

PERFORMANCE ANALYSIS OF SELECTED UTI MF SCHEMES (GROWTH) - SOME SELECTED MEASURES

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ABSTRACT

The empirical study examines the performance analysis of some selected UTI Mutual Fund Schemes (Growth) on the basis of Risk and Return during post bifurcation period. Measures that have been used for the purpose of analysis are William Sharpe's Reward to Variability Ratio, Jack Treynor's Reward to Volatility Ratio, and Jensen's Alpha. Kendal Coefficient of Concordance has been used to find out the significance of agreement among these measures of ranking on the basis of risk adjusted return from the selected schemes of UTI MF.

KEYWORDS: Mutual Fund, Coefficient of Concordance, Volatility, Variability, Risk Adjusted Return.

Introduction

Exploring investment avenues are of very much relevant in the present day of critical, sensitive and dynamic global economic environment. Investments become successful only when it is invested in right instruments at right time. Success in investing activity depends on the prudential knowledge of the investor about the market and also on his ability to analyse the performance of the investment. Mutual Funds (MF) are special forms of institutions which pool the savings of many individual investors and invest them in diversified portfolio. Thus it combines all the savings of investors into a large well managed and diversified portfolio so that it can earn a good amount of return to satisfy the investors. The MF institutions try to optimize the risks which are related to the investments and to maximize the return in the form of growth and income to achieve the basic objective of the investments. Therefore, a MF is an investment organization owned by many individual investors who share its earnings and appreciation of capital in proportion to their investments. In present days the MF schemes are one of the popular investment alternatives to the retail investors. It is because the direct involvement in the capital and money market is quite difficult for the common men who are interested to invest their savings with a view to high return. It is so because it involves collection and analysis of various relevant markets related and specific stock or money market instrument related data which is generally difficult for the common man.

Unit Trust of India (UTI) AMC has completed its 50 years of journey in the year 2014 as India's one of the leading Financial service institution. It was the sole vehicle of capital market investment for Indian Citizens till the early 90's. UTI has a major contribution to industrial growth and capital formation in the economy of India. It has introduced transformative initiatives like developmental financial institutions, rural outreach programs and financial products and services so that the benefit of growing equity market reaches at every corner of rural area of our country. In the present day UTI AMC is a household name in India and has a wide portfolio to suit the varied needs of investors supported by industry-led best practices, long-term vision, and shareholder values. Currently UTI has its presence through 150 branches, 47000 highly trained IFAs, 320 Chief Agents and Business Development Associates and over 1 crore investor accounts. UTI AMC is one of the leading financial institutions performing an important role in mobilization of household savings with a view to nation building as a whole.

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The Intent of Literature Review

There is a vast body of literature by eminent scholars, researcher and financial experts, policy makers on various aspects of capital market. Various mutual fund organizations, both private and public sectors, are running their mutual fund business operations in the capital market of India. Among them the Unit Trust of India (UTI) is one of the biggest mutual fund organization controlled by the Government of India. But there is very little available literature review on UTI mutual fund related activities, operations and their performance. However different literature which analysed the performance of different MF schemes has been briefed below.

Harry M. Markowitz (1952) was the first, who used the mean-variance analysis of portfolio decisions. He discussed the concept of efficiently diversified portfolios which maximized expected returns for a given amount of risk. The risk is measured by variance. He also provided means for calculating efficient portfolios with the means, variances and co-variances of return of the securities. But in his analysis there is a lack of technique of measuring risk on the basis of its nature like controllable or uncontrollable risk. Therefore the analysis is unable to measure the unsystematic and systematic risk relating to an investment.

According to Markowitz the risk of a portfolio is measured by following formula:

$$\text{Total Risk} = \frac{\text{Script Deviation}}{\text{Market Deviation}}$$

Friend, et al., (1962) compared Mutual Fund return of 152 schemes. The average return of those 152 schemes was 12.4 percent whereas the benchmark return was 12.6 percent. The value of alpha was (-)20. The relationship between fund return and turnover was not much strong as per their study result.

Treynor (1965) showed that the performance of a Mutual Fund can easily be analyzed using volatility ratio. It is a measure of returns in excess of what could have been earned on a risk less investment per unit of market risk. The ratio helps investors to get their portfolio not only on the basis of return but also the risk they took to achieve the return. The ratio is also named as 'Reward to volatility Ratio'. The ratio uses beta to measure the volatility. Beta is the measure of the systematic risk of the portfolio. Treynor calculated the beta by using CAPM model. The formula for calculating Sharpe ratio is as follows:

$$\text{Treynor's Ratio } (T_n) = [R_n - R_f] / \beta_n$$

Where, T_n = Treynor's measure of evaluation

R_n = the return of a portfolio

R_f = The risk free rate of return

β_n = Beta of the Portfolio as a measure of systematic risk

A higher Treynor Ratio of an investment means a better risk adjusted return in comparison to that of lower Treynor Ratio.

Sharpe, William F (1966) also showed the relation between the risk premium and the total risk relating to a particular scheme. In other words this measure compares the risk premium to the total amount of risk. The ratio can be used to compare reward to inherent risk of more than one fund. The ratio measures the performance of a scheme on the basis of risk. The formula for calculating Sharpe ratio is as follows:

$$\text{Sharpe Ratio (SR)} = [R_p - R_f] / \sigma_p$$

Where, R_p = the return of a MF scheme

R_f = The risk free rate of return

σ_p = the standard deviation of return of the MF scheme

The larger the SHARPE ratio indicates the better performance of the MF Scheme.

He did the study with 34 open ended MF. The result showed that the Reward to Variability ratio for each scheme was significantly less than the variability of Dow Jones Industrial Average (DJIA) which was ranged between 0.43 to 0.78. The result also showed that good performance of a scheme is related with low expenses and the size of the scheme is not correlated with its return.

Jensen (1968) was the first to introduce a model that showed fund performance in relation to a benchmark. The model is again based on the CAPM and is given as: $R_{jt} - R_{ft} = \alpha_j + \beta_j(R_{mt} - R_{ft})$

Where R_{jt} is the expected return of the portfolio 'j'. R_{ft} is the risk free rate of return. β_j is the systematic risk and R_{mt} is the market return all for the time period t (t=1N). The constant α_j is the Jensen's alpha. A positive α indicates an ability to generate superior stock picking.

Using this model Jensen studied 115 funds for the time period 1945-59. A statistically significant number of funds had a negative alpha and the average alpha was minus 110 basis points.

Carlson (1970) calculated the Jensen alpha and Sharpe ratio for 86 funds in associated with the return from market series like S&P 500, NYSE composite, and DJIA over the period 1948-67. He found an average positive alpha of 60 basis points and further found the Sharpe ratio of funds at 0.57 to be higher than that for the Dow Jones with 0.43. The performance measurement is dependent on the fund type, the benchmark index and the time period considered.

Mc Donald and John (1974) studied with 123 funds. He used monthly performance data for the period 1960-69. His study was based on a CAPM model four measures monthly mean excess return; reward-to-volatility Ratio, Jensen's alpha and reward to variability ratio were calculated. He concluded that the average fund performance was not significantly different from the market and given fees and expenses they were slightly better. That means there is a positive relationship between the return of a fund and the risk associated with it and more aggressive funds showed better result in terms of return.

Avadhani V. A., in his book 'Securities analysis and portfolio management' has explained risk-return in portfolio management, risk-return trade-off, portfolio analysis etc. Avadhani has explained various mutual funds performances on the basis of risk and return.

Tobin (1956) used the mean- variance approach to study the choice between safe liquid assets and risk assets by a rational investor. In his article, Tobin showed that the optimal portfolio for any investor is a combination of the optimal portfolio of risky assets and a portfolio of risk free securities. This speaks of investors' ability to separate the decision about investment proportions among risky assets separate from the decision with respect to investment proportion between risky and risk-free assets. This property is termed as monetary-separation.

In addition to the above, a number of academics, professionals, experts and journalists explained the basic concepts of mutual funds, their features, performances and trends in the capital market.

Objective of the Study

The objective of the study is to evaluate the performance of growth schemes of selected UTI Mutual Fund during post bifurcation period on the basis of risk and return using performance measure of portfolio evaluation proposed by Sharpe, Treynor and Jensen. Apart from this, the study will find out the significance of agreement among these measures on the basis of ranking.

Research Methodology

The study requires indirect observations and experiences to attain the objectives of the study. Moreover I have used the quantitative techniques to analyze the data.

The data in the current study about performance of different types of mutual fund consists of NAV of the thirty UTI MF schemes. Twenty six among them are open ended and four of them are closed ended which were are closed during the period of study. All the MF Schemes taken into consideration are growth schemes as because the return calculation from the growth schemes is less complicated than that of from the schemes that distribute dividend. The data that are used for the study has been collected from the records of UTI, AMFI, NSE and Moneycontrol website. All financial data is nominated in terms of Indian Rupees.

The Mutual Fund industry came under the control of SEBI Regulation 1996. UTI was bifurcated in the year 2002 and UTI Asset Management Company was formed for looking after the NAV based pure Mutual Funds of UTI. The panel data set covers the post bifurcation period i.e., thirteen years period from 2003 – 2015 with a sample of 30 (thirty) UTI mutual fund of growth schemes.

Further it is noted that the BSE Sensex figure at different point of time is considered as the benchmark return in this study and the rate of interest on fixed deposit in State Bank of India, being nationalized Bank, has been considered as risk free rate of return. Therefore, on the basis of review of earlier research works following variables are identified for this study:

- NAV
- SENSEX point
- MF size
- Range of FD interest of a Nationalized Bank (SBI)

Tools and Techniques of Analysis

In order to evaluate the performance of UTI mutual funds, two major issues need to be addressed: the way in which a fund's return is adjusted for risk and the choice of an appropriate benchmark. With a view to that the tools like return, risk and risk free rate of return have been used in the present study of risk-return analysis of UTI MF Schemes in relation to that of the market as per Treynor, Sharpe and Jensen's model. Beta (β) is a measure of systematic risk which shows the rate of change in NAV of a growth scheme in response to the change in market rate of return. The concept of Beta helps us to estimate required return on a MF scheme.

The tools (i-v) and techniques (vi-ix) of analysis used in this study are:

- Change in NAV as Portfolio Return
- Change in Benchmark Market Index as Market Return
- Risk Free Rate of Return
- Unsystematic Risk
- Systematic Risk; Beta (β)
- Sharpe's Reward to variability Ratio (S_i)
- Treynor's Reward to volatility Ratio (T_i)
- Jensen's Alpha (α)
- Kendall's Coefficient of Concordance

Application of Performance Measure

The investors invest their savings in Mutual Funds to get considerable return from their investment. So they are very much interested to know the value of their investment. The investors should have to be aware of the basic terms used in performance evaluation. The most common term which is used in performance evaluation of mutual funds is Net Asset Value or NAV.

The Accounting Definition of NAV laid down by SEBI is as follows:

NAV = Net Asset of the Schemes/No of units outstanding

i.e.,
$$\frac{\text{Market value of Assets} - \text{Liabilities}}{\text{No. of units outstanding}}$$

Change in NAV is a popular method of evaluating performance of a fund. Percentage change in NAV for a particular year = (NAV at the end - NAV at the beginning) * 100/ NAV at the beginning.

Sharpe's Reward to Variability Ratio

Sharpe tried to measure the schemes total risk and risk adjusted return. The larger the Sharpe ratio indicates the better performance of the MF Scheme. Scheme's return has been calculated on the basis of Average change in NAV of scheme during past years and average FD interest rate of SBI has been taken as risk free rate of return. Following Table shows the Sharp Ratio of the UTI MF Schemes on the basis of Annual Return from Scheme and Risk free return.

Table 1: Sharp Ratio of the UTI MF Schemes

Name of the fund	Return from the Fund (Mean Return)	Total Risk (Standard Deviation of Return)	Risk Free Rate of Return	Sharpe Ratio	Rank
UTI Equity Fund (G)	25.18	38.62	7.38	0.4607	3
UTI Balanced Fund (G)	19.06	27.86	7.38	0.4192	7
UTI Nifty Index Fund (G)	22.88	36.74	7.38	0.4219	5
UTI Bond Fund (G)	7.40	6.09	7.38	0.0037	28
UTI Energy Fund (G)	19.57	46.44	7.38	0.2624	18
UTI MNC Fund (G)	27.77	34.08	7.38	0.5983	1
UTI Top 100 Fund (G)	26.61	41.85	7.38	0.4595	4
UTI Equity Tax savings (G)	21.73	38.46	7.38	0.3730	10
UTI CCP Advantage Fund (G)	9.72	22.46	7.38	0.1043	27
UTI Pharma & Healthcare Fund (G)	21.38	26.16	7.38	0.5351	2
UTI Mastershare (G)	18.87	33.67	7.38	0.3412	12
UTI Banking Sector Fund (G)	23.36	42.84	7.38	0.3731	9
UTI Infrastructure Fund (G)	20.40	44.08	7.38	0.2954	15
UTI Transport & Logistics (G)	28.58	50.77	7.38	0.4175	8
UTI Mid Cap Fund (G)	28.78	50.74	7.38	0.4217	6
UTI Dividend Yield Fund (G)	19.71	39.32	7.38	0.3135	14
UTI Opportunity Fund (G)	20.62	41.71	7.38	0.3173	13
UTI Leadership Equity Fund (G)	13.90	37.06	7.38	0.1760	22
UTI India Lifestyle Fund (G)	11.55	33.35	7.38	0.1250	24
UTI Money Market Fund (G)	7.68	1.49	7.38	0.1989	19
UTI Smart Woman Savings Plan (G)	3.71	21.79	7.38	-0.1685	30
UTI Treasury Advantage Fund (G)	7.96	1.60	7.38	0.3616	11
UTI Master Plus Unit Scheme (G)	13.10	40.75	7.38	0.1403	23
UTI Master Value Fund(G)	22.94	56.62	7.38	0.2749	17
UTI Bluechip Flexicap Fund (G)	14.09	37.75	7.38	0.1777	21
UTI Contra Fund (G)	11.83	41.42	7.38	0.1073	26
UTI Super Fund (G)	7.86	1.68	7.38	0.2840	16
UTI Liquid Fund Cash Plan (G)	7.55	1.56	7.38	0.1119	25
UTI G- Sector Fund STP (G)	6.89	3.52	7.38	-0.1382	29
UTI Service Industries Fund (G)	16.03	47.13	7.38	0.1835	20
S&P BSE Sensex (Benchmark)	23.62	36.64	7.38	0.4432	

The result of each scheme (table-1) showed positive return on the basis of annual average return. Two of them showed less return than average risk free rate of return. They are UTI Smart woman savings plan and UTI G Sector Fund STP. Five schemes showed return higher than that of Sensex (23.62). Those are UTI MNC Fund, UTI Top 100 Fund, UTI Transport & Logistics, UTI Mid Cap Fund and UTI Equity Fund. UTI Mid Cap Fund showed the highest return of 28.77%. Therefore only these five funds out of the 30 schemes studied have outperformed the market on the basis of Average Annual Return.

As per SHARPE Index, all the funds except two of them showed positive value indicating sufficient returns in comparison to risk free return and total risk involved. Scheme's risks ranged from 1.49 to 56.62 and Sharpe Index ranged from (-)0.1648 to 0.5983. Four of the schemes out of thirty schemes performed better than the market in terms of risk and return during the period of the study. These are: UTI MNC Fund (0.5983), UTI Pharma & Healthcare Fund (0.5352),

UTI Equity Fund (0.4609) and UTI Top 100 Fund (0.4595) in comparison to the market index of Sensex(0.4432).

Treynor's Reward to Volatility Ratio

Jack Treynor used beta as measure of risk. The Ratio shows the relation between the risk premiums to the volatility of return as measured by the portfolio beta. It evaluates excess return of a scheme with regard to the systematic risk associated to it. The ratio helps to rank the schemes according to the schemes performance with respect to non diversifiable risk. The higher the Treynor ratio indicates the better performance of the MF Scheme.

Table 2: Treynor's index value of Selected UTI Mutual Fund Growth Schemes

Name of the fund	Return from the Fund	Risk Free Rate of Return	(Regression Method)	Treynor's Ratio	Rank
UTI Equity Fund (G)	25.18	7.38	1.0008	17.78	5
UTI Balanced Fund (G)	19.06	7.38	0.7461	15.65	7
UTI Nifty Index Fund (G)	22.88	7.38	1.0011	15.48	9
UTI Bond Fund (G)	7.4	7.38	-0.0989	-0.23	27
UTI Energy Fund (G)	19.57	7.38	1.1435	10.66	16
UTI MNC Fund (G)	27.77	7.38	0.8494	24.00	1
UTI Top 100 Fund (G)	26.61	7.38	1.0808	17.79	4
UTI Equity Tax savings (G)	21.73	7.38	1.0043	14.29	11
UTI CCP Advantage Fund (G)	9.72	7.38	0.3942	5.94	24
UTI Pharma & Healthcare Fund (G)	21.38	7.38	0.5887	23.78	2
UTI Mastershare (G)	18.87	7.38	1.2409	9.26	18
UTI Banking Sector Fund (G)	23.36	7.38	1.0213	15.65	8
UTI Infrastructure Fund (G)	20.4	7.38	1.1115	11.72	15
UTI Transport & Logistics (G)	28.58	7.38	1.0416	20.35	3
UTI Mid Cap Fund (G)	28.78	7.38	1.2238	17.49	6
UTI Dividend Yield Fund (G)	19.71	7.38	0.9761	12.63	13
UTI Opportunity Fund (G)	20.62	7.38	1.0167	13.02	12
UTI Leadership Equity Fund (G)	13.9	7.38	0.9298	7.01	20
UTI India Lifestyle Fund (G)	11.55	7.38	0.8367	4.98	25
UTI Money Market Fund (G)	7.68	7.38	0.0289	10.25	17
UTI Smart Woman Savings Plan (G)	3.71	7.38	0.2568	-14.30	29
UTI Treasury Advantage Fund (G)	7.96	7.38	-0.0118	-49.04	30
UTI Master Plus Unit Scheme (G)	13.1	7.38	0.8749	6.54	23
UTI Master Value Fund(G)	22.94	7.38	1.2895	12.07	14
UTI Bluechip Flexicap Fund (G)	14.09	7.38	0.9650	6.95	22
UTI Contra Fund (G)	11.83	7.38	0.9296	4.78	26
UTI Super Fund (G)	7.86	7.38	0.0333	14.34	10
UTI Liquid Fund Cash Plan (G)	7.55	7.38	-0.0232	-7.51	28
UTI G- Sector Fund STP (G)	6.89	7.38	-0.0698	6.97	21
UTI Service Industries Fund (G)	16.03	7.38	1.0152	8.52	19
S&P BSE Sensex (Benchmark)	23.62	7.38	0.9999	16.24	

It is seen from the table-2 that there are only 6 Schemes which have higher value of Treynor's Index than that of the Sensex (16.24). The Schemes are: UTI MNC Fund (24.00), UTI Pharma & Healthcare Fund (23.78), UTI Transport & Logistics (20.35), UTI Top 100 Fund (17.79), UTI Equity Fund (17.78), UTI Mid Cap Fund (17.49). Therefore only these six funds out of the 30 schemes studied have outperformed the market on the basis of Treynor's index.

Jensen's Measure

The Treynor and Sharpe Ratio help us in ranking the different portfolios on the basis of relative performance on a risk adjusted basis. Whereas Jensen developed a formula to measure the absolute return of a portfolio on risk adjusted basis. The performance of various funds can easily be measured with the help of this standard. It is based on the predictive ability of the portfolio manager of the respective scheme. It measures the amount of extra return over the expected return from a portfolio. In other words Jensen's α is that portion of excess return () that is not explained by systematic risk.

Table 3: Jensen's Alfa of Selected UTI Mutual Fund Growth Schemes

Name of the fund	Return from the Fund	Risk Free Rate of Return	Market Return	(Regression Method)	Jensen's	Rank
UTI Equity Fund (G)	25.18	7.38	23.62	1.0008	1.5436	6
UTI Balanced Fund (G)	19.06	7.38	23.62	0.7461	-0.4372	13
UTI Nifty Index Fund (G)	22.88	7.38	23.62	1.0011	-0.7594	15
UTI Bond Fund (G)	7.4	7.38	23.62	-0.0989	1.6289	5
UTI Energy Fund (G)	19.57	7.38	23.62	1.1435	-6.3851	22
UTI MNC Fund (G)	27.77	7.38	23.62	0.8494	6.5937	1

UTI Top 100 Fund (G)	26.61	7.38	23.62	1.0808	1.6782	4
UTI Equity Tax savings (G)	21.73	7.38	23.62	1.0043	-1.9627	16
UTI CCP Advantage Fund (G)	9.72	7.38	23.62	0.3942	-4.0581	19
UTI Pharma & Healthcare Fund (G)	21.38	7.38	23.62	0.5887	4.4394	2
UTI Mastershare (G)	18.87	7.38	23.62	1.2409	-8.6651	27
UTI Banking Sector Fund (G)	23.36	7.38	23.62	1.0213	-0.6032	14
UTI Infrastructure Fund (G)	20.4	7.38	23.62	1.1115	-5.0282	20
UTI Transport & Logistics (G)	28.58	7.38	23.62	1.0416	4.2802	3
UTI Mid Cap Fund (G)	28.78	7.38	23.62	1.2238	1.5239	7
UTI Dividend Yield Fund (G)	19.71	7.38	23.62	0.9761	-3.5242	18
UTI Opportunity Fund (G)	20.62	7.38	23.62	1.0167	-3.2765	17
UTI Leadership Equity Fund (G)	13.9	7.38	23.62	0.9298	-8.5776	26
UTI India Lifestyle Fund (G)	11.55	7.38	23.62	0.8367	-9.4213	29
UTI Money Market Fund (G)	7.68	7.38	23.62	0.0289	-0.1732	12
UTI Smart Woman Savings Plan (G)	3.71	7.38	23.62	0.2568	-7.8443	24
UTI Treasury Advantage Fund (G)	7.96	7.38	23.62	-0.0118	0.7704	8
UTI Master Plus Unit Scheme (G)	13.1	7.38	23.62	0.8749	-8.4897	25
UTI Master Value Fund(G)	22.94	7.38	23.62	1.2895	-5.3789	21
UTI Bluechip Flexicap Fund (G)	14.09	7.38	23.62	0.9650	-8.9638	28
UTI Contra Fund (G)	11.83	7.38	23.62	0.9296	-10.6517	30
UTI Super Fund (G)	7.86	7.38	23.62	0.0333	-0.0632	11
UTI Liquid Fund Cash Plan (G)	7.55	7.38	23.62	-0.0232	0.5517	10
UTI G- Sector Fund STP (G)	6.89	7.38	23.62	-0.0698	0.6465	9
UTI Service Industries Fund (G)	16.03	7.38	23.62	1.0152	-7.8396	23
S&P BSE Sensex (Benchmark)	23.62	7.38		0.9999	0.0042	

A positive value of 'α' indicates a greater return from the Scheme than the expectation, which means the fund has outperformed the market, whereas a negative value of 'α' indicates low rate of return from the Scheme than the expectation which means the scheme has underperformed the market.

Therefore, as per Jensen's 'α', of the thirty UTI MF Growth Schemes studied, only ten schemes showed positive value of 'α'. It means ten funds gave extra return over the expected return calculated on the basis of beta coefficient. UTI MNC Fund topped the list with positive 'α' value (6.5937) and UTI contra Fund is showing the worst performance with negative 'α' value (-10.6517).

Comparison of Performance Evaluation Measure

So far different UTI MF Growth Return have been analysed by using three models of evaluation. Here the similarity among the results derived from those three models, viz. Sharpe, Treynor and Jensen Models. Kendall Coefficient of Concordance has been used to identify the uniformity in ranking the three models. The following hypothesis will be tested at 0.001 level of significance by using chi square distribution. Kendall's Coefficient of Concordance is a non parametric test that has been used to measure the degree of association among different raters on the basis of their rankings. This method is considered an appropriate measure of studying the degree of association among three or more sets of ranking (Sphereman's coefficient of correlation is generally used for two sets of rankings).

Kendall's Coefficient of Concordance

Kendall's Coefficient of Concordance also known as Kendall's 'W' ranges from '0' to '1'. In case of w=0, there will be perfect disagreement among the various methods of evaluation. On the other hand when w=1, there is perfect agreement among the various methods.

Formula of computing Kendall's 'w' is as follows:

$$W = \frac{12S}{m^2(n^3 - n) - mI}$$

where, $S = \sum_{i=1}^n (R_i - \bar{R})^2$

R_i = Rank Total by different raters for an object

\bar{R} = Average of rank total

n = number of object (schemes)

m = number of variables (methods)

$$T = \text{correction factors for tied ranks} = \sum_{k=1}^G (t_k^3 - t_k)$$

t_k = number of tied rank

G = group of ties.

For test of significance for the value of 'w' as per Kendal coefficient of Concordance, the value of Chi square will be calculated by the following formula.

$$\chi^2 = m(n-1)w$$

When the table value of the χ^2 is more than the calculated value, the null hypothesis will be accepted and when the calculated value will be more than the table value, the null hypothesis will be rejected.

Table 4: Comparison of Performance evaluation model using Kendall's Coefficient of Concordance

Name	Sharpe		Treynor		Jensen		Ri	S	
	Index	Rank	Index	Rank	Index	Rank			
UTI Equity Fund (G)	0.461	3	17.782	5	1.544	6	14	1056.250	
UTI Balanced Fund (G)	0.419	7	15.654	7	-0.437	13	27	380.250	
UTI Nifty Index Fund (G)	0.422	5	15.481	9	-0.759	15	29	306.250	
UTI Bond Fund (G)	0.004	28	-0.229	27	1.629	5	60	182.250	
UTI Energy Fund (G)	0.262	18	10.656	16	-6.385	22	56	90.250	
UTI MNC Fund (G)	0.598	1	24.003	1	6.594	1	3	1892.250	
UTI Top 100 Fund (G)	0.459	4	17.793	4	1.678	4	12	1190.250	
UTI Equity Tax savings (G)	0.373	10	14.286	11	-1.963	16	37	90.250	
UTI CCP Advantage Fund (G)	0.104	27	5.945	24	-4.058	19	70	552.250	
UTI Pharma & Healthcare Fund (G)	0.535	2	23.781	2	4.439	2	6	1640.250	
UTI Mastershare (G)	0.341	12	9.257	18	-8.665	27	57	110.250	
UTI Banking Sector Fund (G)	0.373	9	15.649	8	-0.603	14	31	240.250	
UTI Infrastructure Fund (G)	0.295	15	11.716	15	-5.028	20	50	12.250	
UTI Transport & Logistics (G)	0.418	8	20.349	3	4.280	3	14	1056.250	
UTI Mid Cap Fund (G)	0.422	6	17.485	6	1.524	7	19	756.250	
UTI Dividend Yield Fund (G)	0.313	14	12.629	13	-3.524	18	45	2.250	
UTI Opportunity Fund (G)	0.317	13	13.017	12	-3.277	17	42	20.250	
UTI Leadership Equity Fund (G)	0.176	22	7.014	20	-8.578	26	68	462.250	
UTI India Lifestyle Fund (G)	0.125	24	4.981	25	-9.421	29	78	992.250	
UTI Money Market Fund (G)	0.199	19	10.252	17	-0.173	12	48	2.250	
UTI Smart Woman Savings Plan (G)	-0.169	30	-14.301	29	-7.844	24	83	1332.250	
UTI Treasury Advantage Fund (G)	0.362	11	-49.038	30	0.770	8	49	6.250	
UTI Master Plus Unit Scheme (G)	0.140	23	6.536	23	-8.490	25	71	600.250	
UTI Master Value Fund(G)	0.275	17	12.069	14	-5.379	21	52	30.250	
UTI Bluechip Flexicap Fund (G)	0.178	21	6.951	22	-8.964	28	71	600.250	
UTI Contra Fund (G)	0.107	26	4.782	26	-10.652	30	82	1260.250	
UTI Super Fund (G)	0.284	16	14.342	10	-0.063	11	37	90.250	
UTI Liquid Fund Cash Plan (G)	0.112	25	-7.506	28	0.552	10	63	272.250	
UTI G- Sector Fund STP (G)	-0.138	29	6.972	21	0.647	9	59	156.250	
UTI Service Industries Fund (G)	0.183	20	8.518	19	-7.840	23	62	240.250	
Spearman's Coefficient of Correlation:								1395	15623.5
Ranking between Sharpe and Treynor's Model =0.86874									
Ranking between Treynor and Jensen's Model = 0.55239									
Ranking between Sharpe and Jensen's Model =0.55461									

Test Statistics	
n	30
m	3
Kendall's 'W'	0.7724
Chi Square	67.1988
Degree of freedom	29
Level of Significance	0.001

Table-4 shows that the rank correlation (as per Spearman's Coefficient of Correlation) between pairs of evaluation & measures are more than 0.5. Therefore there are positive relationships between ranks calculated by the three measures proposed by William Sharpe, J. Treynor and Jensen. The value of coefficient between Sharpe and Treynor is highest (0.86874) and the same is lowest (0.55239) for Treynor and Jensen Model. The value of Kendall's 'w' is 0.7722 which shows there is considerable level of association among all the three measures used for evaluating performance of different schemes of UTI MF.

Testing the significance in the relationship using the Kendall's Coefficient of Concordance (W) provides the calculated value of Chi square is 67.1988 which is greater than the table value of 49.588 at 0.001 level of significance with 29 degree of freedom. Hence null hypothesis is rejected and hence it is inferred that the ranking provided by the methods reveals the same standard in evaluating the performance of different UTI MF schemes.

Therefore, it may be concluded that, there is a significant agreement among the ranking derived from three measures. The lowest value in rank total (Ri) is 3 corresponding to UTI MNC (G) Fund. So the UTI MNC Fund scheme is the topper of the selected fund covered under this study on the basis of performance after adjusting the market risk involved.

Result and Analysis

The Mutual Fund Sector had undergone a lot of structural changes in the regulatory environment during this period. Several financial houses had entered and lots of schemes came into the market. The growth in mobilization of fund is noticeable during this period in spite of massive recession in stock market during 2008-09. The Asset under Management (AUM) of UTI MF was Rs. 1959 crores during the 2003 which was increased to Rs. 106129 crores by the end of 2015. The same was Rs. 140093 crores and Rs. 1340798 crores respectively for the MF industry as a whole. The growth during these thirteen years period in AUM was 457% for UTI MF in comparison to the growth of 857% of the MF Industry of India as a whole. However, the outcomes of risk-return analysis of the thirty selected growth schemes for the study period 2003 to 2015 are as follows:

Average annual return computed on the basis of change Sensex points showed that the market return was 23.62%. The same was compared with the average annual change in NAV of the selected scheme which showed that only five schemes out of the thirty studied had higher return than the market. UTI Mid Cap fund topped the list with 28.77% of return followed by UTI Transport & Logistics Fund with 28.57% of return. However all of the schemes except UTI Smart woman savings plan (3.71%) and UTI G sector Fund STP (6.89%) showed higher return than the average return from fixed deposits from nationalized bank which was 7.38% on average during the period of study.

Most of the Schemes showed positive risk premium under Sharpe and Treynor's measure. For those schemes, Sharpe Index, Treynor index indicate that the sample schemes return are sufficient to cover the risk free return and the inherent risk of the respective scheme. UTI MNC Fund, UTI Pharma and Healthcare Fund, UTI Equity Fund and UTI Top 100 Fund outperformed the market on overall basis according to the result of the Sharpe index. Among them, UTI Equity Fund scheme outperformed the market under all the measures.

Seven schemes out of the thirty schemes studied, outperformed the market on the basis of Treynor index. The schemes are UTI Equity Fund, UTI MNC Fund, UTI Top 100 Fund, UTI Pharma & Healthcare Fund, UTI Transport & Logistics and UTI Mid Cap Fund. UTI Equity Fund showed the highest value of Treynor Index (17.78) in comparison to that of Sensex (16.24).

There are Ten Funds which showed positive Jensen Alpha which implies that these schemes gave positive amount of risk adjusted return above market index. UTI MNC Fund showed the highest alpha value of 6.59 and UTI Contra Fund showed the lowest alpha value of -10.65. The positive beta () value for all the schemes (except four out of thirty schemes studied) revealed that the performance of the sample schemes of UTI MF and that of the market were in same direction except UTI Bond Fund, UTI Money Market Fund, UTI Treasury Advantage Fund and UTI G Sector STP Fund. The beta value is more than 1 (one) in case of UTI Equity Fund, UTI Nifty Index Fund, UTI Energy Fund, UTI Top 100 Fund, UTI Equity Tax savings Fund, UTI Mastershare Fund, UTI Banking Sector Fund, UTI Infrastructure Fund, UTI Transport & Logistics, UTI Mid Cap Fund, UTI Opportunity Fund, UTI Master Value Fund and UTI Service Industries Fund which shows their aggressive nature in comparison to the market index. Whereas the beta value of others schemes which are less than 1 (one) indicate that they are defensive in nature compared to the market.

Spearman's coefficient of correlation value was highest (0.86874) between Sharpe and Treynor's Model and the same was lowest (0.55239) between Treynor and Jensen's Model.

The value of Kendall's 'w' is 0.7724 which showed that there exist a significant agreement among the ranking on the basis of performance measures proposed by Sharpe, Treynor and Jensen. A test of significance has been done to test the significance of the value of Kendall's 'w'. The calculated value of chi square is 67.1988 which is greater than the table value of 49.588 at 0.001 level of significance with 29 degree of freedom. Therefore the null hypothesis was rejected and the alternative hypothesis was accepted which inferred that the ranking provided by the methods reveals the same standard in evaluating the performance of different UTI MF schemes. So, the significance test of chi square also supports that there is no significant difference among the three performance measures proposed by Sharpe, Treynor and Jensen.

Concluding Thought

UTI MF growth schemes showed good progress in terms of growth in Average AUM of 457% during the thirteen of study period. However the share of the AUM by UTI in the total MF industry of India has reduced to 7.92% in 2015 from 13.6% in 2003. A good numbers of growth schemes were launched by UTI during this period. The most important factor for any Mutual Fund is how it is outperforming the market during both rising and falling market condition. Only UTI MNC Fund, UTI Equity Fund, UTI Top100 Fund and UTI Pharma and Healthcare Fund outperformed the market in terms of absolute return as well as other performance measures. UTI Mid Cap Fund showed the highest value in average annual return, UTI MNC Fund showed the highest return in terms of absolute return, Sharpe Index, Treynor's Index and Jensen's alpha. Sharpe, Treynor and Jensen's performance measure were significantly same in terms of ranking the schemes

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