



Analysis of ETFs for Better Investment: Special Evidence from NSE

KEYWORDS

ETF, volatility, ADF, EGARCH.

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ABSTRACT Exchange Traded Fund are funds that follow a common index and traded like share in the financial market. ETFs may be attractive as investments because of their stock-like features, tax efficiency and low costs. The risk involved in ETFs is very low. Because of all these features they are preferred by many. In this paper an attempt is made to know whether these ETFs are really attractive investments and if so for whom? For this purpose the descriptive statistics, ADF and EGARCH test were used in order to check the volatility, stationarity and risk involved in selected ETFs traded in NSE.

Introduction

Exchange-Traded Fund was first started by State Street Global Advisors in 1993, with the introduction of the SPDR. They have continued to grow in popularity and gather assets at rapid pace. ETFs are like mutual funds that are traded like stocks. Trading like stocks is one of the main features that make ETFs popular with professional investors and individual investors who are active traders. An ETF is bought and sold on an intraday securities exchange and is composed of a basket of securities. Generally, ETFs will trade at (or very close to) the same price of the net asset value of the underlying assets. The first ETF in India, the "NIFTY BEES" (Nifty Benchmark Exchange Traded Scheme) based on Nifty 50 was launched in December 2001 by Benchmark Mutual Fund.

Concept of ETF

An ETF is a marketable financial instrument that tracks an index, a commodity, bonds, or a basket of assets. Unlike mutual funds, an ETF trades like a common stock in a stock exchange. ETFs experience price changes throughout the day as they are bought and sold. ETFs generally provide the easy diversification, low expense ratios, tax efficiency of index funds, and still maintaining all the features of ordinary stock, such as short selling, options and limit orders. ETFs typically have higher daily liquidity and lower fees than mutual fund shares, which makes them an attractive alternative for individual investors. Because it trades like a stock, an ETF is not calculated based on its net asset value (NAV), once at the end of every day like a mutual fund does. Besides ETF shareholders are entitled to a proportion of the profits like earned interest or dividends paid, and they will not get a residual value in case the fund is liquidated.

Investing in ETF

To Invest in ETF, one needs to have a demat account and a trading account with an online account for trading stock. Pan card, Identity proof and Address proof are required to open demat and trading account. Once it is ready with the account it's just a matter of choosing the ETF and place the order online. The orders will be routed to the exchange where the purchase order are matched with the sell orders and executed and a confirmation will be sent back to you.

Review of Literature:

Kostovetsky (2003) studied relative performance of the ETFs and index mutual funds from the investors' point of view. The key areas of differences between the two that he found out lie in management fees, taxation efficiency, shareholders transaction fees, and the qualitative factors transaction convenience, short selling, and ability to margin.

Mei-Maun Hseu (2007) examined the relative price efficiencies of three American stock market indices (S & P 500, Nasdaq-100 and DJIA) in the spot, futures, E-mini futures and ETF markets for the periods both before and after the NASDAQ market crash between March 2000 and March 2001. The study found that a co-integrating relationship existed between the three indices during the period after the crash.

Adjei Frederick (2009) found no significant difference between the performances of the ETFs and the S&P 500 index. He found weak evidence of on both the half-yearly and the yearly horizons in performance persistence.

Wong and Shum (2010) examined the performances of 15 worldwide ETFs across bearish and bullish markets over the period 1999 to 2007. They have found out that ETFs always provide higher returns in a bullish market than in a bearish market. They noted that ETF returns are not positive and proportional to the market volatility from the Sharpe ratios.

Agapova (2011) has examined the substitutability of two similar investment vehicles: conventional index mutual funds and exchange-traded funds both of which offer a claim on the same underlying index return process but have distinctly different organizational structures. The results show that conventional mutual funds and ETFs are perfect substitutes for one another.

Vikrant Kumar and Sougata Ray (2012) made a study on "Gold ETF Performance: A Comparative Analysis of Monthly Returns" revealed that Gold investment has been a very important aspect for ages across the globe. The study also examines the role of gold in hedging equity investment risk.

Research Objectives

- To analyze the return earned by investing in ETFs.
- To find out the degree of risk involved in ETF investment
- To check the volatility and stationarity of the selected ETFs.

Methodology

Collection of Data:

The Secondary data of selected 5 ETFs is collected for this research from NSE from the period of November 2014 to January 2015. The ETFs selected for research are Bank Bees, Axis Gold, BSL Nifty, N 100 and Religare Go.

Tools used for Analysis:

• **Descriptive Statistics**

The descriptive statistics is used to get a meaningful insight into the data given. Mean, Median, Range, Standard Deviation, Skewness and Kurtosis are used to interpret the volatility, riskiness and returns of the selected ETFs.

• **ADF**

Augmented Dickey- Fuller test is test for a unit root in a time series data. The testing procedure for the ADF test is given as

$$\Delta y_t = \alpha + \beta t + \gamma y_{t-1} + \delta_1 \Delta y_{t-1} + \dots + \delta_{p-1} \Delta y_{t-p+1} + \epsilon_t$$

where α is a constant, β the coefficient on a time trend and p the lag order of the autoregressive process. With the constraints $\alpha = 0$ and $\beta = 0$ corresponds to modelling a random walk and using the constraint $\beta = 0$ corresponds to modeling a random walk with a drift.

• **EGARCH**

The Exponential Generalized Autoregressive Conditional Heteroskedastic developed by Nelson in 1991 is another form of GARCH model to test the heteroskedasticity of time series data.

$$\log \sigma_t^2 = \omega + \sum_{k=1}^q \beta_k g(Z_{t-k}) + \sum_{k=1}^p \alpha_k \log \sigma_{t-k}^2$$

Limitations

- The data is collected from selected 5 ETF companies during November 2014 to January 2015.
- The research paper is based on secondary data.

Table 1 Descriptive Statistics of the selected ETFs

Particulars	BANKBEES	AXIS-GOLD	BSLNIFTY	N100	RELIGAR-EGO
Mean	0.002314321	0.000722	0.00444	0.000201	0.000876
Median	0.000359911	-0.00015	0.001192	0.002301	0.0004
Standard Deviation	0.012982104	0.008534	0.033917	0.014689	0.011561
Kurtosis	0.98855971	1.231336	2.755865	0.222404	0.211163
Skewness	-0.106254792	0.758096	0.425865	-0.24968	0.186103
Range	0.065918692	0.044747	0.20271	0.075157	0.050555
Jarque-Bera	1.746399	8.127690	15.84244	0.620482	0.351976

*Computed using E Views software version 7.0.

Table 1 shows descriptive statistics of selected ETFs. It is inferred that the mean of all the selected ETF shows a positive but negligible average returns which means the profit earned from them will be very less. As the mean and median values are slightly different which results in skewness. Except Bank Bees and N100 all others are positively skewed which represents more negative returns. Kurtosis shows high value for BSLNIFTY and Axis Gold but below 3 which is a standard one resulting in low fluctuation of ETF's returns. The standard deviation of all the ETF's show lower values which means lower volatility and lower risk because minimum spread of data.

Unit Root Test – ADF

Hypothesis: Ho – The data is not Stationary Ha – The data is Stationary

Table 2 ADF test of selected ETFs

Particulars	BANK-BEES	AXIS-GOLD	BSLNIFTY	N100	RELIGAR-EGO
*Probability Value	0.000	0.000	0.000	0.000	0.000
t-Statistics	-7.36788	-7.51433	-8.40693	-8.74535	-11.4437
Critical Value : 1%	-2.60475	-2.60475	-2.60616	-2.60475	-2.60475
5%	-1.94645	-1.94645	-1.94665	-1.94645	-1.94645
10%	-1.61324	-1.61324	-1.61312	-1.61324	-1.61324

*MacKinnon (1996) one-sided p-values ** Lag Length based on SIC

Table 2 shows the result of Unit root test – ADF. The probability value (p – value) of all selected ETF's is less than sig value (0.005). The t-statistics is less than the critical values of all selected ETF's. Both the value leads to the conclusion that we should reject Null hypothesis and accept the Alternative hypothesis. So the selected ETF's data are stationary.

EGARCH:

Table 3 EGARCH of selected ETFs

Name of ETF	Variable	Coefficient	Std. Error	z-Statistic	Prob
Bank Bees	C(1)	-3.8857	0.072324	-53.7264	0
	C(2)	-1.03926	0.095617	-10.869	0
	C(3)	-0.21022	0.137408	1.52991	0.126
	C(4)	0.468844	6.07E-05	7720.714	0
Axis Gold	C(1)	-18.5581	0.967367	-19.1841	0
	C(2)	0.103643	0.145132	0.714131	0.4751
	C(3)	0.362927	0.137846	2.632842	0.0085
	C(4)	-0.89512	0.089103	-10.046	0
BSL Nifty	C(1)	-11.0949	1.093838	-10.1431	0
	C(2)	-0.33296	0.331276	-1.00508	0.3149
	C(3)	0.487263	0.218552	2.229502	0.0258
	C(4)	-0.61907	0.157827	-3.92248	0.0001

N100	C(1)	-4.45847	4.669126	-0.95488	0.3396
	C(2)	0.322752	0.714699	0.451591	0.6516
	C(3)	-0.31729	0.342662	-0.92597	0.3545
	C(4)	0.516151	0.484279	1.065812	0.2865
RELIG-AREGO	C(1)	-17.1292	1.279251	-13.39	0
	C(2)	0.585369	0.277583	2.10881	0.035
	C(3)	0.182319	0.162825	1.11972	0.2628
	C(4)	-0.8827	0.152431	-5.7908	0

$$\text{LOG}(\text{GARCH}) = \text{C}(1) + \text{C}(2) * \text{ABS}(\text{RESID}(-1) / \text{SQRT}(\text{GARCH}(-1))) + \text{C}(3)$$

$$* \text{RESID}(-1) / \text{SQRT}(\text{GARCH}(-1)) + \text{C}(4) * \text{LOG}(\text{GARCH}(-1))$$

Table 3 shows the EGARCH calculations of selected ETFs. From the table the sum value for selected ETFs are calculated as Bank Bees (-4.666336), Axis Gold (-18.98665), BSLNIFTY (-11.559667), N100 (-3.936857), RELIGAREGO (-17.244212). It is interpreted that Bank Bees & N100 shows low risk and Axis Gold, BSLNIFTY, RELIGAREGO shows a very low risk.

Findings and Suggestions:

From the above research it is evident that the risk and return of the selected ETFs in India are very low. The de-

scriptive statistics shows a skewed position of the selected ETF which means even though it moves based on the underlying common index, it is not fully representing the same. This further makes it as a better instrument as it is less risky. Since the data is stationary and has very less volatility, it is considered to be a good option for an investor to invest in ETFs. As the cost involved and return earned in ETFs are very minimum, this instrument will be best suitable for one who buys in huge volume. Institutions which has more money to invest and needs high safety and liquidity may select this investment option.

Conclusion

ETFs are financial instruments that are in developing stage in India. Programmes related to ETFs should be conducted in order to create awareness among public. The selection of a particular ETF depends on the investor's income level, their investment objectives, their tenure of investment etc., among various schemes available in the financial market. Hence ETFs seems to be best suitable for the investors those who can invest in bulk and needs more safety for their money.

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