Private Sector V/Spublic Sector Mutualfunds (Performance Study of Mutual Fund Industry in India)

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Abstract: *The Main **Objective** of this paper is to find out **whether Private sector mutual funds are performing better and providing better results to investors in comparison to public sector mutual funds in India** or it is the other way round. The issue of earning profits while investing in the share market via Mutual Funds is gaining currency now a days, in the general mind set of investors and even in the mind of the common man but the key is," which fund to invest?".*

Hypothesis: Null Hypothesis: H0: *There is no significant difference in the performance of Public sector Mutual Funds and Private sector Mutual Funds in India. ($\mu_1 = \mu_2$)*

Alternative Hypothesis: H1: *H0 is falls. ($\mu_1 \neq \mu_2$)*

Methodology: *Authors first, took a stock of ground realities of same kind of Ten products (which are investing in share markets via MFs and of same nature) of ten different MF companies, Public and Private sector both; collected the data available of the yield of these products and then compared the yield of these products with the help of **T- test and variance** to examine the Null Hypothesis.*

About the products:

After taking in to account ten products of ten different companies, authors collected the information regarding these products as well as these companies also.

Findings: *On the basis of their average returns (NAV) and variances the researchers applied student's T- test on the available data of Private and Public sector MF companies of last five years. The result shows that the calculated value of student's-T is 1.95 and the tabulated value is 1.86 at 08 degrees of freedom. The difference is significant. Next, the researchers also calculated the variation among the variance values of Private sector as well as the Public sector MFs. On looking to these values, it is observed that the variance (s_2^2) i.e. 190 is more than the (s_1^2) i.e. 31.51.*

Conclusion: *We can conclude with the help of empirical data that the Private sector Mutual Fund Companies have shown very impressive growth in comparison to Public sector Mutual Fund companies **and with the calculated "t" statistic result we can say that the private sector mutual funds have performed better and given good results with better NAV to the investors.***

Key Words Used In The Paper: *Mutual Funds, Private Sector, Public Sector Performance (Nav), Variance, Significant Difference.*

I. Introduction

Since its inception in 1960s in India the Mutual fund Industry has grown leaps and bounds**.** The performance of Mutual Funds in India is discussed here from the day the concept of mutual fund took birth in India. The year was 1963. Unit Trust of India invited investors or rather to those who believed in savings, to park their money in UTI Mutual Fund. For 30 years it goaled without a single second player though the 1988 year saw some new mutual fund companies, but UTI remained in a Monopoly position. The performance of mutual funds in India, in the initial phase, was not even closer to satisfactory level. People rarely understood, and of course investing was out of question. But yes, some 24 million shareholders were accustomed with guaranteed high returns by the beginning of liberalization of the industry in 1992. This good record of UTI became marketing tool for new entrants. The expectations of investors touched the sky in profitability factor. However, people were miles away from the preparedness of risks factor after the liberalization.

Financial Performance:

Major Indicator of Financial Performance of Mutual Funds is Assets under Management. The Assets under Management of UTI was Rs. 67bn.or Rs 67 Cr by the end of 1987. From Rs. 67bn. the Assets under Management rose to Rs. 470 bn. or Rs 470 Cr. in March 1993 and the figure had a three times higher performance by April 2004. It rose as high as Rs. 1,540bn or Rs 1,540Cr. The assets under management (AUM) of all the mutual funds increased to Rs.6,13,979 Cr. at the end of March 31, 2010 from Rs.4,17,300 Cr. a year ago.

1.1.1 Performance and Growth of Mutual fund Industry in India:

UTI was floated by financial institutions and is governed by a special act of Parliament. Most of its investors believe that the UTI is government owned and controlled, which, while legally incorrect, is true for all practical purposes. The Indian mutual fund industry is dominated by the Unit Trust of India, which has a total corpus of Rs700bn collected from more than 20 million investors. The UTI has many funds/schemes in all categories i.e. equity, balanced, income etc with some being open-ended and some being closed-ended. The Unit Scheme 1964 commonly referred to as US 64, which is a balanced fund, is the biggest scheme with a corpus of about Rs200bn.

The second largest category of mutual funds is the ones **floated by nationalized banks.** Canbank Asset Management floated by Canara Bank and SBI Funds Management floated by the State Bank of India are the largest of these. GIC AMC floated by General Insurance Corporation and Jeevan Bima Sahayog and another AMC floated by the LIC are some of the other prominent ones. The aggregate corpus of funds managed by this category of AMCs is about Rs150bn.

The third largest category of mutual funds is the ones floated by **the private sector and by foreign asset management companies.** The largest of these are Prudential ICICI AMC and Birla Sun Life AMC. The aggregate corpus of assets managed by this category of AMCs is in excess of Rs250bn After a battering performance in March, the mutual fund industry has registered a net inflow of Rs 1,54,192 Cr. during April , the highest net inflow in the last four years. Although equity markets staged a rally last month and generated 15 per cent returns, mutual funds registered maximum inflows in the debt category at Rs 1,03,055 Cr. The last time the industry registered such inflows was in August 2004, when there was a net inflow of Rs 1,55,686 Cr.During April 2009, funds moved out of exchange traded funds (both Equity and Gold), gilt, balanced and equity funds to income funds. "During 2008-09, especially after September, a lot of money was withdrawn from debt funds. Now, that the liquidity situation is normalised, money has again starting pouring in this category. With so much volatility in equities, debt funds have become the flavour of the season for mutual funds," said A. P. Kurian, chairman, Association of Mutual Funds in India (AMFI). The second most preferred category was liquid and money market funds, which registered a net inflow of 51,852 Cr. Next in line were equity linked saving schemes that managed a net inflow of Rs 90 Cr.

April 2009 was a fairly good month for the industry. The industry garnered more than Rs 5 lac Cr. assets under management. The AUM in March was Rs 4,93,286 Cr. and there was a net outflow of Rs 98,697 Cr. only.

The Net Asset Value (NAV) of mutual funds in India declined when stock prices started falling in the year 1992. Those days, the market regulations did not allow portfolio shifts into alternative investments. There were rather no choices apart from holding the cash or to further continue investing in shares. One more thing to be noted, since only closed-end funds were floated in the market, the investors disinvested by selling at a loss in the secondary market. The performance of mutual funds in India suffered rather qualitatively. The 1992 stock market scandal, the losses by disinvestments and of course the lack of transparent rules in the whereabouts, rocked confidence among the investors. Partly owing to a relatively weak stock market performance, mutual funds have not yet recovered, with funds trading at an average discount of 10 to 20 percent of their Net Asset Value.

The supervisory authority adopted a set of measures to create a transparent and competitive environment in Mutual Funds. Some of them were like relaxing investment restrictions into the market, introduction of open-ended funds, and paving the gateway for mutual funds to launch pension schemes. The measure was taken to make mutual funds, the key instrument for long-term saving. The more the variety offered, the quantitative will be investors.

At last to mention, as long as mutual fund companies are performing with lower risks and higher profitability within a short span of time, more and more people will be inclined to invest until and unless they are fully educated with the dos and don'ts of mutual funds.

II.   Performance Evaluation: Tools Of Analyais Of Selected Mutual Funds
(Methodology of Research)

The present research study is mainly based on secondary data and information. The researcher has collected the data and research material directly from the mutual funds organizations in the form of their annual reports, monographs and many other publications of the mutual funds companies as well as data from CMIE. The statistical information relating to mutual funds is also procured from the Reserve Bank of India - Monthly Bulletin, its Annual Reports and other Publications. The University Library and other Libraries have been visited to get requisite research material on the subjects. Particularly, the libraries of Delhi School of Economics, and the planning Commission (Govt. of India) at Delhi have been visited by the researcher to refer the published literature, doctoral theses, projects reports, research journals etc. to get the relevant literature. Thus, from various official sources adequate research material has been procured. On the basis of the statistical

information and data so collected, a good number of master tables are prepared relating to the Mutual Fund companies their Progress, Present Position, Financial Performance, Capital/funds inflows/outflows, Profitability etc. and their analysis and interpretations are scientifically made with the help of the appropriate statistical tools. The analysis of data and literature is made in such a manner so that some concrete findings and observations relating to the assessment of growth, pattern and trends of development of Mutual Fund industry, is properly made and some important and specific conclusions are brought forth relating to the products and profitability of Mutual Funds after comparative analysis.

To compare the Consistency and significance of Private and Public Sector Companies the researcher used the Student's T-test.

Significance Testing Techniques and Student's T- test

Whenever, one test the Hypothesis, a certain suitable test is applied on collected data. First, these tests are designed neither to prove nor disprove hypotheses. One never set out to prove anything; the aim is to show that an idea is untenable as it leads to an unsatisfactorily small probability. Secondly, the hypothesis anyone trying to disprove is always chosen to be the one in which there is no change; for example there is no significant difference between the two population means, between the two samples, etc. This is why it is usually referred to as the Null hypothesis, H_0. To describe the process of Hypothesis testing one cannot do better than follow the five step method introduced by Neave (1967):

Formulate the practical problem

in terms of hypothesis. This can be difficult in some cases. One should first concentrate on what is called the alternative hypothesis, H1 since this is the more important from the practical point of view. This should express the range of situation what one wishes the test to be able to diagnose. In this sense, a positive test can indicate that one should take action of some kind. In fact, a better name for the alternative hypothesis would be the Action Hypothesis. Once this is fixed, it should be obvious whether one should carry out a one or two-tailed test. The null hypothesis need to be very simple and should represent the status quo, i.e. there is no difference between the processes being tested. It is basically standard or control with which the abidance pointing to the alternative can be compared.

Calculate statistic (T):

It is a function purely of data. All good test statistic should have two properties: (a) They should tend to behave differently when H_0 is true from when H_1 is true; and (b) their probability distribution should be calculable under the assumption that H_0 is true. It is also desirable that tables of this probability distribution should exit.

Choose a critical region:

One must be able to decide on the kind of values of T which will most strongly point to H_1 being true rather than H_0 being true. Critical regions can be of three types: right-sided, so that one rejects H_0 if the test statistic is greater than or equal to some (right) critical value; left-sided, so that one rejects h_0 if the test statistic is less than or equal to some (left) critical value; both-sided, so that one rejects H_0 if the test statistic is either greater than or equal to the right critical value or less than or equal to the left critical value. A value of T lying in a suitably defined critical region will lead to reject H_0 in favor of H_1; if T lies outside the critical region one cannot reject H_0 and should never conclude by accepting H_0.

Decide the size of the critical region.

This involves specifying how great a risk one is prepared to run of coming to an **incorrect conclusion**. It is defined the significance level or size of the, test which one denote by ά, as the risk one is prepared to take in rejecting H_0 when it is in fact true. This is referred as an error of the first type or a Type I error. Usually ά is set to be between 1 and 10 percent depending on the severity of the consequences of making such an error.

One is also contend with the possibility of not rejecting H_0 when it is in fact false and H_1 is true. This is an error of the second type or Type II error, and the probability of this occurring is denoted by β.

Thus in testing any statistical hypothesis, there are **Four possible situations** which determine whether the decision is correct or in error. These situations are illustrated as follows:

<div align="center">

Situation

</div>

		H_0 is true	H_0 is false
Conclusion	H_0 is not rejected	Correct decision	Type II error
	H_0 is rejected	Type I error	Correct decision

Many textbooks stop after step 4, but it is instructive to consider just where in the critical region the calculated value of T lies. If it lays close to the boundary of the critical region one may say that there is some evidence that H_0 should be rejected, whereas if it is at other and of region one would conclude that there was considerable evidence. In other words, the actual significations level of T can provide useful information beyond the fact that T lies in the critical region. The **Student's T- test** is applied for the two populations when (sample) Mean and (sample) Variance is unknown.

$$t = \frac{(\overline{x}_1 - \overline{x}_2) - (\mu 1 - \mu 2)}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}}$$

Where,

n_1 = frequency of x_1
n_2 = frequency of x_2
y= Degrees of freedom i.e.
$$y = (n_1 + n_2) - 2$$

$$s_1^2 = \frac{\sum (\overline{x}_1 - \overline{x}_2)^2}{n_2 - 1}$$

$$s_1^2 = \frac{\sum (\overline{x}_1 - \overline{x}_2)^2}{n_2 - 1}$$

III.   Company Wise Comparative Analysis

The profiles of the selected Asset management Companies will be covered in this comparative analysis under following headings. (The researcher has taken utmost care in collecting and producing the data related to these companies, where ever is available.) For the purpose of the study the candidate has collected the data of

Five Private and Five public sector AM companies.
The **Private Sector** Asset Management Companies are:
1. Kotak Mahindra Asset Management Company Ltd.
2. Reliance Capital Asset Management Company Ltd.
3. Tata Asset Management Company Ltd.
4. HDFC Asset Management Company Ltd.
5. ICICI Prudential Asset Management Company Ltd.

The **Public Sector** Asset Management Companies are:
6. Canara Roboco Asset Management Company Ltd.
7. UTI Asset management Company Ltd.
8. SBI Funds Management Ltd.
9. LICMF asset Management Company Ltd.
10. Principal P N B Asset Mgmt. Company Private Ltd. (IDBI)

Table 1.3 Present Position of the Selected MF Companies (31 Dec 2010)

	Name of the MF	Total income year 2010 Rs cr.	Total AAuM year 2010 Rs Cr.
1	KM	176.00	027565
2	RMF	654.25	102066
3	TMF	124.00	020855
4	HDFC	624.00	087883
5	ICICI	467.00	065841
6	CR	038.47	007392
7	UTI	486.00	065387
8	SBI	216.30	041498
9	LIC	195.11	042304
10	1DBI	039.00	002032

Source: CMIE Data
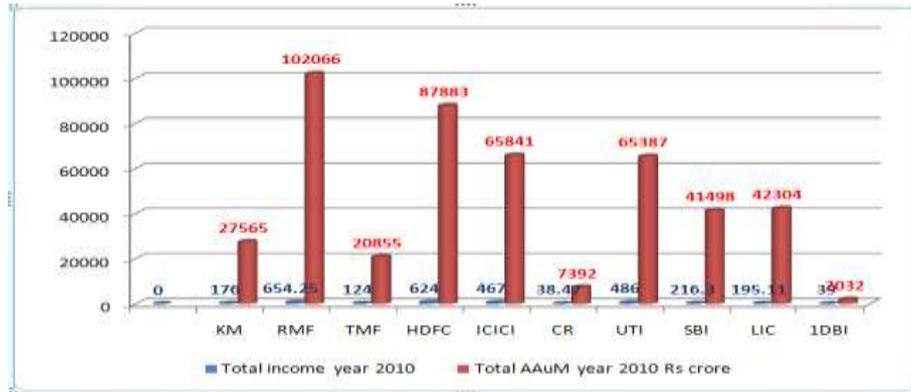
Diagram 1.3 Present Position of the MF Companies

IV.   Critical Appraisal Of Performance Of Mutual Funds

Hypothesis:

The following hypothesis has been set for the research study, which is to be tested on the basis of detailed analysis**:**

1) The private sector Mutual Funds Companies has shown **very impressive growth in comparison to public sector Mutual Funds organizations** and they have captured lion share in the total resources mobilized by the Mutual Fund Industry in India.

The researcher earlier dealt with the performance of companies with the help of Profitability, and Liquidity tools. For the purpose of testing the Hypothesis with students-T statistic the researcher choose five AMCs from Private sector and five AMCs from Public sector at random. The AMCs are:

The Researcher has collected data for these AMCs products i.e. open ended growth schemes for last Five years for at least five MFs products each in Private as well as Public sector both.

Hypothesis:

The private sector Mutual Funds Companies has shown very impressive growth in comparison to public sector Mutual Funds organizations and they have captured lion share in the total resources mobilized by the Mutual Fund Industry in India

To verify **Hypothesis** the researcher set up the Null Hypothesis like this:

Null Hypothesis (H0): $\mu1= \mu2$

There is no difference between the mean NAVs of public sector and private sector mutual funds.

Alternative Hypothesis (H1): $\mu1 \square \mu2$

$\mu1> \mu2$

$\mu1<\mu2$

We have calculated sample means for chosen companies.

Significance Testing

Here the researcher has applied he student's T test to test the Hypothesis.

Private sector

TABLE: 1.4 KOTAK MAHINDRA MUTUAL FUND PRODUCT   NAV

Fund Name	Option	Rs. Mar.-06 NAV	Rs. Mar.-07 NAV	Rs. Mar.-08 NAV	Rs. Mar.-09 NAV	Rs. Mar.-10 NAV
Kotak 30	Growth	59.46	64.99	85.53	55.41	94.69
Kotak Global India	Growth	24.15	25.67	26.92	13.76	19.28
Kotak Midcap	Growth	19.79	19.25	20.59	10.71	22.45
Kotak Tech	Growth	8.34	10.22	7.56	4.28	5.95
		139.5	**145.28**	**167.53**	**103.58**	**167.38**

Source: Center for Monitoring Indian Economy Pvt. Ltd. CMIE Products: 'Alpha' Monthly Reports and Publications, Mumbai, Year 2010

TABLE: 1.5 RELIANCE MUTUAL FUND PRODUCT NAV

Fund Name	Option	Rs. Mar.-06 NAV	Rs. Mar.-07 NAV	Rs. Mar.-08 NAV	Rs. Mar.-09 NAV
Reliance Diversified Power Sector Fund	Growth Plan	30.07	34.38	62.89	40.39
Reliance Equity Oppurtunities Fund	Growth	14.48	20.35	21.86	13.53
Reliance Diversified Power Sector Fund	Growth	-	-	-	-
Reliance growth Fund	Growth	-	11.04	13.28	9.29
		48.55	65.77	98.03	63.21

Source: Center for Monitoring Indian Economy Pvt. Ltd. CMIE Products: 'Alpha' Monthly Reports and Publications, Mumbai, Year 2010

TABLE: 1.6 TATA MUTUAL FUND PRODUCT NAV

Fund Name	Option	Rs. Mar.-06 NAV	Rs. Mar.-07 NAV	Rs. Mar.-08 NAV	Rs. Mar.-09 NAV	Rs. Mar.-10 NAV
Tata Equity Management Fund	Growth		10.64	11.09	7.59	13.5
Tata Equity Opportunities Fund	Growth	53.7	55.32	71.25	38.52	79.57
Tata Equity P/E Fund	Growth	22.89	24.13	32.99	21.05	43.9
Tata life Sciences and Technology Fund	Growth	40.72	46.77	40.59	28.9	64.55
Tata Mid Cap Fund	Growth	13.83	13.08	15.55	7.84	16.85
Tata Pure Equity Fund	Growth	55.31	58.75	73.6	49.05	91.53
Tata Select Equity Fund	Growth	42.94	45.03	56.41	29.12	60.71
Tata Tax saving Fund	Growth	41.27	40.17	45.38	27.52	42.69
		299.67	324.66	384.43	228.77	453.31

Source: Center for Monitoring Indian Economy Pvt. Ltd. CMIE Products: 'Alpha' Monthly Reports and Publications, Mumbai, Year 2010

TABLE: 1.7 HDFC MUTUAL FUND PRODUCT NAV

Fund Name	Option	Rs. Mar.-06 NAV	Rs. Mar.-07 NAV	Rs. Mar.-08 NAV	Rs. Mar.-09 NAV	Rs. Mar.-10 NAV
HDFC Balanced Fund	Growth	28.87	29.18	34.34	25.94	47.2
HDFC Capital Builder Fund	Growth	60.17	60.3	75.97	46.6	97.21
HDFC Core & Satellite Fund	Growth	23.82	23.94	27.37	15.91	35.79
HDFC Equity Fund	Growth	127.15	142.6	165.79	108.85	236.27
HDFC Growth Fund	Growth	41.24	45.46	62.15	38.73	74.51
HDFC Income Fund	Growth	16.12	16.55	18.06	20.07	21.46
HDFC Mid Cap Opportunities Fund	Growth			9.49	5.88	13.09
HDFC Prudence Fund	Growth	95.35	110.13	127.74	91.47	182.05
HDFC Sovereign Gift Fund	Growth					
		392.72	428.16	530.26	358.63	718.77

Source: Center for Monitoring Indian Economy Pvt. Ltd. CMIE Products: 'Alpha' Monthly Reports and Publications, Mumbai, Year 2010

TABLE: 1.8 ICICI MUTUAL FUND PRODUCT NAV

Fund Name	Option	Rs. Mar.-06 NAV	Rs. Mar.-07 NAV	Rs.Mar.-08 NAV	Rs. Mar.-09 NAV	Rs. Mar.-10 NAV
ICICI Prudential Emerging Star Fund	Growth	24.76	26.61	30.94	13.61	32.14
ICICI Prudential Mid Cap Fund	Growth	-	-	-	-	-
ICICI Prudential Nifty Junior Index Fund	Growth	-	-	-	-	-
CICI Prudential Value Fund	Growth	64.8	95.5	100.2	101.3	110.8
		89.56	132.55	143.36	120.35	155.96

Source: Center for Monitoring Indian Economy Pvt. Ltd. CMIE Products: 'Alpha' Monthly Reports and Publications, Mumbai, Year 2010

Public sector

TABLE: 1.9 CANARA ROBOCO MUTUAL FUND PRODUCT   NAV

Fund Name	Option	Rs. Mar.-06 NAV	Rs. Mar.-07 NAV	Rs. Mar.-08 NAV	Rs. Mar.-09 NAV	Rs. Mar.-10 NAV
Can D'Mat	Growth	22.24	18.89			
Canara Robeco Equity Diversified	Growth	29.66	28.6	36.66	23.7	49.69
Canara Robeco Equity Tax saver	Growth	20.17	15	15.76	10.85	23.33
Canara Robeco Expo	Growth	51.4	51.3	51.91	54.83	-
Canara Robeco Fortune' 94	Growth	31.52	30.77	36.86	39.11	-
Canara Robeco Infrastructure	Growth	13.09	12.87	18.85	10.99	21.36
Canara Robeco Nifty Index	Growth	18.55	20.55	25.28	16.1	27.67
		186.63	177.98	185.32	155.58	122.05

Source: Center for Monitoring Indian Economy Pvt. Ltd. CMIE Products: 'Alpha' Monthly Reports and Publications, Mumbai, Year 2010

TABLE: 1.10 UTI MUTUAL FUND PRODUCT   NAV

Fund Name	Option	Rs. Mar.-06 NAV	Rs. Mar.-07 NAV	Rs. Mar.-08 NAV	Rs. Mar.-09 NAV	Rs. Mar.-10 NAV
Grand master – 1993	Growth	23.63				
Primary Equity Fund	Growth	27.21				
UTI Dynamic Equity Fund	Growth	34.7	31.7	33.45		
UTI Equity Fund	Growth	32.12	30.7	38.22	26.47	48.35
UTI Growth & Value	Growth		53.95	56.69		
UTI Growth Sector Fund (Brand Value)	Growth	25.88	25.5	25.6		
UTI Growth Sector Fund (Petro)	Growth	18.84	24.77	14.62		
UTI Growth Sector Fund (Service Sector)	Growth	40.78	47	50.91	27.47	54.79
UTI Growth Sector Fund (Software)	Growth	20.5	27.04	18.26	17.12	
UTI Index Linked Plan	Growth	13.25				
UTI India Advantage Equity Fund	Growth	7.37	7.89	8.36		
UTI Large Cap Fund	Growth	18.28	18.87	18.94		
UTI PSU Fund	Growth	16.53	15.78	16.09		
Unit Scheme 2002	Growth	13.44	13.67			
		306.79	313.93	295.9	81.69	127.16

Source: Center for Monitoring Indian Economy Pvt. Ltd. CMIE Products: 'Alpha' Monthly Reports and Publications, Mumbai, Year 2010

TABLE: 1.11 SBI MUTUAL FUND PRODUCT   NAV

Fund Name	Option	Rs. Mar.-06 NAV	Rs. Mar.-07 NAV	Rs. Mar.-08 NAV	Rs. Mar.-09 NAV	Rs. Mar.-10 NAV
SBI Magnum Balanced Fund	Growth	31.44	33.84	40.67	28.73	48.46
SBI Magnum Comma Fund	Growth	14.15	14.37	20.65	12.76	24.24
SBI Magnum Contra Fund	Growth	32.26	35.55	45.65	29.67	55.74
SBI Magnum Equity Fund	Growth	27.84	26.61	33.05	20.49	39.77
SBI Magnum Gift Fund	Growth	16.35	17.25	18.21	19.01	18.7
SBI Magnum Index Fund	Growth	30.49	34.85	41.58	25.83	44.61
SBI Magnum Multiplier Pl	Growth	46.34	50.68	62.31	40.25	75.21
		214.59	226.22	276.92	189.46	329.26

Source: Center for Monitoring Indian Economy Pvt. Ltd. CMIE Products: 'Alpha' Monthly Reports and Publications, Mumbai, Year 2010

TABLE: 1.12 LIC MUTUAL FUND PRODUCT   NAV

Fund Name	Option	Rs. Mar.-06 NAV	Rs. Mar.-07 NAV	Rs. Mar.-08 NAV	Rs. Mar.-09 NAV	Rs. Mar.-10 NAV
LIC MF INDEX FUND	Sensex plan Growth	23.61	27.36	32.3	18.77	32.57
LIC MF EQUITY FUND	Growth	19.85	19.17	22.45	14.46	24.9
LIC MF GROWTH FUND	Growth	10.43	9.97	10.19	6.59	12.12
LIC MF INDEX FUND	Nifty plan Growth	21.99	23.4	27.75	17.25	28.92
LIC MF INDEX FUND	Sensex advantage plan Growth	25.19	26.78	28.02	17.45	30.69
		101.07	106.68	120.71	74.52	129.2

Source: Center for Monitoring Indian Economy Pvt. Ltd. CMIE Products: 'Alpha' Monthly Reports and Publications, Mumbai, Year 2010

TABLE: 1.13 IDBI MUTUAL FUND PRODUCT   NAV

Fund Name	Option	Rs. Mar.-06 NAV	Rs. Mar.-07 NAV	Rs. Mar.-08 NAV	Rs. Mar.-09 NAV	Rs. Mar.-10 NAV
Principal Balanced Fund	Growth	21.22	20.79	25.48	17.77	29.88
Principal Growth Fund	Growth	47.36	46.52	52.91	28.5	50.67
Principal Index Fund	Growth	25	27.38	33.38	20.9	35.82
Principal Monthly Income Plan	Growth	14.51	14.95	17.34	17.7	20.55
Principal tax saving Fund	Growth	72.41	72.75	90.12	40.97	73.44
		180.5	182.39	219.23	125.84	210.36

Source: Center for Monitoring Indian Economy Pvt. Ltd. CMIE Products: 'Alpha' Monthly Reports and Publications, Mumbai, Year 2010

V.   Calculations:

We choose the **Student's T- test** for the two populations when (sample) mean and (sample) Variance is unknown.

$$ t= \frac{(\overline{x_1}-\overline{x_2})-(\mu 1-\mu 2)}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}} $$

Where,

n_1= frequency of x_1
n_2= frequency of x_2
y= Degrees of freedom i.e.
   y= (n_1+n_2)--2

$$ s_1^2 = \frac{\sum (x_1-\overline{x_1})^2}{n_2 -1} $$
$$ s_2^2 = \frac{\sum (x_2-\overline{x_2})^2}{n_2 -1} $$

Table 1.14 PUBLIC SECTOR AMCs

	Company Name	x_1	$(x_1-\overline{x_1})$	$(x_1-\overline{x_1})^2$
1	Canara roboco	27.88	(28.86-27.88)=0.98	0.98^2=0.96
2	UTI	27.55	(28.86-27.55)=1.31	1.31^2=1.71
3	SBI	30.90	(28.86-30.90)=2.04	2.04^2=4.16
4	LIC	21.28	(21.86-21.28)=7.58	7.58^2=57.45
5	IDBI	36.72	(28.86-36.72)=7.86	7.86^2=61.77
	Total	144.33		126.05

$\overline{x_1}$ = $\frac{144.33}{5}$ =28.86

where,   N1 = 5

$$ S_1^2 = \frac{\sum (x- \underline{x_1})^2}{n_1 -1} = \frac{126.05}{5-1=4} = \frac{126.05}{4} = 31.51 $$

$S_1 = (31.51)^{1/2} = 5.61$

Table 1.15 PRIVATE SECTOR AMCs

	Company Name	x_2	$(x_2 - \bar{x}_2)$	$(x_2 - \bar{x}_2)^2$
1	KOTAK	28.92	(28.92-41.31)=12.39	153.5
2	RELIANCE	24.98	(24.98-41.31)=16.33	266
3	TATA	39.71	(39.71-41.31)=1.6	2.56
4	HDFC	59.17	(59.17-41.31)=17.86	318.9
5	ICICI	45.8	(45.8-41.31)=4.49	20.16
	Total	206.58		761

$$\bar{X}_2 = \frac{206.58}{5} = 41.31$$

$$S_2^2 = \frac{\sum (x - x_2)^2}{n_2 - 1} = \frac{761}{5} = 190$$

$N_2 = 5$

$$S_2 = (190)^{1/2} = 13.79$$

$$t = \frac{(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)}{\left(\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}\right)^{1/2}}$$

Where,

$n_1 = 5$, $n_2 = 5$, $V = (n_1 + n_2) - 2$ $= 10 - 2$ $V = 8$ $(\mu_1 - \mu_2) = 0$	$\bar{X}_1 = 28.86$ $\bar{X}_2 = 41.31$

$$t = \frac{(28.86 - 41.31) - (\mu_1 - \mu_2)}{\left(\frac{31.51}{5} + \frac{190}{5}\right)^{1/2}}$$

$$t = \frac{13.01}{(6.3+38)^{1/2}} = \frac{13.01}{(44.3)^{1/2}} \frac{13.01}{06.65} = \frac{13.01}{} = 1.95$$

t = 1.95

t % for 8 degrees of freedom=1.86 tabulated value
t 5% for 8 degrees of freedom=1.95 calculated value

VI.   Conclusion:

For comparing the Private and public sector companies on the basis of their average returns (NAV) and variances the candidate applied student's t- test on the available data of last five years. The result shows that the calculated value of student's-t is 1.95 and the tabulated value is 1.86 at 08 degrees of freedom. The difference is significant. The average value of returns for Private Sector is greater than the average value of returns for Public sector. Hence we conclude that the average performance of Pvt. Sector is better. Next, the candidate also calculated the variation among the variance values of private sector as well as the public sector. On looking to these values, it is observed that the variance (s_2^2) i.e. 190 is more than the (s_1^2) i.e. 31.51. Hence, Null Hypothesis is rejected and we conclude that the private sector Mutual Funds Companies has shown very impressive growth in comparison to public sector Mutual Funds organizations and that the private sector mutual funds have performed better and given good results with better NAV to the investors.

So, we can conclude with the help of empirical data that the private sector Mutual Fund Companies have shown very impressive growth in comparison to public sector Mutual Fund companies *and with the calculated "t" statistic result we can say that the private sector mutual funds have performed better and given good results with better NAV to the investors and due to their better performance, private sector MFs have captured lion's share in the total resources mobilized by the Mutual Fund Industry in India. The private sector Mutual Funds Companies has shown very impressive growth in comparison to public sector Mutual Funds organizations.*

Footnotes:
1Source: SEBI Annual Report 2009-2010
2 Source: AMFI data
3Source: Thinktank,   The Financial Express September1999
4Source: www.easy mf.com
5Source: Center for Monitoring Indian Economy Pvt. Ltd. CMIE Products: 'Alpha' Monthly Reports
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