

PERFORMANCE OF EXCHANGE TRADED FUNDS A COMPARATIVE ANALYSIS OF INDEX ETFS AND INDEX FUNDS IN INDIA

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Abstract

An Exchange-Traded Fund (ETF) and Index Funds are an innovative products which puts together favorable characteristics of open-ended and closed-ended mutual funds and presents a more flexible and liquid product for investors. The study covers the performance evaluation of ETFs vis-à-vis Index Funds in India. The study is based on secondary data and covering the period of eight years from 2008-09 to 2015-16 for the purpose of evaluating performance of select Index ETFs and Index Funds in India. The parameters for evaluating the performance are: Net Asset Value, Risk, Return, Reward to Variability and Differential Return. Beta, Treynor's Ratio, Sharpe Ratio, Jensen Alpha and Fema the statistical tools like Standard Deviation, are used for data analysis.

It is concluded that ETFs have offered better opportunity when compared to Index Funds for the small investors in terms of diversified portfolio with a small amount of money; positive-Alpha, lower risk and volatility as compared to Index Funds. The ETFs can become one of the best investment alternatives, provided, adequate awareness is created among the investors in stock markets.

Key words: *ETF, NAV, Risk and Return, Performance*

Introduction

An Exchange-Traded Fund (ETF) is an investment company whose shares are traded intra-day on stock exchanges at market-determined prices. ETFs enable investors to buy or sell shares on the collective performance of a stock or bond portfolio. ETF is an innovative product which puts together favorable characteristics of open-ended and closed-ended mutual funds and presents a more

flexible and liquid product for investors. Over the past decade, demand for ETFs has grown markedly as investors—both institutional and retail—increasingly turn to them as investment options in their portfolios. With the increase in demand, sponsors have offered more ETFs with a greater variety of investment objectives. While ETFs share some basic characteristics with mutual funds, there remain key operational and structural differences between the two types of investment products.

An ETF is an investment company, typically a mutual fund or unit investment trust, whose shares are traded intraday on stock exchanges at market-determined prices. Investors may buy or sell ETF shares through a broker just as they would buy the shares of any publicly traded company. ETFs are just what their name implies: baskets of securities that are traded, like individual stocks, on an exchange. Unlike regular open-end mutual funds, ETFs can be bought and sold throughout the trading day like any other stock. An Index Fund is a Mutual Fund that aims to replicate the movements of an index of a specific financial market. An Index Fund follows a passive investing strategy called Indexing. It involves tracking an index say for example, the Sensex or the Nifty and builds a portfolio with the same stocks in the same proportions as the index. The Fund makes no effort to beat the index and in fact it merely tries to earn the same return.

Exchange-traded funds (ETFs), which offer flexibility of a stock and protection of a fund, are catching on big time with Indian investors. ETFs, which invest in stocks comprising an index, traded on exchanges. Financial planners are increasingly recommending ETFs to investors who have long-term goals and want to invest in equity without taking too much risk. This is reflected in average assets under management in the retail ETF category, which have risen from Rs 59 crore in March 2009 to Rs 394 crore in March 2012 and finally stood 19,224.82 crores in 18th May 2016 according to the www.moneycontrol.com. Investors are now realizing the benefits of ETF's and have started to invest in and find value in ETF's and Index Based Fund.

Review of Literature

Jonne M. Hill and Barbara Mueller (2001) made a research on ETFs and they concluded that Tracking errors and returns based on fund NAV relative to the

index reflect characteristics of the product structure. In addition, price-to-index returns and tracking error reflect ETF prices that are captured at a different time from the underlying index and the short-supply and demand factors relevant to the ETF, as well as the hedging instruments used by the market makers. NAV tracking error is much lower than price-to-index tracking error and is the most useful measure in assessing the long-term characteristics of an ETF relative to its underlying index.

Philippe Jorion (2003) in his article explored the risk and return relationship of active portfolios subject to a constraint on tracking-error volatility (TEV), which can also be interpreted in terms of value at risk. Such a constrained portfolio is the typical setup for active managers who are given the task of beating a benchmark. The problem with this setup is that the portfolio manager pays no attention to total portfolio risk, which results in seriously inefficient portfolios unless some additional constraints are imposed. The study reflected that TEV-constrained portfolios are described by an ellipse on the traditional mean– variance plane. This finding yields a number of new insights. Because of the flat shape of this ellipse, adding a constraint on total portfolio volatility can substantially improve the performance of the active portfolio. In general, plan sponsors should concentrate on controlling total portfolio risk.

Manuel Ammann, Stephan Kessler and Jurg Tobler(2006) stated that for investors, it is important to know what trading strategies an asset manager pursues to generate excess returns. In this paper, they proposed an alternative approach for analyzing trading strategies used in active investing. They used tracking error variance (TEV) as a measure of activity and introduced two decompositions of TEV for identifying different investment strategies. To demonstrate how a tracking error variance decomposition can add information, a simulation study testing the performance of different methods for strategy analysis is conducted. In particular, when investment strategies contain random components, TEV decomposition is found to deliver important additional information that traditional return decomposition methods are unable to uncover.

Benchmark Funds Asset Management Company(2008) research department did research in early 2008 on the topic of **"Myth of Eternal Alpha"** It has often been argued that individual active fund managers are consistently able

to exploit anomalies and aberrations that may exist in the market and while considering out performance/ under performance one should look at longer periods.

B Phaniswara Raju and K Mallikarjuna Rao (2009) made a study on –**Market Timing Ability of Selected Mutual Funds in India: A Comparative Study**” and they analyzed the market timing ability of selected fund managers, which is a vital aspect in the success of a mutual fund. In order to measure the market timing ability of the fund managers, two important models, namely, Treynor and Mazuy and Heriksson and Merton, have been used with BSE Sensex and NSE Nifty as market proxies.

Prashanta Athma and K. Raj Kumar (2011) – made a study on **ETF vis-a-vis Index Funds: an Evaluation** stated that trends and progress of ETFs and Index Funds in India and to evaluate the performance of ETFs vis-à-vis Index Funds in India. It's covering the period of five years from 2005 to 2009 for the purpose of evaluating performance of select ETFs and Index Funds in India. The parameters for evaluating the performance are NAV, Risk, Return, Expenses Ratio, Tracking Error, Reward to Variability and Differential Return is used for data analysis. It is concluded that ETFs have given better opportunity for the small investors in terms of diversified portfolio with a small amount of money; low expense ratio, reduced tracking error, lower risk and volatility as compared to Index Funds.

Need For the Study

The impressive growth of exchange traded funds in India has attracted the attention of Indian researchers, individuals and institutional investors during past few years. A number of empirical studies have been conducted to examine the growth, competition and performance of exchange traded funds in India. There has been severe competition among various avenues of investment and the Exchange Traded Funds is no exception and the competition would intensify in the coming years as it happened in other investment avenues. Hence, it is appropriate, relevant and topical to focus our attention as to how the exchange traded funds would emerge in the coming few years and to ascertain what kind of portfolios (different types of ETF schemes) would be able to win the investors' confidence and survive in the market place. One way of achieving the above

objective is to research into the investment of different combination of portfolios adopted by the portfolio managers as these facilitate some kind of portfolio differentiation resulting in different performance levels. In view of the above developments, research in finance exhibits a surging interest in this area, with an increasing number of studies focusing on the examination of ETFs. Growth of ETFs in India was very less than USA, Canada. But there is a huge scope for growth in India because of its advantages over Index Funds. Therefore, the present study aims at making a performance evaluation of ETFs vis-à-vis Index funds in order to know the barriers for the growth of the ETFs in India.

Aim and Objective of the Study

The main aim of the study is to examine the growth and performance of exchange traded funds in India in the context of globalization, liberalization and privatization of investment business.

The specific objective of this paper is to compare and evaluate the performance of Index Exchange Traded funds and Index funds of India based on risk and return.

Methodology

The study is based on secondary data. The Secondary data sources include Fact sheets of Mutual funds, articles, news papers, SEBI manuals, AMFI reports and websites. However, to gain an insight into the working of ETFs, discussions were held with the officials of stock brokerage firms and Investors. The study covers a period of Eight years from 2008-09 to 2015-16 for the purpose of evaluating the performance of select Exchange Traded Funds and Index Funds in India. There are 18 schemes (including Eight Index ETFs and Ten Index funds) in India, out of which, data with regard to all the parameters selected for the evaluation of performance of selected index ETFs and Index funds. The parameters for evaluating the performance are Standard Deviation, Beta, Treynor's Ratio, Reward to Variability (Sharpe) and Differential Return (Jensen Alpha) and Fema and also risk return grid are used for data analysis.

Index Exchange Traded Funds

Most ETFs are index funds that attempt to replicate the performance of a specific index. Indexes may be based on stocks, bonds, commodities, or currencies. An index fund seeks to track the performance of an index by holding in its portfolio either the contents of the index or a representative sample of the securities in the index. As of June 2012, in the United States, about 1200 index ETFs exist, with about 50 actively managed ETFs. Index ETF assets are about \$1.2 trillion, compared with about \$7 billion for actively managed ETFs. Some index ETFs, known as leveraged ETFs or inverse ETFs, use investments in derivatives to seek a return that corresponds to a multiple of, or the inverse (opposite) of, the daily performance of the index.

Some index ETFs invest 100% of their assets proportionately in the securities underlying an index, a manner of investing called *replication*. Other index ETFs use representative sampling, investing 80% to 95% of their assets in the securities of an underlying index and investing the remaining 5% to 20% of their assets in other holdings, such as futures, option and swap contracts, and securities not in the underlying index, that the fund's adviser believes will help the ETF to achieve its investment objective. There are various ways the ETF can be weighted, such as equal weighting or revenue weighting. For index ETFs that invest in indices with thousands of underlying securities, some index ETFs employ "aggressive sampling" and invest in only a tiny percentage of the underlying securities. As already discussed in the introductory part of this chapter, a total of eight Index exchange traded Funds are identified, the results of each are presented here under. 1) Kotak Sensex ETF, 2) Goldman Sachs banking Index ETF, 3) Kotak PSU Bank ETF, 4) Goldman Sachs Nifty ETF, 5) Goldman NIFTY Junior benchmark ETF, 6) Goldman Sachs PSU Bank benchmark ETF, 7) ICICI Prudential Sensex ETF and 8) Gold Benchmark ETF (Gold Bees).

Index Funds

An Index Fund is a Mutual Fund scheme that invests in the securities of the target Index in the same proportion or weight age. Since the first Index Fund launched, the Index Funds. Index funds are a relatively small part of the overall mutual fund industry in India, and this is markedly different from the west, where index funds do quite well, and in fact the biggest fund in the US is an index fund (SPY) that tracks the popular S&P 500 index. I think there are two aspects to this – the first is

that actively managed funds have performed better than index funds in the past and people expect that to continue in the future as well, and secondly, index funds aren't really low cost in India. The lists of selected funds are: 1) Birla Sun Life Index Fund, 2) Franklin India Index Fund NSE Nifty plan, 3) HDFC Index Fund NIFTY plan, 4) HDFC Index Fund SESEX plan, 5) LIC Numra MF Index Fund NIFTY plan, 6) LIC Numra MF Index Fund SENSEX plan, 7) SBI NIFTY Index Fund, 8) TATA Index Fund - NIFTY plan, 9) TATA Index Fund SENSEX Regular plan, and 10) UTI NIFTY Index Fund.

Table No. 1**STATEMENT OF RELATIVE PERFORMANCE OF SELECTED INDEX ETFS AND INDEX FUNDS**

S. No	Name of Mutual Fund	Mean Return (%)	SD (Fund)	Treynor's	Sharpe	Jensen	Fama	Rank
1	2	3	4	5	6	7	8	9
1	Kotak Sensex ETF	8.69	32.14	2.12	0.05	-1.81	-2.02	13
2	Goldman Sachs banking Index ETF	21.9	47.59	13.38	0.31	10.00	9.41	1
3	Kotak PSU Bank ETF	8.14	48.68	1.12	0.02	-3.34	-4.47	17
4	Goldman Sachs Nifty ETF	9.62	31.29	3.67	0.08	-0.52	-0.99	6
5	Goldman NIFTY Junior benchmark ETF	19.72	54.58	10.27	0.23	7.27	6.43	2
6	Goldman Saxe PSU Bank benchmark ETF	7.45	43.24	0.5	0.01	-3.54	-4.54	18
7	ICICI Prudential Sensex ETF	7.72	28.74	1.11	0.02	-2.12	-2.6	15
8	Gold Benchmark ETF (Gold Bees)	12.24	17.91	58.72	0.29	4.85	3.17	3
9	Birla Sun Life Index Fund	9.24	31.33	3.14	0.07	-0.9	-1.37	10
10	Franklin India Index Fund NSE Nifty plan	12.54	33	7.91	0.17	2.46	1.93	4
11	HDFC Index Fund NIFTY plan	9.25	30.11	3.28	0.07	-0.77	-1.23	8
12	HDFC Index Fund SESEX plan	8.79	30.7	2.57	0.06	-1.27	-1.75	11
13	LIC Numra MF Index Fund NIFTY plan	8.57	30.41	2.27	0.05	-1.47	-1.93	12
14	LIC Numra MF Index Fund SENSEX plan	8.42	32.79	1.90	0.04	-1.86	-2.37	14
15	SBI NIFTY Index Fund	7.05	29.49	0.08	0.00	-2.87	-3.35	16
16	TATA Index Fund - NIFTY plan	9.29	31.17	3.23	0.07	-0.84	-1.3	9
17	TATA Index Fund SENSEX Regular plan	9.62	33.03	3.47	0.08	-0.7	-1.19	7
18	UTI NIFTY Index Fund	9.63	31.17	3.79	0.08	-0.42	-0.78	5
	BSE 200	11.40	38.16					

Source: Computed & Tabulated from data analysis of the study

Relative Performance of Selected Index ETFs and Index Funds

In the next stage, an attempt is made to present a comparative picture of the relative performance of all the Index exchange traded funds and index funds selected for the study. The returns as per the descriptive statistics and risk adjusted measures like mean, standard deviation, Beta, Sharpe ratio, Treynor ratio, Jensen's alpha and Fama are calculated on annual basis taking BSE-200 as a benchmark for all selected equity funds and the results of these are given in Table-1. The relative performance of all these funds is represented in a diagrammatic form and shown in figure 1.

As already discussed earlier, the benchmark comparison is an important performance measure as it indicates to what extent the fund managers were able to produce better results of managed portfolio compared to the market or index portfolios. A close perusal of table reveals that Goldman Sachs banking Index ETF (21.90 per cent), Goldman NIFTY Junior benchmark ETF (19.72 per cent) and Gold Benchmark ETF (Gold Bees) (12.24 per cent) are the top three from Index Exchange Traded funds which are outperformed as per mean values and the least two funds are SBI NIFTY Index Fund (7.05 per cent) and Goldman Satche PSU Bank benchmark ETF (7.45) that are underperformed. The table further shows that the top five funds are three from Index ETFs and two from Index funds which are outperformed, whereas the underperforming funds are those of majority from Index funds which are compared to the benchmark return of 11.40 per cent as per the mean.

Standard deviation is used to measure the variation in individual from the average expected return over a certain period. Table-1 clearly reveals that Goldman NIFTY Junior benchmark ETF has clearly outperformed all the schemes with highest value of 54.58 of standard deviation. It indicates the relatively high volatility of the scheme and the high return per unit of risk. This is followed by Kotak PSU Bank ETF (48.68), Goldman Sachs banking Index ETF (47.79), Goldman Satche PSU Bank benchmark ETF (43.34). The standard deviation values of index funds are all lower than the benchmark values of 38.16. This indicates the relatively low risk

and low volatility of the schemes and the moderate return per unit of risk. In other words, Index ETFs show high risk with high and moderate return but in Index funds are funds relatively low risk with low and moderate returns. More or less similar situation is seen in respect of Beta values.

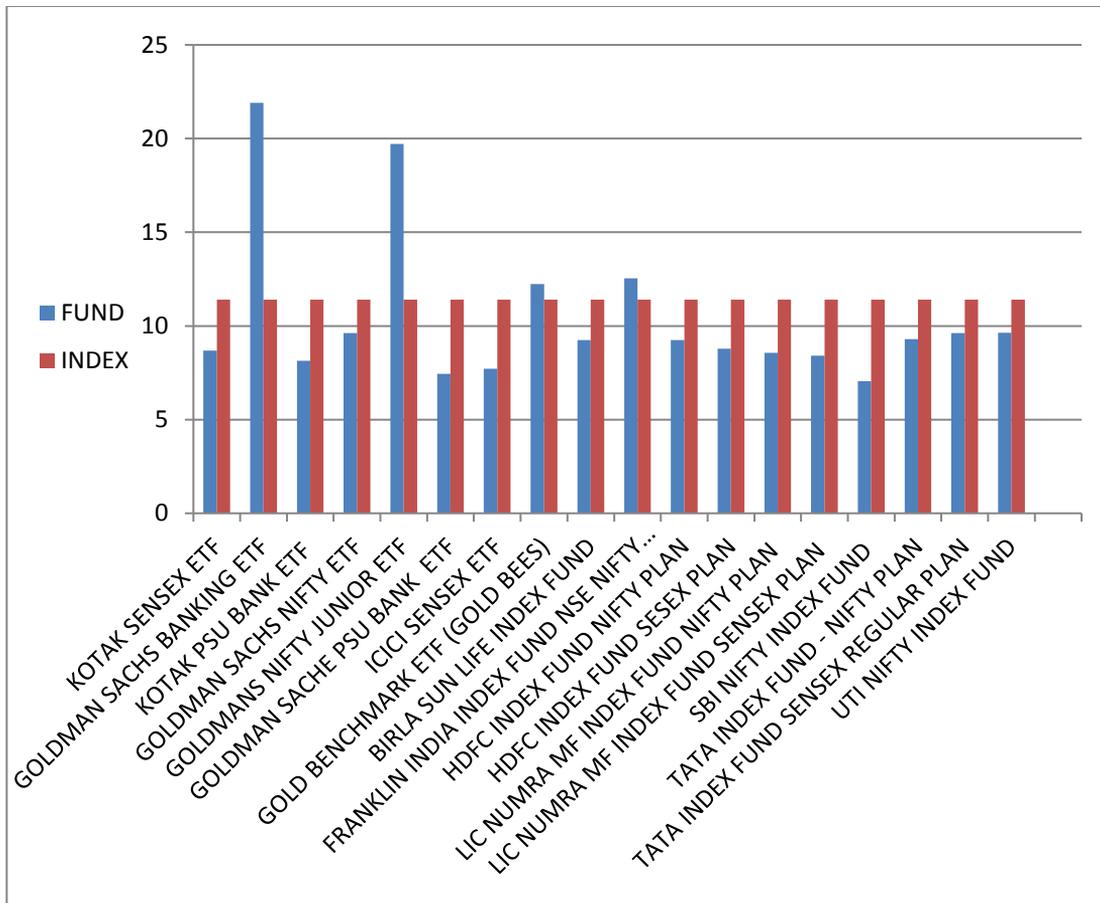
In general, it is assumed that Index funds tend to outperform the market but in case of bearish market sometimes it underperforms the market. A close perusal of the performance of the sampled schemes on the basis of the risk adjusted return measures namely Sharpe, Treynor, Jensen Alpha and Fama values some interesting findings are observed. It is evident from the Table 1 that according to Sharpe's index, the Index ETFs outperformed by registering higher ratios than the Index funds which showed lower ratios. Evidently, the Goldman Sachs banking Index ETF (0.31), Gold Benchmark ETF (Gold Bees) (0.29) and Goldman NIFTY Junior benchmark ETF (0.23) secured the highest ratios, whereas the SBI NIFTY Index Fund (0.00) and Goldman Satche PSU Bank benchmark ETF (0.01) accounted for lowest ratios. In brief, Index ETFs sector are more comfortable comparing to Index funds. Even the Treynor ratios and Jensen' Alpha also indicate similar type of situation and also identified the three Index ETFs funds as best and the one Index funds as least as shown above. As per the Jensen's alpha, the Goldman Sachs banking Index ETF performed high positive (10.00), Goldman NIFTY Junior benchmark ETF (7.27) and Gold Benchmark ETF (Gold Bees) (4.85) it shows the strength of Index ETFs.

As per the results of Fama, the Index ETFs Goldman Sachs banking Index ETF (9.41), Goldman NIFTY Junior benchmark ETF (6.43), Gold Benchmark ETF (Gold Bees) (3.17) are the top three performers in their respective order. From this, it is clearly evident that Index ETF fund managers are making the selection and switch of the portfolio according to market conditions. In order to Fama all the index funds are negative except Franklin India Index Fund NSE Nifty plan. Index funds showing negative values resulting in poor stock selection as per the results of Fama.

According to rank allocation as per the weighted average method, the top three ranks are those of Index ETFs, viz., Goldman Sachs banking Index ETF, Goldman NIFTY Junior benchmark ETF, Gold Benchmark ETF (Gold Bees) which are the top three performers. The Index funds secured lowest exhibiting their poor performance. Even the Bar diagram depicted in Figure 4.1 also indicated the superior performance of Index Exchange Traded Funds as against those of Index Funds.

Finally, it can be observed from Table-1 that Goldman Sachs banking Index ETF, ranked number one taking into consideration the weighted averages of all mutual funds parameters such as Jensen alpha, Sharpe ratio, Treynor ratio, and Fama. Index Exchange Traded Funds showed superior performance comparing to Index Funds. In fact, the fund managers had an accountability of their respective funds, but the Index Funds fund managers are lacking accountability and skills, consequently, the funds resulted in least and negative performances.

Figure.1
Relative Performance of Index Exchange Traded Funds and Index Funds



Risk Return Grid

Risk Return Grid, as a tool of analysis, helps the investor in carrying out a thorough analysis of the fund risk behaviour with respect to return. For carrying out the risk return grid analysis, sample funds have been classified under the following four categories on the basis of risk return characteristics:

1. **High Return and High Risk:** This category includes all those funds whose returns as well as the standard deviations are higher than that of the market. This is the first quadrant.
2. **High Return and Low Risk:** This category comprises of those funds whose returns are higher than the market, but their standard deviations are lower than that of the market. This is the second quadrant.
3. **Low Return and Low Risk:** This category consists of funds whose average returns are less than the average market return and their standard deviations are also lower than that of the market. This is the third quadrant.
4. **Low Return and High Risk:** The last category includes all those funds whose returns have been found to be lower than that of the market, but their standard deviations are higher than that of the market. This is the fourth quadrant.

An attempt is made to prepare the risk return grid for the public and private sector mutual funds. The analysis is prepared and shown in Figure 6.6. In preparing this grid, the excess return has been taken on Y-axis and the excess risk on X-axis. Since, the entire study revolves around benchmark indices and four different timings of returns, the risk return grid has been prepared on annual basis.

Figure No 2
Risk Return Grid of Index ETFs and Index Funds

Return	High	II	I
		$R_p \geq R_m, \quad \delta p < \delta m$ Low Risk and High return (2) Gold Benchmark ETF (Gold Bees), Franklin India Index Fund NSE Nifty plan	$R_p \geq R_m, \quad \delta p > \delta m$ High risk and High Return (2) Goldman Sachs banking Index ETF, Goldman NIFTY Junior benchmark ETF

Low	$R_p < R_m, \delta p < \delta m$ Low Risk and Low Return (12) Kotak Sensex ETF, Goldman Sachs Nifty ETF, ICICI Prudential Sensex ETF, Birla Sun Life Index Fund, HDFC Index Fund NIFTY Plan, HDFC Index Fund SESEX Plan, LIC Numra MF Index Fund NIFTY plan, LIC Numra MF Index Fund SENSEX plan, SBI NIFTY Index Fund, TATA Index Fund - NIFTY plan, TATA Index Fund SENSEX Regular plan, UTI NIFTY Index Fund	$R_p \geq R_m, \delta p < \delta m$ High Risk and Low Return(2) Kotak PSU Bank ETF, Goldman Satche PSU Bank benchmark ETF
	III	IV
Low	High	
Risk		

In preparing this grid the excess return has been taken on Y-axis and the excess risk on X-axis. Since the entire study revolves around benchmark index and four different timings of returns. The risk return grid has been prepared on annual basis.

The figure 2 shows Risk Return Grid of Selected sample funds 18 i.e., Index ETFs 8, Index Funds 10, it can be seen that, 2, 2, 12 and 2 funds lie in the high risk and high return category, high return low risk, low return and low risk and low return and high risk category respectively. The investors investing in the growth funds are risk seekers among risk adverse category. It would be the most ideal fund for investors to invest in a fund that gives higher return but has a lesser risk. It was

found that two funds (Index ETF one and Index fund one) from falls under this category, i.e. in the second quadrant.

From the above analysis, it can be concluded that with the change in the time factor in the calculation of return and risk and benchmark index, the funds that fall in the category of the high risk/high return, low risk/high return, low risk/low return and high risk/low return keep on changing. The majority of the funds come under the category of low return and low risk. This implies that the index funds have provided lower returns than the market index, but the investment has increased the returns and risks. Some index ETFs are high return funds and the fund manager select portfolio and switch portfolio according to market conditions, but index funds are in third and fourth quadrants covering 90 per cent underperformed because index funds fund managers are underperformed. So, it can be concluded that ETFs provide better returns in the long run rather than in the short run. In short, index ETFs beater performance compared to the index funds.

Conclusion

On the basis of overall analysis, it can be inferred that the majority of index funds showed underperformance in comparison with those of index ETFs. Except one of the schemes of index funds could provide more returns. On the other hand, Most of the index ETFs outperforms that of index funds showing good performance. The inability to fix the responsibility on the fund managers and fluctuations in the market conditions led to the poor performance of funds. Besides, returns on funds are adversely affected by fluctuations in the stock market and also lack of awareness of portfolio of securities.

Fund houses are the intermediaries in the investment business which indirectly connect the public and the private corporate sector. So, based on this, they are considered to be the powerful engines and catalytic agents for resource mobilization from the common investors to the corporate sector. Reducing the

level of risk and diversifying the risk are the two normal strategies applied by the AMCs. Also, charging the portfolio structure and making investment on various stocks following appropriate timings are very important. The analyses indicate that more than index funds, index ETFs have been consistent in their performance and have recorded high NAV during the study period. It is suggested that aggressive and risk seeking investors might opt for index ETFs as the yield high returns based on the NAV performance. The index funds fund managers have to apply suitable methodology to choose the best securities and investment avenues based on reliable analytical measures as the investors might lose confidence if the performance is not satisfactory over a long period of time. The ETFs can become one of the best investment alternatives, provided, adequate awareness is created among the investors in stock markets. It is suggested that prospective investors need to be informed to apply the basic analytical tools for their wise-investment, apart from creating awareness on various schemes.

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