.e. equity diversified and sector specific in which all the 16 schemes have been divided. These schemes have been analysed on various parameters.

Tools For Analysis Of Mutual Funds

Risk is neither good nor bad, rather it is viewed on some context. The difference between the required rate of return on a mutual fund investment and the risk-free rate is the risk premium. There are many sources that determine appropriate risk premium, including market risk, business risk, liquidity risk, financial risk, duration and credit risk for bonds and political and currency risk for international asset. Classification of risk for portfolio is systematic or unsystematic risk. Systematic risk is market related or non-diversifiable. Unsystematic risk is one that is unique to given particular mutual fund portfolio and is diversifiable.

To quantify the relationship between risk and return precisely, there are a number of statistics available. These measurements help to determine:

- Fund's volatility (σ) i.e, variation from the average.
- Funds resemblance (R^2) i.e, the extent to which the movement of the fund can be explained by corresponding benchmark index.
- Funds volatility as regards market index (β) i.e. the extent of co-movement of fund with that of benchmark index.
- How much is manager's role in funds risk adjusted return (α) i.e; market timing ability of fund managers.

Standard Deviation (σ)

It is a statistic to measure the variation in individual returns from the average expected returns over a certain period. In addition, while the average may be acceptable but year to year swings in performance may not be acceptable to an investor. Lower the investor's risk tolerance, less likely it is that he/she will hold the riskier fund long enough to achieve its ultimate return. The factors which affect the variability of the performance of an investment are: the kind of stocks in the portfolio, the degree to which a fund diversify, the degree to which the manager uses leverage, or borrowing in an effort to enhance performance and the extent to which the manager tries to time the market.

Coefficient Of Determination (R^2)

It shows the extent to which the market index explains the portfolio of the given fund. It measures percentage of mutual fund's movement that corresponds to its benchmark index. R^2 is also neither good nor bad. So the investor should screen for index fund with an R^2 approaching 100% so to attain market performance. So knowing the goodness of fit between a fund and its appropriate benchmark is crucial to avoiding meaningless and perhaps misleading analysis. To evaluate fund properly, comparison with appropriate benchmark is important.

Beta (B)

Beta coefficient compares the variability of funds return to the market as a whole. It is a relative measure unlike absolute measure (σ).By convention, market will have beta 1.0.Mutual fund can be as volatile, more volatile or less volatile. If a fund has below market beta of 0.86, it can be said that fund has 86% of the gain in up markets and decline by 86% of the drop in the index in down markets.

Alpha (σ)

` Alpha represents the difference between a mutual fund's actual performances that would be expected based on the level of risk taken assumed; the fund would have an alpha equal to zero. A positive alpha indicates that the manager produced return greater than expected for the risk taken. Alpha is calculated by comparing fund's actual performance with the risk-adjusted expected return. This difference is a measure of manager's contribution to return.

For the purpose of our study, risk is calculated as:

Risk: $\sigma_{it} = \sqrt{\{\Sigma Rpt\text{-}Rp)^2\}}/n$

Where σ_{it} it is the total risk of the portfolio, Rpt is the portfolio return and Rp is the average portfolio return.

Risk: $\sigma_{mt} = \sqrt{\{\Sigma Rmt\text{-}Rm)^2\}}/n$

Where σ_{mt} is the total risk of the market index, Rmt is the market return and Rm is the average market return.

Return

Similarly, return has been calculated as:

Portfolio Return: Rit= (NAVt-NAVt-1)/NAVt-1

Where Rit is the difference between net asset values for two consecutive months divided by the NAV of preceding day.

Market Return: Rmt = (M.Indt-M.Indt-1)/M.Indt-1

Where Rmt is the difference between market indices of two consecutive months divided by market index of preceding day.

Benchmark Index

For this study, individual benchmark index has been used as a proxy for market index.

Risk-Free Rate

` Risk free rate of return refers to that minimum return on investment that has no risk of losing the investment over which it is earned. For the present study, it has been marked as 5.25% p.a (91 day T-Bill rate) on an average during the period under the study,

For evaluating the performance of mutual fund, the risk-return relation models given by Sharpe (1966),Treynor (1965) and Jensen (1968) have been applied.

Sharpe Ratio

Given by WF Sharpe in 1966, it is expressed as the ratio of excess return per unit of risk, where risk is measured by the standard deviation of the rate of return. In short, it is reward to variability ratio and is defined as:

SI= (Rp-Rf)/σp

Where: SI=Sharpe's ratio

Rp=Average return on fund p.

σp=Standard deviation of return on fund p

RF=Return on risk free-asset

The ratio is based on the fact that preferred portfolio lies on the most counter clockwise ray in the expected return and standard deviation space i.e, the slope of the ray is maximised and is denoted by Sharpe ratio. The ratio views at the decision from the angle of the inventor who chooses mutual fund that represents the majority of his investment.

Treynor's Ratio

Given by Jack Treynor in 1965 it is expressed as a ratio of returns to systematic risk (Beta).Precisely, it is reward to volatility ratio and is defined as:

$TI= (Rp-Rf)/\beta p$

Where: TI=Treynors ratio

Bp=Sensitivity of fund return to market return

Rp=Average return on fund p

RF=Return on risk free asset

JENSEN'S MEASURE

It is a regression of excess fund return with excess market return given by MC Jensen in 1968.It is expressed as:

$Rpt-Rf=\alpha+\beta\ (Rm-Rf)\ +e_i$

Where: β=Systematic risk

Rm=Market return

Rpt=Fund return for time period t

RF=Return on risk-free asset

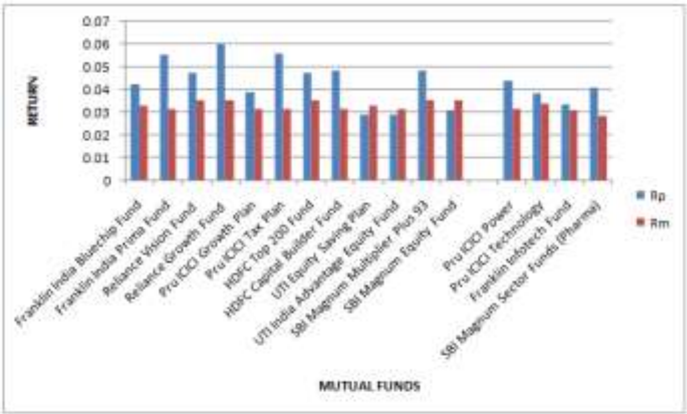
The intercept of the equation provides Jensen's measure of performance. The measure is derived from capital asset pricing model (CAPM).This involves running a regression with excess return on security and that on the market acting as dependent and independent variables respectively, where excess return is computed with reference to return on a risk free return. Significantly positive alpha indicates superior performance.

From the above models, the two major variables that emerged are risk and return. For the purpose of application of models, these have been discussed in the following pages.

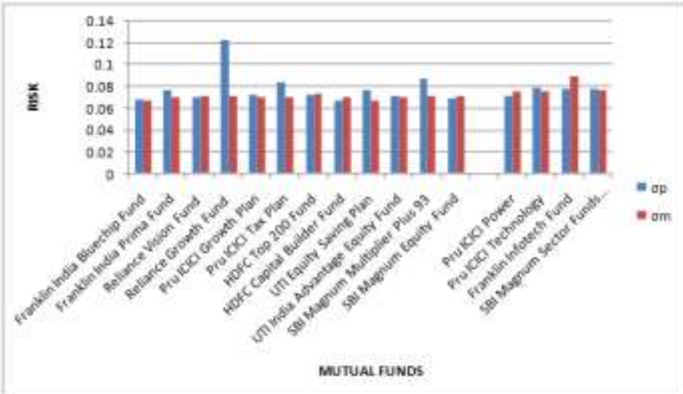
The table represents the return and risk of all 16 schemes together with market return and risk. Return for both market and the scheme has been calculated from monthly index value and the net assets value respectively. Growth in value for each month over previous month has been calculated and it has been divided by the value of the previous month. Then the average of the series is so developed is taken. In equity diversified category almost all schemes have earned higher returns than the market returns. Only three schemes have earned less return and they are: UTI equity tax saving plan, UTI advantage equity fund and SBI magnum equity fund. The highest monthly return earned is by Reliance growth fund and lowest by UTI India advantage equity fund. Franklin prima and Pru ICICI tax plan have also earned high returns as compared to market returns. In sector specific schemes all earned returns nearly equal to market return except SBI pharma fund which has earned double of the market returns.

In all, for returns Franklin Templeton, Reliance fund and HDFC funds have shown good returns. UTI and SBI have however not faired well. In case of risk, the risk involved in a security depends upon its volatility. This can be measured by standard deviation or variance of its returns. The third and fourth column in the table above represents the variance of the portfolio and market returns. In equity diversified schemes, the high risk portfolios are Reliance growth fund (0.1231) and Pru ICICI tax plan (0.0836), these schemes have very high risk than the market. However reliance vision fund, SBI magnum multiplier and SBI magnum equity funds are less risky. All other schemes have risk almost equal to market risk. Franklin InfoTech is a highly risky portfolio. SBI pharma is less risky in case of sector specific funds.

Overall, we can say that all schemes have substantial risk. SBI fund schemes are less risky showing the fund managers efficiency and timely judgement abilities. Pru ICICI funds schemes show mixed results. Reliance growth fund is a highly risky fund, though it had good returns.



Exhibits-1 Showing comparitive result of returns from mutual fund schemes



Exhibits-2 Showing Comparitive Result Of Risk Calculated For Mutual Fund Schemes

From the above exhibits we can analyse each fund company separately:

- Franklin Templeton India fund is an attractive fund since it contains risk nearly equal to market risk and is giving returns higher than the market. Its InfoTech fund is also promising as it is giving good returns although with a little high risk.
- Reliance fund is giving mixed performance. Its growth fund is giving high returns but the risk involved is also very high as compared to the market. The vision fund is an attractive scheme since it has higher returns and less risk than the market.
- Pru ICICI is a very balanced fund. Each scheme from this group is giving better performance as compared to the market. They all have substantial risk too. Only the tax plan has above average risk, but has very high returns as compared to market returns.
- HDFC is the most attractive scheme as it has low market risk but greater market returns.
- UTI is a market leader in debt markets, but here it has low returns with very high risk involved.
- SBI is giving an average performance. The magnum multiplier plus has high returns with high risk. The magnum equity fund has low returns, but less risk too. The sector specific pharma fund has risk nearly equal to the market but with higher returns.

These schemes have further been classified in four categories on the basis of their return and risk characteristics. It can be seen in the risk –return grid below. The grid clearly identifies schemes giving higher returns or lower returns along with high or low risk.

Systematic risk (β)

The first column in the Table-3 shows the systematic risk of the 16 schemes studied. In equity diversified scheme it can be seen that all schemes have systematic risk of less than one, except SBI Magnum multiplier plus 93 (1.0685) implying all these schemes hold portfolio that are less risky than market portfolio. It can also be seen that Franklin India bluechip fund (0.9717), Reliance vision fund (0.9357), Pru ICICI growth fund (0.9425), Pru ICICI tax plan (0.99609) and HDFC top 200 (0.9465) are more risky as compared to other schemes in the category, but less risky than the market portfolio. In the sector specific category, Pru ICICI technology is the most risky scheme. However all sector specific schemes are less risky than the market portfolio risk.

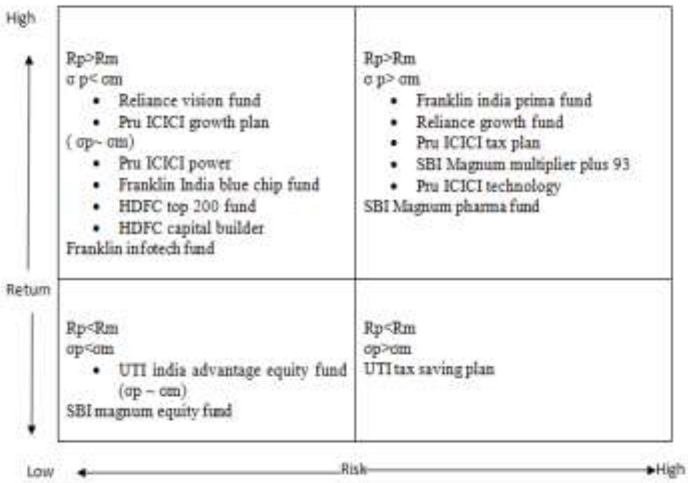


Exhibit -3 showing risk – return grid of mutual funds

Diversifiable risk (D.R.)

The second column in the Table-3 shows the diversifiable risk of the selected schemes and is defined as [(α p / α m) – β p]. For a well diversified portfolio this should be zero. Higher the value more poor is the diversification. The tabulated values of Diversifiable risk show that for all the schemes diversifiable risk is positive. It is highest in case of Reliance growth fund (0.7903) followed by UTI equity tax saving plan (0.2866) and least in case of HDFC top 200 funds (0.0321). Even so in case of sector specific funds this risk is high in case of Pru ICICI technology (0.1498) and lowest for Franklin InfoTech fund (0.0502).It can be clearly said that UTI mutual funds have shown average beta in equity diversified category, which indicates less risk of scheme portfolio. On the other hand SBI magnum fund emerged as having high risk portfolio. Reliance and Pru ICICI funds showed high risk presence in their portfolio schemes whereas Franklin and HDFC funds have shown mixed results. From diversifiable risk point of view all schemes are below average risk.

The table shows the risk in percentages and makes the picture very clear. Maximum diversifiable risk is seen in case of Reliance growth fund (45.79%) and least in case of HDFC fund (3.28%). Amongst sector specific schemes all schemes show average diversifiable risk. In all, we can say that Franklin Inda Bluechip Fund, Pru ICICI growth fund, HDFC top 200 and Franklin InfoTech fund are well diversified portfolios. Reliance growth fund is very poorly diversified portfolio and hence would be unable to capture the market gains.

The coefficient measures the extent to which the market index has been able to explain the variation in mutual fund. This table reveals that in the equity diversified category maximum and minimum variations were found in case of HDFC Top 200 fund (0.958) and Reliance Growth Fund (0.543) respectively. Low value of this coefficient indicates less diversification of the portfolio. High value in case of HDFC fund shows high diversification of portfolio that can easily contain the market variability. Almost all equity diversified schemes have reasonably exploited the diversification strategy except Reliance Growth Fund. This fund has given average performance. Further in sector specific category we see a high R^2, showing high diversification than diversified schemes. Overall, we can say all schemes selected, cover the equity market well except Reliance Growth Fund

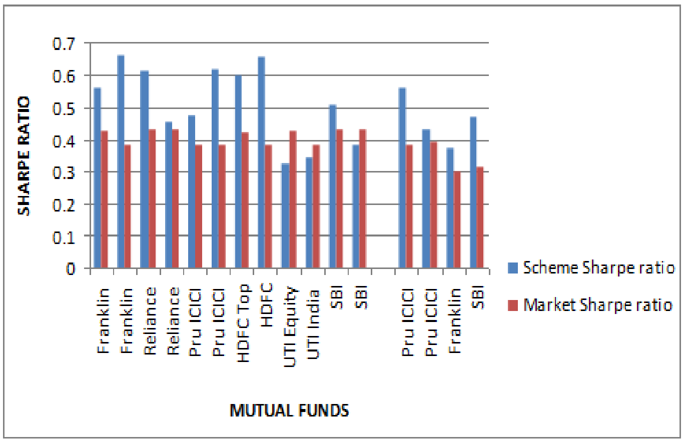


Exhibit-4 showing sharpes ratio for performance evaluation.

The above table and graph depicts the value of Sharpes reward to variability ratio. It is an excess return earned over risk free return per unit of risk involved, i.e. per unit of standard deviation. Negative value of this index shows poor performance. All schemes selected have posted positive values. This shows that adequate return as against level of risk involved has been provided. In equity diversified schemes category, it can be seen that 9 out of 12 schemes have recorded better Sharpe index than the market. This indicates that 75% schemes have outperformed the market index. It means that equity mutual funds have performed better concerning return on investments compared to market. UTI mutual fund schemes have again performed poorly. The highest Sharpe ratio in equity diversified schemes is of Franklin India Prima Fund (0.6633) and lowest of UTI tax saving plan (0.3243). UTI and SBI have not been able to outperform the market. In sector specific schemes, Pru ICICI power has maximum value (0.5615) and Franklin Infotech has the minimum (0.3752). Most of the schemes have better ratio than market. This implies that funds decision for diversified portfolio in a falling market has proved successful in earning higher excess returns per unit of risk as compared to the market. The Sharpe ratio is important from small investor point of view who seeks diversification through mutual funds.

So, it could be deducted from the above discussion that amongst diversified schemes , Franklin , Pru ICICI funds and HDFC fund schemes have shown better performance by reducing loss per unit of risk of investors as compared to the market. Reliance fund however has shown average performance in this regard. SBI fund schemes, too, have performed their returns well with both the schemes, recording high value as against market.

Public Sector	Private Sector
1. UTI	1. Franklin Templeton India
	2. Prudential ICICI
	3. HDFC
	4. Reliance
	5. SBI

Table-1 Showing List Of Mutual Fund Schemes Studied For The Study

Name of scheme	Benchmark index	Date of launch
Equity – diversified		
Franklin India Bluechip Fund	BSE Sensex	01-12-1993
Franklin India Prima Fund	S&P CNX 500	01-12-1993
Reliance Vision Fund	BSE100	08-10-1995
Reliance Growth Fund	BSE100	08-10-1995
Pru ICICI Growth Plan	S&P CNX NIFTY	09-07-1998
Pru ICICI Tax Plan	S&P CNX NIFTY	19-08-1999
HDFC Top 200 Fund	BSE 200	11-10-1996
HDFC Capital Builder Fund	S&P CNX 500	01-02-1994
UTI Equity Saving Plan	BSE SENSEX	15-11-1999
UTI India Advantage Equity Fund	S&P CNX 500	05-01-2000
SBI Magnum Multiplier Plus 93	BSE 100	28-02-1993
SBI Magnum Equity Fund	BSE 100	02-01-1991
Sector Specific		
Pru ICICI Power	S&P CNX NIFTY	04-10-1994
Pru ICICI Technology	BSE Tech	03-03-2000
Franklin Infotech Fund	BSE IT Index	22-08-1998
SBI Magnum Sector Funds (Pharma)	BSE - HC	03-07-1999

Table -2 Showing Fund Return, Market Return, Std Deviation Of Fund Returns And Market Returns

Name of scheme	Rp	Rm	σp	σm
Equity – diversified				
Franklin India Bluechip Fund	0.04257342	0.0330393	0.06834489	0.06689462
Franklin India Prima Fund	0.05533780	0.3152311	0.07682798	0.07049456
Reliance Vision Fund	0.04752015	0.03530892	0.07046956	0.07133888
Reliance Growth Fund	0.06069612	0.03530892	0.12313028	0.07133888
Pru ICICI Growth Plan	0.03886194	0.03152311	0.07265209	0.07049456
Pru ICICI Tax Plan	0.05596341	0.03152311	0.08355845	0.07049456
HDFC Top 200 Fund	0.04748523	0.03553813	0.07207646	0.07364885
HDFC Capital Builder Fund	0.04842616	0.03152311	0.067179085	0.07049456
UTI Equity Saving Plan	0.02922034	0.0330393	0.076617924	0.06691576
UTI India Advantage Equity Fund	0.02890445	0.03152311	0.071194295	0.0704956
SBI Magnum Multiplier Plus 93	0.04863581	0.03530892	0.087302616	0.07133888
SBI Magnum Equity Fund	0.03107592	0.03530892	0.69311441	0.07133888
Sector Specific				
Pru ICICI Power	0.04424852	0.03152311	0.071015955	0.0749456
Pru ICICI Technology	0.03831964	0.03414505	0.07828666	0.07563357
Franklin Infotech Fund	0.03345774	0.03124257	0.077516906	0.08898551
SBI Magnum Sector Funds (Pharma)	0.04091630	0.02849621	0.078016715	0.07623839

Table -3 Showing Systematic And Unsystematic Risks In Mutual Funds

Name of scheme	BETA (β)	Diversifiable risk
Equity – diversified		
Franklin India Bluechip Fund	0.97167190	0.05000809
Franklin India Prima Fund	0.78101834	0.30882437
Reliance Vision Fund	0.90336018	0.08445395
Reliance Growth Fund	0.93572392	0.79026717
Pru ICICI Growth Plan	0.94245416	0.08815147
Pru ICICI Tax Plan	0.96098085	0.22433681
HDFC Top 200 Fund	0.94653744	0.03211268
HDFC Capital Builder Fund	0.76586476	0.18710360
UTI Equity Saving Plan	0.85839442	0.28659629
UTI India Advantage Equity Fund	0.78063665	0.22928943
SBI Magnum Multiplier Plus 93	1.06853628	0.15523697
SBI Magnum Equity Fund	0.77593126	0.19564886
Sector Specific		
Pru ICICI Power	0.90096994	0.10642630
Pru ICICI Technology	0.88527166	0.14980665
Franklin Infotech Fund	0.82089349	0.05022478
SBI Magnum Sector Funds (Pharma)	0.80485843	0.21846743

Table-4 Showing Beta Risk And Diversifiable Risk

Name of scheme	BETA RISK (in percentage)	DIVERSIFIABLE RISK (in percentage)
Equity – diversified		
Franklin India Bluechip Fund	95.10531	4.894692
Franklin India Prima Fund	71.6634	28.3366
Reliance Vision Fund	91.45042	8.549579
Reliance Growth Fund	54.21372	45.78628
Pru ICICI Growth Plan	91.44663	8.553366
Pru ICICI Tax Plan	81.0737	18.9263
HDFC Top 200 Fund	96.71868	3.281324
HDFC Capital Builder Fund	80.36623	19.63377
UTI Equity Saving Plan	74.96955	25.03045
UTI India Advantage Equity Fund	77.29641	22.70359
SBI Magnum Multiplier Plus 93	87.31489	12.68511
SBI Magnum Equity Fund	79.86282	20.13718
Sector Specific		
Pru ICICI Power	89.43551	10.56449
Pru ICICI Technology	85.52702	14.47298
Franklin Infotech Fund	94.23445	5.765552
SBI Magnum Sector Funds (Pharma)	78.65124	21.34876

Table -5 Showing Coefficient Of Determination

Name of scheme	R^2
Equity – diversified	
Franklin India Bluechip Fund	0.95105309
Franklin India Prima Fund	0.71662962
Reliance Vision Fund	0.90552814
Reliance Growth Fund	0.54288230
Pru ICICI Growth Plan	0.91390027
Pru ICICI Tax Plan	0.81075052
HDFC Top 200 Fund	0.95786033
HDFC Capital Builder Fund	0.80340312
UTI Equity Saving Plan	0.74065320
UTI India Advantage Equity Fund	0.77204177
SBI Magnum Multiplier Plus 93	0.86619702
SBI Magnum Equity Fund	0.77673639
Sector Specific	
Pru ICICI Power	0.89396367
Pru ICICI Technology	0.84606465
Franklin Infotech Fund	0.94268035
SBI Magnum Sector Funds (Pharma)	0.79232789

Table-6 showing sharpe ratio of various schemes

Name of scheme	Scheme Sharpe ratio	Market Sharpe ratio
Equity – diversified		
Franklin India Bluechip Fund	0.55890675	0.4283742
Franklin India Prima Fund	0.6633649	0.3851093
Reliance Vision Fund	0.61225227	0.4336196
Reliance Growth Fund	0.45741077	0.4336194
Pru ICICI Growth Plan	0.47468614	0.3851093
Pru ICICI Tax Plan	0.61739308	0.3851093
HDFC Top 200 Fund	0.59811808	0.4231312
HDFC Capital Builder Fund	0.65572729	0.3851093
UTI Equity Saving Plan	0.32427578	0.4282389
UTI India Advantage Equity Fund	0.34454234	0.3851093
SBI Magnum Multiplier Plus 93	050698154	0.4336194
SBI Magnum Equity Fund	0.38523113	0.4336194
Sector Specific		
Pru ICICI Power	0.56147268	0.3851093
Pru ICICI Technology	0.43359419	0.3936089
Franklin Infotech Fund	0.37517935	0.3019319
SBI Magnum Sector Funds (Pharma)	0.46837787	0.3163919

Table -7 showing treynor ratios of various schemes

Name of scheme	Scheme Treynor ratio	Market Treynor ratio
Equity – diversified		
Franklin India Bluechip Fund	0.039312057	0.02949136
Franklin India Prima Fund	0.065251738	0.03475989
Reliance Vision Fund	0.0477607	0.03424318
Reliance Growth Fund	0.0601899	0.03305881
Pru ICICI Growth Plan	0.0365927	0.02880576
Pru ICICI Tax Plan	0.053683075	0.02825042
HDFC Top 200 Fund	0.0455452	0.03292329
HDFC Capital Builder Fund	0.0575182	0.03544766
UTI Equity Saving Plan	0.028943964	0.03338317
UTI India Advantage Equity Fund	0.0314224	0.03477689
SBI Magnum Multiplier Plus 93	0.0414219	0.02894981
SBI Magnum Equity Fund	0.0344115	0.03986683
Sector Specific		
Pru ICICI Power	0.0442562	0.03013209
Pru ICICI Technology	0.0383438	0.03362815
Franklin Infotech Fund	0.0354282	0.03272966
SBI Magnum Sector Funds (Pharma)	0.0454009	0.02996951

Table -8 Showing jenson's measure for various schemes

Name of scheme	Jenson's α
Equity – diversified	
Franklin India Bluechip Fund	0.010354258
Franklin India Prima Fund	0.029759631
Reliance Vision Fund	0.0152007
Reliance Growth Fund	0.0273755
Pru ICICI Growth Plan	0.0089011
Pru ICICI Tax Plan	0.025499592
HDFC Top 200 Fund	0.0136132
HDFC Capital Builder Fund	0.0232594
UTI Equity Saving Plan	0.000247246
UTI India Advantage Equity Fund	0.0033366
SBI Magnum Multiplier Plus 93	0.0112068
SBI Magnum Equity Fund	0.0026983
Sector Specific	
Pru ICICI Power	0.0154139
Pru ICICI Technology	0.0075901
Franklin Infotech Fund	0.0070273
SBI Magnum Sector Funds (Pharma)	0.0171271

Table 9 showing summary of performance of mutual funds

FUND	MEAN RETURN	BETA RISK	DIVER. RISK	SHARPE RISK	TREYNOR RATIO	JENSONS ALPHA	R^2
Franklin Templeton India MF	Average	High	Low	Good	Good	Above average	Good
Reliance MF	Better	Low	High	Average	Good	Best	Below average
Prudential MF	Above average	High	Low	Average	Average	Average	Good
HDFC MF	Above average	High	Low	Good	Good	Good	Good
UTI MF	Low	Low	High	Poor	Poor	Poor	Below average
SBI MF	Below average	Average	Average	Mixed	Below average	Below average	Average

Table 10 showing ranking of funds

Name of scheme	Jenson's α
Equity – diversified	
Franklin India Bluechip Fund	0.0106561
Franklin India Prima Fund	0.0381036
Reliance Vision Fund	0.0168268
Reliance Growth Fund	*0*.029256
Pru ICICI Growth Plan	0.0094446
Pru ICICI Tax Plan	0.026535
HDFC Top 200 Fund	0.0143821
HDFC Capital Builder Fund	0.0303701
UTI Equity Saving Plan	0.000288
UTI India Advantage Equity Fund	0.0042742
SBI Magnum Multiplier Plus 93	0.010488
SBI Magnum Equity Fund	0.0034775
Sector Specific	
Pru ICICI Power	0.0171081
Pru ICICI Technology	0.0085738
Franklin Infotech Fund	0.0085606
SBI Magnum Sector Funds (Pharma)	0.0212796

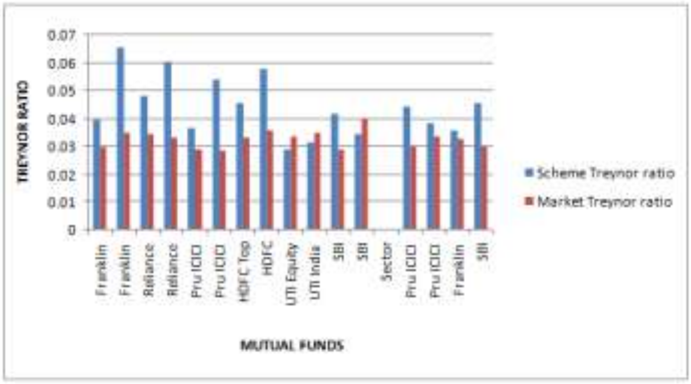


Exhibit-5 showing treynor ratio for performance evaluation

Yet again , UTI has poor performance Analysis of the table reveals that most of the mutual funds in equity diversified category showed higher value of Treynor index as compared to the market index except UTI tax saving plan (0.0289), UTI India advantage fund (0.0314) and SBI magnum fund (0.0344). The highest Treynor ratio in equity diversified scheme is of Franklin India Prima fund (0.0653) and lowest is of UTI equity tax saving plan (0.0289). In sector specific schemes the highest Treynor ratio is of SBI Pharma (0.0454) and lowest of Franklin InfoTech (0.0354). A higher Treynor index as compared to market indicates that investors who invested in mutual funds to form well diversified portfolio did receive adequate return per unit of systematic risk undertaken.

On concluding, amongst equity diversified schemes category, Franklin Templeton India fund, Pru ICICI fund, Reliance fund and HDFC fund schemes have posted better performance by containing loss per unit of systematic risk taken by investors, though marginally. SBI schemes have shown mixed performance. Once again, UTI fund has shown poor performance. In case of sector specific schemes, all schemes have posted average performance.

It is the regression of excess return of the scheme with excess return of the market, acting as dependent and independent variables respectively. Higher positive value of alpha posted by the schemes indicates its better performance. The analysis of table reveals that in diversified category, alpha values of Franklin India Prima fund (0.0298), Reliance growth fund (0.0274), Pru ICICI tax plan (0.0255) and HDFC capital builder fund (0.0233) are indicating superior performance than the market. UTI schemes have shown poor performance. It shows that fund managers have not been able to forecast future security prices in time so as to take appropriate investment decisions, which resulted in low performance of these schemes. In sector specific schemes, schemes have posted average performance.

Summary of findings and recommendations findings

The above discussions on performance of mutual funds reveal that investor's have mixed response towards mutual funds. Selected mutual funds have not performed too good or too bad. Table below presents the performance of mutual funds in summarised manner showing parameters of performance. Overall mutual funds will be finalised on the summarised parameters and the ranking of funds based on alpha/beta ratio.

On overall basis , Franklin Templeton India fund & HDFC mutual funds have posted better performance for the period of study in that order as compared to other funds. Reliance and Pru ICICI mutual funds have shown average performance. With preponderance of low values for different parameters, UTI mutual fund has staged a poor show whereas, SBI magnum funds have shown mixed performance.

Ranking of funds:

The alpha values of funds indicate managerial skills. To properly adjust the Jenson measure for ranking purpose, each portfolio alpha should be divided by its beta. So we can rank the funds according to their alpha/beta values. The table and the graph are given as below shows ranking of all funds.

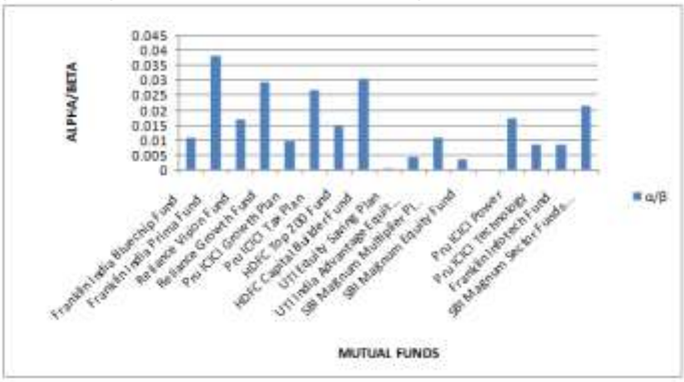


Exhibit-6- showing rank of various mutual fund schemes

The above graph clearly shows that Franklin Prima fund is the top ranked fund and UTI advantage is the lowest. HDFC, Reliance and ICICI funds have also faired well. On concluding, it can be clearly said that Franklin and HDFC funds are safe options of investing and have low risk. Reliance and ICICI funds are favourable in returns but with a little risk involved. SBI is a very safe option but with average returns. It is however not advisable to invest in UTI mutual funds in the present scenario.

Recommendations

1. While working in various departments of the company a lot a practical exposure to the day to day workings of the company were learned. The company has different kinds of working atmosphere and pattern across different departments. All departments rely heavily on use of software; however, the use is not uniform. This is also due to cost cutting measures of the company. Using this in house software is much more economical than using SAP for HR practices. Also the administration department can be done more automated and records maintained through software. At later stage the whole system can be brought to a common software platform, for ease of data transfer and analysis.
2. Hedging is done in the company not on speculation but on actual sales. This commodity hedging is done only twice a month, this can be increased to avoid loss due to sudden fluctuation of the market.
3. The profit acquired highly depends on zinc prices fluctuating in the LME. Hedging is done to avoid loss by fluctuations, but company can also indulge in speculative buying, selling and maintaining stock to avoid huge changes. Since the company almost has a standard customer bank and no cyclic demand pattern is seen, hence such measures can be adopted to. They can also help cope up with sudden demands.
4. The capacity for storing sulphuric acid is only one lakh tones. This capacity is distributed in Chanderiya, Debari and Vizag plants. Out of these vizag plant has a very low storage of close to 4500 tonns. The demand of sulphuric acid is highly cyclic and depends on demand of fertilizers. Southern india is a high crop producing area and capacity of vizag plant can be increased for greater sales in southern India. This would also relive the pressure on the company to sell so much of sulphuric acid per month. At present the areas of concentration of sale of acid is Rajasthan, Gujarat, Madhya Pradesh and adjacent area.