



Performance Evaluation of ELSS Mutual Funds in India: A Characteristic Based Approach

Shaini Naveen¹, Dr. T. Mallikarjunappa²

¹Research Scholar, Department of Business Administration, Mangalore University, Mangalagangothri-574199, [Email-shaininaveen@gmail.com](mailto:shaininaveen@gmail.com)

²Professor and Head, Department of Commerce & International Business, School of Business Studies, Central University of Kerala, Kasaragod- 671320, Kerala, India.

ABSTRACT

Key Words:

Performance, age, ELSS, cash holdings, lagged returns.

As the mutual fund industry has grown intensely over the past decades, numerous questions have arisen about the nature of operations and the fund characteristics affecting their performance. With the growing popularity and trend of investment in a mutual fund, investors need to know the fund attributes affecting their performance before making investment decisions. The performance evaluation process helps investors know more about the funds and their performance. This research paper generates knowledge of the Indian mutual fund industry with the characteristics-based framework. It attempts to study the performance evaluation of equity-linked savings schemes (ELSS) under equity funds against NIFTY 50 as the benchmark. The funds' daily returns and index returns are collected for all the 39 open-ended ELSS mutual funds listed on AMFI for the years 2010-2020. The study benefits fund managers and investors by highlighting the significance of characteristics influencing the fund performance. The study employs pooled time-series and cross-sectional regression analysis to investigate the relationship between a fund's risk-adjusted return and specific fund attributes. It focuses on various fund attributes such as fund size, expense ratio, age, turnover, and liquidity. The robustness of the results is checked under residual diagnostics. Results show the importance of performance persistence in the ELSS mutual funds.

JEL Classification : G11

1. Introduction

Over the past decades, the mutual fund industry has seen immense growth and has become a significant player in the Indian capital market. The fund managers professionally managed and mobilize the savings of the small investors by investing in pool of securities which includes shares, debentures, bonds and commodities in the market according to fund's objective. They are mainly advantageous to the small investors as their money is invested in a diversified pool of securities, and the income is distributed to them according to the number of units owned by them.

Equity linked saving scheme is an open ended equity

diversified fund and it provides tax benefit to investors under section 80 C of the Income Tax Act, 1961. The ELSS funds are available in large numbers, and the investors face a challenge in selecting best ELSS funds to suit their needs.

Performance of mutual funds was examined by comparing risk-adjusted returns of funds with the indices chosen as benchmark (Jensen, 1964; Shawky, 1982; Bogle, 1991; Ippolito, 1992; Pushner et al., 1999; George, 2001). The poor fund performance tend to make fund managers shift to other benchmark which leads to difficulty in assessment of fund performance. The investment decisions are clouded for investors as fund evaluati-



-on is at risk of moving to benchmark which may give better performance (Lehman and Modest, 1987). Many studies show persistence in fund performance (Grinblatt and Titman (1992), Hendricks, Patel, and Zeckhauser (1993), and Goetzmann and Ibbotson (1994)). They have shown that portfolio managers have consistently outperformed the market. But the persistence may be due to survival bias or benchmark errors (Brown et al., (1992), Malkiel (1995), Wermers (1997), and Carhart (1997)).

However few studies have also showed that mutual funds in general indicates underperformance against the market. The fund returns are also evaluated with its selected attributes to examine management effectiveness (Ippolito, 1992; Tan et al., 1997; Joseph, 2004). The usual attributes chosen for study are fund size, expenses and turnover ratio which had shown their strong influence over fund returns. Hence, looking at the industry potential and the need of the individual investors, the relationship of fund returns with the selected attributes in India is assessed. The study has examined whether the fund characteristics which have affected the fund performance in foreign context has shown the similar results in Indian context also. However, there are changes in the output which has changed the results.

2. Literature Review

Many researchers have empirically examined the performance of mutual funds by evaluating them against various attributes (Soderlind et al., 2000; Gallagher, 2003; Korkeamaki and Smythe, 2004). Robert (1988) have examined US funds based on quartiles and indicated that the funds which are in smaller in size have achieved superior performance compared to other quartiles. Gorman (1991) also concluded that smaller mutual funds performed better than large funds which are measured based on funds' net assets. Mutual funds are found to adapt quickly to economies of scale and lead to lower

returns. The results are consistent with previous studies showing better performance for funds which are smaller in size. (Soderlind *et al.*, 2000; Becker and Vaughan, 2001; Chen *et al.*, 2004).

The persistence of performance is an area of interest for most of the investors. The efficient market hypothesis suggests that it is impossible for the fund managers to beat the market and consistently generate positive returns. In this context, Brown (1995) examined the US funds and resulted with the annual fund returns being serially correlated over time which ruled out the theory. The performance of funds are further examined for persistence based on their returns for the holding period Brown *et al.*, (1992), Grinblatt and Titman (1992), Hendricks, et al., (1993), and Goetzmann and Ibbotson (1994), Malkiel (1995), and Carhart (1997). The funds tend to attract investors based on fund's past performance (Jain and Wu, 2000). Thus, past performance is used as an important attribute by many researchers for determining fund returns in future.

Mutual fund performance studies have highlighted the importance of expenses and transaction costs. The results showed that actively managed funds fail to boost returns after adjusting their expenses. Wermers (2000) examined US funds from 1975 to 1994, and found outperformance on an average but after considering the trading costs, the returns turned negative. Livingston and O'Neal (1998) have stressed the significance of expenses while evaluating the open-ended mutual funds. Elton et al. (1993) examined the returns of US equity funds and found that expense ratio has reduced the performance of equity funds. Droms and Walker (1995) using a pooled time series/cross-sectional regression model, examined international mutual funds to analyse whether the attributes such as expense ratios, asset size, load and turnover rate are related to risk-adjusted returns. Results found no performance difference between load and no-load funds during the study. McLeod and Mathotr (1995)



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examined 12B-1, a form of expense which is included by fund managers in higher returns. Korkeamaki and Smythe (2004) also examined bank-managed funds and found that highly charged investment avenues do not assure higher risk adjusted returns. Previous studies provide evidence of negative relationship between fund return and their expenses.

The higher turnover represents active management strategy which are chosen by the fund managers to achieve their goals. But passive management style represents fund that replicate the indices. The performance of actively managed funds is related to the level of turnover to study its effect on returns. Jensen (1968), Malkiel (1995), Carhart (1997) empirically examined US funds and found that fund returns are negatively related to its turnover. Babalos et al. (2007, 2008) documented the evidence of weak or no patterns in the risk adjusted performance of funds. However, Goetzmann and Ibbotson (1994), Gruber (1996), Cremers and Petajisto (2010), Soderlind et al. (2000) and Wermers et al. (2000) investigated and found that turnover is positively related to their returns. Glenn (2004) analysed the turnover for open ended funds are less as more assets are kept in the form of cash, which result in lower returns.

Fund's age also acts as an important attribute to determine fund performance. Rao (1996) did not find any significant relationship with age for 964 US mutual funds. But Sawicki and Finn (2002) investigated a sample of 55 Australian funds and confirmed the effect of age on fund-flows towards performance. Edwards and Caglayan (2001) found positive and significant relationship between fund age and performance whereas, Ackermann, McEnally and Ravenscraft (1999) had reported positive but statistically insignificant relationship between fund age and performance.

Ramasamy *et al.* (2003) investigated various attributes such as consistent past performance, fund

size and transaction costs which play a significant role in the selection of mutual funds in Malaysia. Agarwal, Daniel, and Naik (2004) empirically examined the relationship of fund flows, size, incentives and restriction periods with performance and found that size and money flows are negatively related to future performance. Chen et al. (2004), Bris (2007), Kacperczyk and Seru (2007), Yan et al. (2008) and Pollet and Wilson (2008) also found evidence of negative effect of fund size on fund performance. The negative size effect on future performance is found stronger for funds which hold less liquid stocks (Yan et al., 2008). Pastor, Stambaugh and Taylor (2015) examined the affect of fund size on performance using a panel data approach (1993-2011) and found that performance deteriorates with fund size. Further, they investigated that performance are positively related to turnover and it is strongest for small funds and funds with high expense ratios.

The present study attempts to evaluate the performance of open-ended ELSS mutual funds in India based on various attributes such as size, age and fund flows. The fund manager's effectiveness will be evaluated by investigating the relationship of mutual fund returns with fund size, expenses, age, portfolio turnover and liquidity which is an area to be focussed especially in India.

Future research could focus on extending the proposed methodology towards subsets of equity funds formed on the basis of style or even for different types of funds such as balanced or bond funds.

3. Objectives

1. Primary Objective

The paper intends to study the relationship of the ELSS fund returns and the six attributes or the fund characteristics.

2. Secondary Objective

The paper tries to examine the performance of ELSS



funds in India.

4. Data and Methodology

The daily sample data is collected for thirty-nine open-ended mutual funds listed in AMFI for the time period of years, 2010-2020, with data available from their inception till December 2020. The data related to fund characteristics such as expense ratio, size of mutual funds, its inception year, portfolio turnover ratio, cash ratio and net asset value (NAV) is collected from the factsheets of respective asset management companies and AMFI mutual fund website. Treasury bill rate is collected from RBI website and benchmark from NSE website.

The regression model used by Philpot et al. (1998) for evaluating US bond mutual funds is used for the study. Korkeamaki and Smythe (2004) also analysed the mutual fund returns for the time period 1993-2000 using a similar model. Glenn (2004) has identified liquidity as the important attribute in evaluating open ended funds. Afza and Rauf (2014) added age as a new variable to the above model and their relationship with fund returns is analysed. The results showed that higher operative efficiency leads to positive relationship with fund returns. Thus, the study involves six fund characteristics to evaluate the performance.

Analysis and Hypothesis Testing

The relation between fund attributes and their performance are hypothesized based on three financial theories namely, Efficient market theory, Agency theory and Trade-off theory. Efficient market theory deals with two issues, whether fund managers show persistent performance and whether active management increases return. The agency theory is related to fund characteristics which might be manipulated by the management to maximize their own benefits rather than increasing shareholders wealth. Finally, the trade-off theory is concerned with the optimal holding of cash i.e., the

firms set the amount of cash holdings by weighing their marginal cost and benefits.

The hypotheses thus formed and tested in this study as

- H1: There is a no effect of fund size on their performance.
- H2: Performance of the funds is not related to the expense ratio.
- H3: The mutual fund return is not related to turnover ratio.
- H4: The Mutual Fund return has no relationship with fund's age.
- H5: Mutual Funds cash holdings is not related to risk-adjusted return.
- H6: Past performance does not affect the current performance of the funds.

The empirical evaluation of above six hypotheses consists of regressions with risk adjusted return as dependent variable and lagged return, log of fund assets, expense ratio, portfolio turnover rate, cash holdings and age of the fund as independent variables.

Regression Model

The following regression model provides the relation between fund characteristics and performance of mutual funds:

$$\text{Return}_{it} = \alpha + \beta_1 \text{Size}_{it} + \beta_2 \text{Expense}_{it} + \beta_3 \text{Turnover}_{it} + \beta_4 \text{Age}_{it} + \beta_5 \text{Liquidity}_{it} + \beta_6 \text{Return}_{it-1} + e_{it}$$

i represents the fund

t represents the period

The six explanatory variables used in the present study represents the different funds attributes for the various funds at respective time period where:

Return = The fund's risk adjusted return

The risk-adjusted return of each fund is



calculated based on the total monthly returns and the standard deviation for the fund i.e, the risk adjusted performance is measured with Sharpe ratio (Sharpe, 1966).

Sharpe ratio for the year "t" for each mutual fund "i" has been computed as, $Sharpe_{it} = R_{it} - R_{ft} / \sigma_{it}$

Where R_{it} = return of fund "i" for the period "t" which is calculated as,

$NAV_{it} - NAV_{it-1} / NAV_{it-1}$,
 R_{ft} = risk free rate of return for year "t" which is taken as 90-day t-bill rate of return, and
 σ_{it} = standard deviation of returns of fund "i" for the period "t".

Risk adjusted return is able to capture the historic volatility which is a predictor of past volatility and thus, lagged returns is used an estimator of future returns.

Size : The natural logarithm of fund's total net assets is used to calculate the asset size.

Expense : Expense ratio is expressed as a percentage of fund's average net assets with operating expenses (including management fees and distribution fees). If higher the expenses increase the returns, then regression coefficient of expenses will be positive.

Turnover : This ratio is measured by the total trading

activity or the number of trades for each fund during the period. Hence, if active management increases return then the turnover variable is positive related to fund's return.

Age : The number of months for which the fund is operational. As age increases, returns are supposed to increase with efficiency which results in a positive relationship.

Liquidity : The fund's total cash holdings in percentage is taken as liquidity. The relationship of liquidity and the fund return is expected to be positive.

Returns_{t-1}: The returns are lagged for one holding period to check the significance of past performance over future. If fund managers show consistency in their performance, then the expected relationship is positive.

5. Results and Discussion

The performance of thirty nine open-ended ELSS mutual funds under growth option in India are presented in Table 1.

Table 1 shows the returns of various ELSS funds to show their performance for the study period:

Scheme Name	Launch Date	AUM(rs in.crore)	Expense Ratio(%)	1 year return(%)	3 yr ret(%)	5yr ret(%)	10 yr ret(%)
ABSL Tax Plan Reg Gr	16/02/1999	481.827	2.52	31.32	6.86	11.25	14.69
ABSL Tax Relief 96 Gr	05/03/1996	14230.167	1.76	32.02	7.81	11.95	15.45
Axis Long Term Equity Reg Gr	05/12/2009	31015.477	1.61	57.06	17.56	17.46	19.89
Baroda ELSS 96 Plan A Gr	02/03/2015	205.424	2.5	59.67	13.45	12.42	-
BNP Paribas Long Term Equity Gr	05/01/2006	527.426	2.39	44.94	16.11	13.39	15.8
BOI AXA Tax Advtg Reg Gr	25/02/2009	490.17	2.55	67.1	21.28	19.68	17.28
Canara Robeco Equity TaxSaver Reg Gr	05/02/2009	2469.499	2.11	62.01	20.39	18.7	16.57

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DSP Tax Saver Reg Gr	05/01/2007	9333.11	1.76	64.11	18.97	16.3	18.23
Edelweiss Long Term Equity (Tax Savings) Reg Gr	30/12/2008	186.384	2.37	50.27	13.34	12.73	14.18
Franklin India Taxshield Gr	05/04/1999	4731.519	1.84	58.22	12.44	11.87	15.2
HDFC Long Term Advtg Gr	05/01/2001	1329.011	2.2	57.63	15.25	15.45	15.71
HDFC TaxSaver Gr	05/03/1996	8768.133	1.8	50.25	10.05	11.32	12.79
HSBC Tax Saver Equity Gr	05/01/2007	187.031	2.49	54.84	13.26	13.19	15.51
ICICI Pru Long Term Equity (Tax Saving) Gr	19/08/1999	9266.238	1.96	57.11	14.66	13.87	16.27
IDBI Equity Advtg Gr Reg	10/09/2013	518.704	2.4	47.27	10.1	11.41	-
IDFC Tax Advtg (ELSS) Reg Gr	26/12/2008	3316.057	1.9	68.51	15.85	16.65	17.72
Indiabulls Tax Savings Reg Gr	20/12/2017	51.36	2.25	40.02	10.05	-	-
Invesco India Tax Gr	29/12/2006	1775.192	2.06	52.14	15	15.63	16.89
ITI Long Term Equity Reg Gr	18/10/2019	97.251	2.58	45.22	-	-	-
JM Tax Gain Fund Gr	31/03/2008	59.117	2.44	59.07	17.41	16.55	16.72
Kotak Tax Saver Sch Gr	01/11/2005	2144.279	2.08	57.41	17.17	15.41	15.57
L&T Tax Advtg Reg Gr	05/02/2006	3571.94	1.97	50.1	11.41	13.51	14.53
LIC MF Tax Reg Gr	31/03/1997	373.272	2.56	49.81	13.28	13.8	14.21
Mahindra Manulife ELSS Kar Bachat Yojana Reg Gr	05/10/2016	393.339	2.42	62.58	15.39	-	-
Mirae Asset Tax Saver Reg Gr	05/12/2015	8739.296	1.81	61.12	20.72	20.95	-
Motilal Oswal Long Term Equity (MOFLTE) Reg Gr	05/01/2015	2280.181	2.06	61.83	14.95	16.34	-
Navi Long Term Advtg Reg Gr	30/12/2015	64.911	2.25	43.65	11.38	11.49	-
Nippon India Tax Saver (ELSS) Gr Gr	05/09/2005	11822.53	1.82	64.62	8.64	8.6	14.64
PGIM India Long Term Equity Reg Gr	11/12/2015	349.288	2.49	57.48	15.46	14.37	-
Principal Personal Tax Saver	31/03/1996	318.567	2.55	54.84	12.66	11.66	13.33
Principal Tax Savings	31/03/1996	556.489	2.51	54.33	12.91	14.53	17.11
Quant Tax Gr	01/04/2000	327.45	2.25	84.59	29.32	22.59	18.22
Quantum Tax Saving Fund Reg Gr	01/04/2017	98.169	1.79	54.55	11.22	-	-



SBI Long Term Equity Reg Gr	31/03/1993	10365.943	1.82	51.23	14.04	12.36	14.8
Sundaram Diversified Equity -A Long-term Tax Saver OE App	10/05/2005	2269.046	2.13	54.92	11.28	11.69	14.04
Tata India Tax Savings Gr Reg	13/10/2014	2760.717	1.98	50.47	14.19	14.39	-
Taurus Tax Shield Reg Gr	31/03/1996	81.745	2.45	42.05	10.98	13.69	13.14
Union Long Term Equity Gr	23/12/2011	390.972	2.52	57.36	18.12	14.49	-
UTI Long Term Equity (Tax Saving) Reg Gr	01/08/2005	2046.014	2.17	58.59	16.93	15.12	14.55

On an average, the return of ELSS fund are 16.49 percent while the median return stands at 16.23 percent with average net assets amounting to 254696.621 crores. ITI long term equity fund has the highest expense ratio with 2.58 percent and Axis long term equity fund has the lowest expense ratio of 1.61 percent with the highest asset size of 31015.477 crores. Indiabulls tax saving fund fund has the lowest Asset size with 51.36 crores. SBI long term equity fund is the oldest fund which started in 1993 and ITI long term equity fund is the new fund which started its function 2019 among the sample funds. However, the returns of majority of the growth-oriented funds are more than 10 percent for

the study period.

The study shows that largest funds have lower expense ratios but the fund size is not helping them to excavate higher returns. Table 2 represents the results of the model with the independent variables included by Philpot (1998) with two new variables cash and age of the mutual fund for estimation. The regression model uses ordinary least square to evaluate pooled-time series and cross-sectional data and estimate the relationship of mutual fund returns with various attributes. The study has to take care of heteroscedasticity as a check on robustness of the results.

TABLE 2 showing relationship of returns to its selected attributes.

Variable	Coefficient	t-Statistic
Alpha	0.368976**	2.264081
Age	-0.000987***	-5.586529
Cash Holding	0.005126	1.113559
Expense Ratio	-0.005843	-0.116112
Lag Returns	0.590724***	5.663162
Log AUM	-0.077287	-0.833655
Turnover Ratio	0.00017	0.709805
F- statistic	8.8857***	
Durbin Watson Stat	1.8903	

* significant at 10% level,** significant at 5% level ,*** at 1% level.



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If the data supports the efficient markets theory, then the outcome should match the theory's prediction also. The estimated coefficients should be negative or unrelated for the variables such as expense ratio, lagged returns and turnover. If the predictions of agency theory are supported then the estimated coefficients for assets size must be negative. Finally, if the prediction of Yan (2006) made for optimal cash holding holds true then the coefficient for liquidity variable will be negative. The results of regression in the Table 2 shows that returns is positively and significantly related to its lagged returns. This means that past fund performance in a month is directly related to its current performance. This result is of particular importance to financial advisors who study the past fund performance as a key component of selection process (Droms, 2006). The result of this study found that the mutual funds show consistency in their performance and also conforms that the fund managers show difference in skills which may persist over time. However, the expense ratio ($t = -0.116112$) support the efficient market theory but turnover ratio ($t = 0.709805$) is positive. This means that funds' incurring higher expenses do not have any significant effect on the fund returns. However, these results are consistent with Lin (2004) who also confirmed that expense ratio is not related to risk-adjusted return. The funds assets are negative which means that the relation between asset size and fund returns is negative but insignificant ($p = 0.4109$). It shows that large fund size neither maximise the shareholders wealth through economies of scale nor does it lead to increased agency costs. However, the large fund size benefits the management because management fee is a fixed percentage of fund assets. The fund manager have an option to either hold cash or liquidate securities. But they have to maintain a balance between both because holding more cash reduce return and liquidating securities will increase transaction cost which is unfavourable. The result in Table 2 indicates the effect of fund cash holding on performance is positive and insignificant which does not support the prediction of Yan (2006). The older funds are thought to exhibit superior performance due to more experience but somehow, the age variable is negative and highly significant indicating that new funds on average perform much better than

the old ones. The liquidity coefficient is insignificant ($t = 1.113559$) and positive. It means that mutual funds are able to survive with lower level of cash holdings.

Since the p values of age and past returns are statistically significant, null hypothesis is rejected in favour of alternate hypothesis i.e, the hypothesis H4 and H6 are rejected. However, we fail to reject the null hypothesis, H1, H2, H3 and H5 as their p values are not significant. Further, Table 2 shows that the F-statistic is statistically significant which means that all the independent variables are significantly explaining the changes in dependent variables. The model is tested for robustness under serial correlation (p value=0.6857) and heteroscedasticity (p value=0.2220) along with Durbin Watson test statistic close to 2, thus satisfying the results.

The study shows that past performance are positively related and age is negatively related to the current performance of the funds. The remaining characteristics such as turnover rate, cash holdings, expense ratios and asset size have failed to show their significant impact on the performance. Thus, the investor has to give more importance for the two main fund characteristics under ELSS funds i.e, past performance and the age of funds. The investors have to take their decisions wisely regarding the choice of their investment for reaping better returns.

5. Conclusion

Existing literature has literally focused on the characteristics affecting the performance of ELSS funds and concluded that the fund characteristics show satisfactory performance. However, the present study's primary contribution is towards the important characteristics significantly affecting the funds. It investigates the impact of expense ratios, turnover rate, lagged returns, liquidity, asset size and age on fund performance. Mutual fund risk-adjusted return is positively related to turnover and cash holdings, but they are statistically insignificant. Asset size and expense ratio are negative and shows statistically insignificant relationship. The returns have a significant positive relationship with the past returns and a significant negative relationship with



with the fund age in the model. Thus, this study focuses on the relationship between various fund attributes and performance for better management. It implies that investors should study the past performance of the fund and the age of the ELSS funds in order to take better investment decisions. Thus, past performance is an important attribute positively affecting the performance of ELSS mutual funds.

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