

Impact of Extending Lock-in Period on ELSS Funds: An Empirical Study of Indian Mutual Funds

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ABSTRACT

Equity mutual funds are said to be suitable for long term investment and conversely ELSS funds which provide tax saving u/s 80 C has a mandatory lock-in period of 3 years. This may prompt investors to redeem after completion of lock-in period which may adversely impact investors' wealth creation as well as negative or low returns may create a pessimistic perception about mutual funds. We argue that regulators should look into increasing the lock-in period of ELSS to 5 years from existing 3 years. We have probed the data of 10 ELSS funds and scrutinized them on various parameters of probability of loss, negative returns, standard deviation etc to find the results and investigate the impact of increasing the lock-in period in the category.

Keywords: ELSS, Tax Saving, Financial Literacy, Fund performance, SEBI



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INTRODUCTION

Investors generally seek investment avenues that enable wealth accumulation, generate regular returns, and provide opportunities for tax savings. While a wide range of investment options is available in the Indian market, most carry tax liabilities in accordance with the Income Tax Act. This is where Equity Linked Savings Schemes (ELSS) become relevant. ELSS are tax-saving equity mutual fund schemes that combine investment growth potential with tax benefits. The present study examines ELSS tax-saving mutual funds, with particular emphasis on the role of investment time horizon in determining their effectiveness.

ELSS funds primarily invest in equity and equity-related instruments, making them equity-oriented schemes. These funds are commonly referred to as tax-saving funds because they offer tax benefits of up to ₹150,000 on annual income under Section 80C of the Income Tax Act, thereby reducing the investor's tax liability. As equity schemes, ELSS have a mandatory lock-in period of three years. In recent years, a growing number of taxpayers have opted for ELSS schemes to leverage these tax benefits. Investments in ELSS generate income that, at the end of the three-year tenure, is classified as Long-Term Capital Gain (LTCG) and is taxed at 10%, with an exemption on gains up to ₹1 lakh.

The Income Tax Department, along with government initiatives, has introduced various exemptions under Chapter VI-A to encourage savings and investments among taxpayers. Among these, Section 80C is the most prominent, although other deductions are also

available to help individuals and Hindu Undivided Families (HUFs) reduce their tax liabilities. These provisions make ELSS a popular investment choice for both individual investors and entities seeking to optimize tax efficiency while participating in the equity market.

80C deduction is allowed for investment made in PPF (Lock in period 15 Years), Employee Provident Fund, LIC premium (usually for 10-20 years), Equity linked saving scheme (3 Years lock in), Sukanya samriddhi yojana (SSY locked till girl child attains 21 years of age), National saving certificate (NSC has lock in of 5 years), ULIP, tax saving bank FD for 5 years etc

Equity is an asset class which is known for its volatile nature which has been appreciated by most investors. More often than not, investors make investments into equity market with the thought process of making handsome gains in a short time. Given that equity has high volatility over short investment periods, it leaves investors believing that equity is a risky investment. The same happens with ELSS schemes where investor look forward to exiting the scheme after completion of mandatory lock in of 3 years.

REVIEW OF LITERATURE

Kishori and Bhagyasree (2016) conducted a study on the performance of open-ended growth equity funds in emerging economies. The analysis revealed that 14 of the 30 mutual funds outperformed their respective benchmarks, while underperformance in some cases was attributed to diversification challenges. Furthermore, the positive Sharpe ratios across all funds indicated that the schemes consistently generated returns above the risk-free rate.

Mohanashundari, Vetrivel, and Lavanya (2016) conducted an analysis of return and risk in selected ELSS funds. The findings indicated that the historical performance of these schemes does not serve as a reliable indicator of their future outcomes. Although some funds surpassed the benchmark index and exhibited a positive risk–return relationship, the majority demonstrated stronger performance only during the initial phases. The study further emphasized that parameters such as liquidity, rate of return, tax benefits, profitability, price, capital growth, and market share play a significant role in shaping investors' investment decisions. Moreover, despite their availability for more than two decades, ELSS funds have not achieved substantial popularity among investors as a tax-saving investment avenue.

Oliver, Ramun & Ralf (2015) found that investors with low ability to pick high performing mutual funds schemes can have extremely good results with higher percentages allocated to large cap funds.

Junhua Lu (2007) recommended a moderately diversified allocation model, exemplified through a five-fund portfolio. The study emphasized that diversification serves as a critical mechanism for risk mitigation. It was also observed that most ELSS funds employ the BSE 200 TRI Index as their benchmark, which consequently restricts the scope of stock selection within their portfolios. Furthermore, the research highlighted that tax collection is considerably higher in countries where long-term capital gains (LTCG) are subject to taxation.

Narayan and Ravindran (2003) assessed the performance of the Indian mutual fund industry under bearish market conditions. Their study analyzed 269 open-ended mutual fund schemes during the period from September 1998 to April 2002, employing multiple performance measures including the Sharpe ratio, Treynor's ratio, risk–return analysis, Jensen's measure, and Fama's measure. The findings revealed that the majority of the schemes failed to generate positive alpha relative to expected returns. Moreover, the portfolios were found to be inadequately diversified and not managed at an optimal level.

Rao (2006) evaluated the financial performance of selected open-ended equity schemes between April 1, 2005, and March 31, 2006, focusing on two prominent investment styles. The study tested the hypothesis regarding the statistical significance of performance

differences between these styles. The analysis revealed that growth plans yielded higher returns compared to dividend plans, albeit at relatively greater risk. In addition, the research classified 419 open-ended equity mutual fund schemes into six distinct investment styles. Sondhi and Jain (2010) analyzed the financial performance and market risk of 36 equity mutual funds with a focus on profitability. Their findings indicated that private sector mutual funds consistently delivered higher returns than public sector schemes. The study further suggested that the relatively better performance of private sector funds could be attributed to more efficient portfolio management and superior investment strategies.

Goel and Gupta (2014) examined the challenges, growth trajectory, and emerging opportunities in the Indian mutual fund industry, with a particular focus on investor behavior. The study emphasized that investors increasingly prefer to make additional provisions for investment in order to safeguard their portfolios and adjust to dynamic market conditions. The findings further suggested that such investment behavior reflects both the growing awareness among investors and the evolving role of mutual funds as a resilient and adaptable investment avenue in India's financial markets.

NEED FOR THE STUDY

Equity being a long term asset class and ELSS funds opens for redemption after 3 years. After the end of the lock-in period of the ELSS fund, investor is free to decide if he wishes to stay invested or not.

If the market was under a bear phase, the fund manager may not be able to generate the returns. On the other hand, if investors make the wrong decision, one may redeem the units and invest elsewhere. In any case investor will carry a bad impression if they get low or negative returns, without appreciating the fact that equity is a long term avenue. This research paper tries to study the impact on risk and returns matrix if the market regulator increases the lock in period of ELSS to 5 years.

OBJECTIVE OF THE STUDY

The primary objective of the study is to examine the impact of different investment horizons—specifically three-year versus five-year periods—on the average returns, probability of loss, and variability of returns in ELSS funds.

DATA AND METHODOLOGY

The sample data has been obtained for top 10 open-ended ELSS schemes on the basis of their Asset under management and the funds should have completed 10 years of existence, as on 29th September 2022, to allow most precise estimation. The NAV data has been compiled since inception of the funds from the website of AMCs, AMFI, Valueresearchonline and Moneycontrol.

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There are 36 funds out of which 10 funds are filtered from above criteria. The total open ended ELSS AUM was 1,50,926 crores out of which these 10 funds hold 1,13,164 Crore which amounts to 74.97% which is a fair representation of the category. These consist of funds coming from quartile 1 to quartile 4 performances. The Selected Schemes are Axis Long Term Equity Fund (AXISLTE), Aditya Birla Sun Life Tax Relief 96 (ABSLTR96), Nippon India Tax Saver Fund (NIPPONITS), SBI Long Term Equity Fund (SBILTE), DSP Tax Saver Fund (DSPTS), ICICI Prudential Long Term Equity Fund (ICICILTE), HDFC

Taxsaver Fund (HDFCTS), Franklin India Taxshield Fund (FITS), Canara Robeco Equity Tax Saver Fund (CANARAETS) and IDFC Tax Advantage Fund (IDFCTAF).

This research paper is structured as follows: The 3 year and 5 year rolling data of all these schemes till 28th September 2022 are calculated on daily basis and inferences are derived. The number of observation of the rolling data varies on number of observations as the inception date of each fund is different.

Table – 1 Number of Observations of Rolling data of each fund

Fund	3 Years	5 Years
AXISLTE	2403	1915
ABSLTR96	2871	2375
NIPPONITS	3459	2974
SBILTE	3050	2567
DSPTS	3127	2629
ICICILTE	4980	3773
HDFCTS	3773	4314
FITS	5049	4550
CANARAETS	2612	2117
IDFCTAF	2644	2149

RESEARCH DESIGN

A. Research Variables

Research techniques and tools

In the data of schemes' NAV and daily rolled data mean test and standard deviation test were used. t-Test:

Two-Sample Assuming Unequal Variances is applied to establish the difference in 9 hypotheses related to returns range, probability of negative returns and standard deviation. H0 in every case indicate no significant difference in the two variables and H1 demonstrate the significant difference.

EMPIRICAL RESULTS AND DISCUSSION

Negative observations declined with increase of tenure:

Table – 2 Total observations and negative observations in mentioned duration of rolling returns

Fund	3 Years		5 Years	
	Obs	-ve	Obs	-ve
AXISLTE	2403	0	1915	0
ABSLTR96	2871	144	2375	0
NIPPONITS	3459	493	2974	122
SBILTE	3050	199	2567	49
DSPTS	3127	116	2629	5
ICICILTE	4980	369	3773	7
HDFCTS	3773	428	4314	42
FITS	5049	372	4550	27
CANARAETS	2612	8	2117	0
IDFCTAF	2644	124	2149	20

Table 2 enumerates the negative observation out of total observation of rolled data. As we can see out of total 2871 observations of Aditya Birla Tax Relief 96 fund total of 144 times the fund has given negative returns in 3 years tenure whereas in daily rolled 5 years observations of 2375 data points there were no negative

instances. Similarly in rest of the funds SBI long term equity fund 199 negative instances got reduced to 49 negative observations in 5 year time frame, 428 negative observations saw a sharp decline to 42 negative data point in 5 years' time horizon. We can conclude that if negative instances reduce considerably.

Probability of losses sharply reduced as the time frames increased to 5 years:

Table – 3 Probability of loss in percentage of total observations

Fund	Loss % - 3 Years	Loss% - 5 Years
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AXISLTE	0.00	0.00
ABSLTR96	5.02	0.00
NIPPONITS	14.25	4.10
SBILTE	6.52	1.91
DSPTS	3.71	0.19
ICICILTE	7.41	0.19
HDFCTS	11.34	0.97
FITS	7.37	0.59
CANARAETS	0.31	0.00
IDFCTAF	4.69	0.93

As we can observe from Table-3 that the probability of losses is shown in 3 years and 5 years data. Almost all the funds have shown some negative instances in 3 years rolled data, whereas in 5 years data we can observe that except 2 funds viz Nippon India Tax saver fund and SBI Long term equity fund have 4.10% and 1.91% instances of negative returns. Also as we

analyze, we find rest 8 funds have less than 1% instances of negative returns and 3 funds viz. Axis long term equity fund, Aditya Birla Tax relief 96 and Canara Robeco tax saver fund have no negative observations. Increment in lock in period will improve the experience and perception of the investors

The minimum returns are tilted towards positive side in 5 years cases:

Table – 4: The least returns in 5 years data vis-à-vis 3 years

Fund	Least CAGR 3 Yrs	Least CAGR 5 Yrs
AXISLTE	0.60	2.10
ABSLTR96	-4.88	0.21
NIPPONITS	-14.65	-7.05
SBILTE	-8.80	-3.76
DSPTS	-5.97	-0.47
ICICILTE	-24.49	-1.54
HDFCTS	-23.45	-4.47
FITS	-12.90	-3.31
CANARAETS	-1.23	0.56
IDFCTAF	-8.40	-2.98

The analysis in table – 4 reveals a similar trend in the least returns in all the funds. The ELSS funds of Nippon, ICICI, HDFC and Franklin were having huge negative least returns of -14.65%, -24.49%, -23.45% and -12.90% respectively were improved to -7.05%, -1.54%, -4.47% and -3.31% which however being

negative have improved greatly in quantum by a big margin. Also bottom returns in funds like Aditya Birla and Canara came in positive territory. This in turn helps boost the investor perception and improve the experience.

The percentage observations in 0 to 4.99% return bracket reduces in 5 years data:

Table – 5 Variation and difference in 3 year and 5 years data

Returns 0 - 5%	3 Years data		5 Years Data	
Fund	Number of Obs	% to Total Obs	Number of Obs	% to Total Obs
AXISLTE	67	2.79	19	0.99
ABSLTR96	455	15.85	129	5.43
NIPPONITS	369	10.67	380	12.78
SBILTE	467	15.31	364	14.18
DSPTS	298	9.53	123	4.68
ICICILTE	370	7.43	113	2.99
HDFCTS	295	7.82	233	5.40
FITS	260	5.15	181	3.98
CANARAETS	193	7.39	34	1.61
IDFCTAF	221	8.36	88	4.09

Table 2 describes the negative observations out of total data set and Table 5 enumerates the first sub set of positive returns. As it evident from the observation that there is more percentage of lower returns instances are visible in 3 years vis-à-vis to 5 years tenure in this spectrum.

All the funds, except Nippon Tax Saver, have less recurrence of poor returns in 5 years data. Data also exhibits substantial improvement in performance of funds like Canara (7.39% vs 1.61% observations), IDFC (8.36% vs 4.09%) Axis (2.79% vs 0.99%) whereas funds like Nippon, SBI exhibit similar quantum of poor returns.

Observation of data with returns between 5 to 9.99%:

Table – 6 Analysis of data for 5-9.99% returns

Returns 5-9.99%	3 Years data		5 Years Data	
Fund	Number of Obs	% to Total Obs	Number of Obs	% to Total Obs
AXISLTE	347	14.44	164	8.56
ABSLTR96	274	9.54	388	16.34
NIPPONITS	932	26.94	801	26.93
SBILTE	864	28.33	395	15.39
DSPTS	536	17.14	427	16.24
ICICILTE	789	15.84	727	19.27
HDFCTS	849	22.50	923	21.40
FITS	793	15.71	551	12.11
CANARAETS	522	19.98	270	12.75
IDFCTAF	445	16.83	201	9.35

As the data describes, probability of getting return between 5 to 9.99 % lowers in 5 years. In the above table, 8 out of 10 times, the instances of the number of

percentage times said gain has declined in higher time frame. In other words, reading table-3, table-5 and table-6 we can easily observe that returns upto 10% has lower chances of occurring in 5 years frame.

Analysis of data for 10-14.99% for both time frames:

Table – 7 Number of observation and percentage of total instances in both time frame

Returns 10-14.99%	3 Years data		5 Years Data	
Fund	Number of Obs	% to Total Obs	Number of Obs	% to Total Obs
AXISLTE	769	32.00	342	17.86
ABSLTR96	471	16.41	902	37.98
NIPPONITS	653	18.88	327	11.00
SBILTE	492	16.13	977	38.06
DSPTS	704	22.51	723	27.50
ICICILTE	1019	20.46	920	24.38
HDFCTS	958	25.39	818	18.96
FITS	1088	21.55	937	20.59
CANARAETS	787	30.13	798	37.69
IDFCTAF	501	18.95	417	19.40

In this returns bracket, there has been increase in the percentage observations. In 6 out of 10 funds we can observe that percentage instances have increased with respect to the total observations. Except Axis, Nippon,

HDFC and Franklin all other fund have shown higher observations. It can be deduced that returns have a positive impact if the time frame is increased to 5 years.

Analysis of instances for returns between 15-19.99% bracket:

Table – 8 Trend for percentage allocation drastically changes

Returns 15-19.99%	3 Years Data		5 Years Data	
Fund	Number of Obs	% to Total Obs	Number of Obs	% to Total Obs
AXISLTE	411	17.10	591	30.86
ABSLTR96	287	10.00	454	19.12
NIPPONITS	166	4.80	531	17.85
SBILTE	497	16.30	745	29.02
DSPTS	613	19.60	821	31.23
ICICILTE	530	10.64	1147	30.40
HDFCTS	546	14.47	856	19.84
FITS	533	10.56	1331	29.25
CANARAETS	565	21.63	887	41.90

IDFCTAF	594	22.47	992	46.16
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The Table – 8 shows a surprising data in 15 to 20% bracket where we see a secular increase in number of observation as well as percentage. All the funds exhibit sharp increase in this category with hefty difference in

quantum of observations. It can be inferred that there are high chances to get 15-20% returns if regulator increases the lockin period to 5 years.

Analysis of data for 20-29.99% returns bracket:

Table – 9 Number of instances in percentage falls in this category for 5 years' time frame

Returns 20-29.99%	3 Years data		5 Years Data	
Fund	Number of Obs	% to Total Obs	Number of Obs	% to Total Obs
AXISLTE	532	22.14	795	41.51
ABSLTR96	657	22.88	499	21.01
NIPPONITS	566	16.36	807	27.14
SBILTE	525	17.21	31	1.21
DSPTS	805	25.74	526	20.01
ICICILTE	755	15.16	542	14.37
HDFCTS	598	15.85	504	11.68
FITS	905	17.92	685	15.05
CANARAETS	492	18.84	125	5.90
IDFCTAF	701	26.51	428	19.92

As per the observations in Table – 9, we see only 2 funds viz. Nippon and Axis exhibited higher number of observations and percentage rise. Rest all funds show marginal lower instances, that means in this returns

bracket there are higher chances that giving better returns in 3 years' time frame but this will come with volatility.

The probability of data to provide higher returns is skewed towards 3 years' time frame:

Table – 10 Analysis of data for 30% and above returns

Returns Above 30%	3 Years data		5 Years Data	
Fund	Number of Obs	% to Total Obs	Number of Obs	% to Total Obs
AXISLTE	273	11.36	0	0.00
ABSLTR96	109	3.80	0	0.00
NIPPONITS	275	7.95	0	0.00
SBILTE	0	0.00	0	0.00
DSPTS	51	1.63	0	0.00
ICICILTE	1139	22.87	313	8.30
HDFCTS	1121	29.71	391	9.06
FITS	1092	21.63	830	18.24
CANARAETS	43	1.65	0	0.00
IDFCTAF	51	1.93	0	0.00

As per table – 10 it can be observed that there are high number of cases in this return bracket but in the similar returns scenario that data of 5 years exhibit sharp fall in the number and percentage. Also as is seen, there are 7 funds where there are zero observations in 30% plus

scenario. Similarly table 2 and table 3 exhibit high number of observations in negative territory in 3 years vis-à-vis 5 years. This can be attributed to the high volatility in shorter time frame and negative returns and high returns are resulted.

Analysis of standard deviation (SD)

Table – 11 Data shows a drastic reduction in standard deviation in 5 years' time frame

Fund	Standard Deviation		
	3 Years	5 Years	% reduction
AXISLTE	8.56	5.32	62.13
ABSLTR96	9.73	5.88	60.46
NIPPONITS	11.62	7.51	64.7
SBILTE	8.01	5.36	66.98
DSPTS	8.11	5.41	66.69
ICICILTE	21.33	11.25	52.76

HDFCTS	21.42	12.73	59.44
FITS	15.81	11.24	71.07
CANARAETS	6.75	3.97	58.86
IDFCTAF	8.27	5.11	61.77

Table 11 shows that there is approx. 60% reduction in standard deviation in 5 years as compared to 3 years frame. It is generally said that lower the standard deviation the better it is for the investors. There are funds like ICICILTE, FITS, HDFCTS where the standard deviation is very high in 3 years which will

contribute to higher volatility. However this volatility can be both on higher side and lower side. Funds like CANARAETS, SBILTE and DSPTS are already with a lower SD and further reduction in 5 years again can be seen as added advantage.

FINDINGS AND CONCLUSIONS

Table – 12 Testing of hypotheses

Parameter	P Value	Accepted Result
Probability of Losses	0.00	H1: There is a significant difference in variability of loss percentage in selected time frames.
Minimum CAGR difference	0.01	H1: There is a significant difference in the least average CAGR in the selected funds.
Variability in 0-4.99% CAGR Range	0.08	H0: There is no significant difference in the variability of returns in the given range.
Variability in 5-9.99% CAGR Range	0.27	H0: There is no significant difference in the variability of returns in the given range.
Variability in 10-14.99% CAGR Range	0.39	H0: There is no significant difference in the variability of returns in the given range.
Variability in 15-19.99% CAGR Range	0.00	H1: There is a significant difference in the variability between the returns range.
Variability in 20-29.99% CAGR Range	0.59	H0: There is no significant difference in the variability of returns in the given range.
Variability in 30% and more CAGR	0.01	H1: There is a significant difference in the variability between the returns range.
Effect on Standard Deviation	0.04	H1: There is a significant difference in the variability in the standard deviation in 3 and 5 years.

In the research, we have applied the t-Test: Two-Sample Assuming Unequal Variances in table-12. Three hypotheses with critical parameters, P value is less than 0.05 exhibiting the acceptance of alternate hypotheses showing significant differences. Firstly, the probability of losses i.e. negative returns (refer table-3) is much higher in 3 year has drastically reduced in 5 years period. Secondly, the average minimum returns delivered (refer table-4) for 5 years period is much higher than 3 years period states that if the investor is mandatorily invested for 5 years one may have lower quantum of negative returns vis-à-vis to 3 years period. In addition to the 2 hypotheses mentioned above, the returns are tilted to the positive side, the standard deviation (refer table – 11) in returns in all funds see a drastic reduction exhibiting lower deviation to mean returns.

Six hypotheses related to returns show varied observations. Returns range exhibited in table – 5, 6 and 7 shows no significant difference in variability, P value more than 0.05, meaning the returns in both the time frames show similar characteristics. Whereas, returns indicated in table – 8 show higher chances of getting returns in 15-19.99% range skewed towards 5 years period. Also the chances of returns more than

30% will also be reduced as returns averages in higher time frame (table – 10).

Major volatility and risk factors imply towards the reduction of volatility and indicate towards higher chances of wealth creation for the investor in 5 years' time frame. It can hence be concluded that if market regulator increases the lock in period of ELSS funds to 5 years, it may act in favour of improving the investor perception towards the equity linked investment. Equity being a long term asset class most likely helps grow investors' money.

FUTURE RESEARCH DIRECTIONS

- 1.) The study was conducted on selected ELSS funds whereas the study can be extended to rest of the tax savings funds as well.
- 2.) Recently mutual fund industry has launched passive ELSS funds in the form of index funds. When the funds are old enough, a study can be conducted related to active and passive ELSS funds.

I. REFERENCES

1. Sapar, N. R., & Madava, R. (Year). *Performance evaluation of Indian mutual funds*. Available at SSRN: <http://ssrn.com/abstract=433100> or <http://dx.doi.org/10.2139/ssrn.433100>

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2. Rao, D. N. (2006). *Investment styles and performance of equity mutual funds in India*. Available at SSRN: <http://ssrn.com/abstract=922595> or <http://dx.doi.org/10.2139/ssrn.922595>
3. Santhi, N. S., & Gurunathan, K. B. (Year). *Risk and return analysis of Equity Linked Savings Schemes of mutual funds in India*.
4. Sondhi, H. J., & Jain, P. K. (2010). Market risk and investment performance of equity mutual funds in India: Some empirical evidence. *Finance India*, 24(2), 443–464.
5. Goel, S., & Gupta, P. (2014). Mutual fund industry in India: An overview. *International Journal of Emerging Research in Management & Technology*, 3(5). ISSN: 2278-9359.
6. Tripathy, N. P. (2006). Market timing abilities and mutual fund performance: An empirical investigation into Equity Linked Saving Schemes. *XIMB Journal of Management*, 3(2), 127–138.
7. Turan, M. S., & Bodla, B. S. (2001). *Performance appraisal of mutual funds*. New Delhi: Excel Books.
8. ICFAI Journal of Applied Finance. Performance evaluation of selected mutual fund schemes, 10(12).
9. Finance India. Risk-adjusted performance evaluation of Indian mutual funds, XX, 965–983.