ABSTRACT

Available online at www.elixirpublishers.com (Elixir International Journal)

Finance Management

Elixir Fin. Mgmt. 33 (2011) 2323-2327

Study on ETFs & index funds performance in India

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ARTICLE INFO

Article history: Received: 3 March 2011; Received in revised form: 24 March 2011; Accepted: 31 March 2011;

Keywords

Investor Profiling, Returns, Volatility, Premium, Tracking Error.

Introduction

ETFs are listed on a national securities exchange; Individual investors may purchase or sell an ETF through a stock brokerage account. Investors may enter the same types of orders that are placed for shares of stock (including, for example, market and limit orders).

Unlike most equities, however, an ETF can issue new shares and redeem existing shares on any trading day, in a process referred to as "creation" and "redemption", which is open to qualifying entities that register as Authorized Participants with the fund. This mechanism allows an Authorized Participant to exchange a portfolio of stocks and receive ETF shares in return (i.e., a "creation"). Similarly, an Authorized Participant can "redeem" ETF shares and receive the portfolio of stocks. An Authorized Participant is usually an institutional investor or market maker who has signed a participant agreement with an ETF sponsor or distributor.

ETFs compete with index mutual funds for investor dollars, they have a very different operational structure. Most ETFs are unit investment trusts: A UIT is an investment company with a finite life that raises capital from investors and uses the proceeds to buy a fixed portfolio of securities. While an ETF is registered with the SEC as an investment company-either as an open-end fund or a UIT----it differs from a mutual fund both in how shares or units are issued and redeemed and in how they are traded. Unlike mutual funds and UITs, ETF shares are created when an institutional investor (someone who manages money for institutions and corporate investors such as retirement plans or endowment trusts) deposits a block of securities with the ETF. In return for this deposit, the investor receives a fixed number of ETF shares, some or all of which it may then sell on a stock exchange. The institutional investor can get its deposited securities back by redeeming the same number of ETF shares it got from the fund. Individual investors can buy and sell ETF shares only when they are listed on an exchange. Unlike an

one type of structured exchange-traded product. An ETF is an investment product that allows an investor to buy and sell shares in a single security that represents a fractional ownership of a portfolio of securities. ETFs are open-ended investment companies or unit investment trusts that are registered under the Investment Company Act of 1940. The first ETF, SPDR Trust, was listed in 1993 with an underlying portfolio designed essentially to replicate the performance of the S&P 500 index. Since then over 700 ETFs have been introduced. This study shows the performance of ETFs & Index Fund from investors perspectives. The study is based on 6 USA based ETFs that track well known indexes. As in India ETF market is still at introductory stage so International market has been traced.

Exchange Traded Funds ("ETFs") are increasingly popular investment vehicles. ETFs are

institutional investor, an individual investor cannot purchase or redeem shares directly from the ETF as he or she could with a mutual fund. Investors can buy ETFs on margin (subject to the same rules that apply to common stocks) at limit prices and sell them short in a brokerage account.



Investors on established stock

exchanges.

Unlike mutual fund distributors, ETF sponsors do not sell shares to the public for cash. Instead they exchange large blocks of ETF shares-called creation units- for the securities of the companies that make up the underlying index plus a cash component representing mostly accumulated dividends. Some institutional investors or wealthy individuals may hold the creation units in their own portfolios. Others, generally brokerdealers, break up the units and offer the ETF shares on the exchanges where individual investors can buy them in their brokerage accounts through a broker or an online trading account. ETFs are redeemed in a way that is the opposite of how they are created. Broker-dealers buy enough ETF shares from individual investors to make a creation unit block. They then exchange the block with the ETF sponsor for a "basket" of securities and a small amount of cash. Other institutional investors simply trade back the creation units in their portfolio to the ETF sponsor for securities and cash.





Investor Profiling

Investors can be classified broadly on the basis of the following parameters:

1. Risk Appetite : risk takers, risk averse and risk neutrals

2. Amount of investment: large investor, medium and small

3. Time horizon: long term, medium term and short term

4. Life cycle stage: young professional who just started working, young married couple, old married couple and retired couple5. Financial goal: regular Income, investment growth, tax saving

In this paper we compare ETFs performance during the time period from 01/07/2008 to ;30/06/2009, using a set of 6 ETFs that track well known indexes. A great care and understanding was incorporated in selecting the above ETF, as a result one would find that these six ETF's cover all the major segmention the market/index Broad Based (Russell's 3000 Value), Large Cap (S&P 500, Russell's 1000 growth & 1000 value), Mid Cap (Russell's Mid Cap Growth) and Small Cap (Russell's 2000 growth). We estimate their average return and mean risk level. We regress ETFs returns with the return of the underlying indexes and we find out that they don't achieve any excess return than that of their benchmarks. We compute ETFs average tracking error, confirming their analogous tracking ability. Then present ETFs major sources of costs and, regressing average return on expense ratio, we exhibit a significant positive relation of our ETFs with their expense ratio.

Returns, Volatility & Premium:

Table I and II presents the average daily return and risk of indexes, index funds and ETFs during 1/7/2008 to 30/06/2009, when we compute them using the historical closing prices.

In this segment of the paper, we present and compare the results of ETFs/index funds and indexes average daily return and risk calculations. We had the option of applying two alternate methods of ETF return measurement. The first one is to divide the difference of ETF last trade prices on day one and on zero day with the last trade price on zero day. The second one is the division of differ between the bid price on day one and the ask price on zero day to the ask price on zero day. Since these two methods yield the same result if the number of observations is large so we have used the first method. Likewise we estimate the return of tracking indexes. Finally, one should also keep in mind that we measure the ETFs and index return assuming that all dividends and capital gains are reinvested on the ex-dividend date at the ex-dividend price or the net asset value. Table 1 also exhibits the average daily premium of ETF's. There can be two alternate method of calculation for premium or discount. One, concerns the percentage deviation of the LTP from the NAV and the second method measures the divergence of the midpoint between the highest bid and lowest offer price (MID) from the NAV. It has been proven that the second result gives more consistent and stable results. Thus, in our study we have used this methodology of premium or discount calculation (which required a great effort in determining the highest bid and the lowest offer prices).

To summarize the main result of the table, average or mean daily percentage return of ETFs which is negative equal to -.2475 percent. This figure for the index is less negative at -.071percent. On testing whether the returns from the ETF and the index were significantly different we found that they were not different at both 95% and 99% confidence level. This is in line with the general expectation that the ETF's can't move away from the index in the long run. Volatility, as it is expressed in standard deviation terms, is small enough and equal to .0292764. This low level of ETFs standard deviation demonstrates the great degree of portfolio risk diversification, so investors in ETFs mainly deal with market systematic risk. In case of Index funds too returns of index funds are more negative than the index itself. We conclude this part stating that according to our findings, ETFs and index result nearly the same levels of performance and portfolio risk to their investors, so one could wonder why we should have two different investment products, which both derive similar effects. The answer is that ETFs principally address to stock investors who prefer to invest on exchange indexes, while mutual funds investors are more conservative, they narrowly invest on ETFs and prefer to follow buy and hold investing strategies.

Regression Analysis:

In this section we introduce and decompose the results of returns regression, comparing simultaneously the ETFs and index funds performance estimations. More specifically, we use the model,

$Rpt = \alpha t + \beta t Rbt + \varepsilon t$

Where, Rpt is the tth fund's portfolio (ETF or index fund) daily return, αt express the constant return a manager can achieve independently of index return. Alternately, αt represents the return an ETF or index fund investor can have, when there is no relationship between the managed portfolio and the index. Since the ETF or index fund and index performance are narrowly connected, we expect alphas of regressions to be statistically insignificant. Rbt is the return of tth underlying index portfolio and βt describe the sensitivity of funds return to index movements, otherwise βt is an estimation of the systematic risk a fund manager face, βt also can be the rate in which ETFs or index funds follow the stock composition of the tracking index. Finally, ϵt refers to residual daily return of ith ETF or index fund, which is not accounted for by the model.

Table III and IV presents the results of running regression, using successively as dependable variable the ETF and index funds returns. On this Table, ETF's and index funds' return is calculated by the last trade values and we should note that return computations are gross and before the subtracting of expenses. The mean alphas of all the ETFs is negative and its average tratio is also negative, which entails that average alpha is not statistically different from zero, implying that ETFs just follow the index return and do not produce excess return. The beta coefficients on the contrary show very healthy value of above .95 for all most the ETF's (except IWF). Also the single tail ttest shows that that the value of the beta is significant for all the funds i.e. the betas are not significantly different from unity. When we combine the above two results with the correlation coefficients of our regression model, we obtain a model which is very robust in explaining in the risk-return profile of the ETF's with that of the index.

Tracking Error:

The major current problem that portfolio managers face is the minimization of portfolio's return volatility relative to volatility of a benchmark or an index portfolio, known as tracking error criterion (TEV). Economists argue that fund managers follow a two-dimensional investment policy. The first goal is the beating of market, resulting in a positive expected tracking error and the second one is the reduction of the variance of difference between managed portfolio return and benchmark return. Two of the most prominent researchers Frino and Gallagher describe the main factors that derive and induce tracking error of index fund portfolios as: > Managerial fees and transaction costs, which are correlated with portfolio operation, rebalancing and capital flows, both for ETFs and index funds, affect the ability of funds to achieve accurately the same performance of indexes. On the other side, indexes do not reflect any expense at all.

> Handling of dividends. Specifically, there is a time delay between when the index incorporates the dividends and when the dividends actually received by index funds.

> Changes in index composition and the liquidity of portfolio stocks can also affect funds tracking ability.

> Further, ETFs tracking error records are induced by the bidask spread in their exchange prices, as also by the premium or the discount of their Net Asset Value.

Table V and VI reports the tracking error estimations of ETFs, when the ETF return is measured using the last trade prices difference into two successive days. In considering the first method, the average tracking error of ETFs is equal to .017 percent. The second method results a mean tracking error of ETFs equal to 36.23 basis points.

This difference in the tracking error estimate is due to the fact that the average beta of the regression coefficient is exactly not equal to 1. Hence the standard error estimate (i.e. the second method) will give a slightly different but significant result. Concluding this part, we declare that in general ETFs and index funds substantially introduce similar tracking error records, as they are resulted from fist two formulas.

Comparison of expense ratios of etfs and index funds What Does Expense Ratio Mean?

A measure of what it costs an investment company to operate a fund. An expense ratio is determined through an annual calculation, where a fund's operating expenses are divided by the average dollar value of its assets under management. Operating expenses are taken out of a fund's assets and lower the return to a fund's investors. Also known as "management expense ratio" (MER).

Depending on the type of fund, operating expenses vary widely. The largest component of operating expenses is the fee paid to a fund's investment manager/advisor. Other costs include recordkeeping, custodial services, taxes, legal expenses, and accounting and auditing fees. Some funds have a marketing cost referred to as a 12b-1 fee, which would also be included in operating expenses. A fund's trading activity, the buying and selling of portfolio securities, is not included in the calculation of the expense ratio. Costs associated with mutual funds but not included in operating expenses are loads and redemption fees, which, if they apply, are paid directly by fund investors.

So by table VII we can say that expense ratio of index funds are more than ETFs which means deduction from the returns of the investors for operating expenses will be more in case of Index funds.

Conclusion:

Concluding this study, we state that ETFs and index funds, though offer analogous performance possibilities, they are differentiated in view that they addressed to disparate class of investors. More specifically, conservative stock investors or more risky mutual funds investors mainly prefer ETFs. Institutional investors, who aren't allowed to use financial derivatives as a hedging tool, also resort to ETFs, while traditional individual mutual fund investors avoid investing on ETFs.

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ETF	UNDERLYING	RETURNS	S.D DEV.	RETURNS	S.D. ETF	PREMIUM OR	OBSERVATIONS
	INDEX	INDEX %	INDEX	ETE %		(DISCOUNT) ON ETF %	
	II (DEA		повл	E11 /0			
IVV	S&P 500	-0.09	0.028679	-0.09234	0.0275433	0.02	250
		0.000		0.101			
IWD	RUSSELL 1000 VALUE	-0.099	0.031565	-0.101	0.030562	0.02	250
IWF	RUSSELL 1000	0.029	0.032954	-0.085	0.025979	0.01	250
11	GROWTH	0.025	0.052951	0.005	0.023373	0.01	200
IWO	RUSSELL 2000	-0.066	0.031892	-0.07	0.030874	(0.02)	250
10	GROWTH	0.000	0.051072	0.07	0.050071	(0.02)	200
IWP	RUSSELL MID	-0.101	0.030891	-0.104	0.029886	0.02	250
11	GROWTH	0.101	0.050071	0.101	0.029000	0.02	200
IWW	RUSSELL 3000	-0.097	0.031735	-0.099	0.030814	0.06	250
	VALUE						
		1	1	1			1

Table I: Descriptive Statistics of ETFs (Last Trade Prices) & Premium/Discount through NAV

Table II: Descriptive Statistics of Index Funds							
INDEX FUNDS	UNDERLYING INDEX	RETURNS INDEX %	STD DEV. INDEX	RETURNS INDEX FUND %	STD DEV. INDEX FUND	OBSERVATIONS	
VPMCX	S&P 500	-0.0009	0.028679	-0.1128	0.0265959	250	
VEIPX	RUSSELL 1000 VALUE	-0.00099	0.031565	-0.088	0.027865	250	
VGEQX	RUSSELL 1000 GROWTH	0.00029	0.032954	-0.1368	0.0267233	250	
VEXPX	RUSSELL 2000 GROWTH	-0.00066	0.031892	-0.0876	0.02827483	250	
VHCOX	RUSSELL MID GROWTH	-0.00101	0.030891	-0.1107	0.0269635	250	
VUVLX	RUSSELL 3000 VALUE	-0.00097	0.031735	-0.1226	0.0305532	250	

Table III This Table presents the results of ETFs and indexes returns regression: Rpt = $\alpha + \beta$ Rbt + ϵ t during the period 01/07/2008 to 30/06/2009. Rpt represents the return of ETF while Rbt is the index portfolio return.

ETF	INDEX FUND	ALPHA (%)	BETA	R-SQUARE
IVV	S & P 500	-5.77881E-03 (-0.32619)	0.95536645	0.989669921
(t- stat)			(154.1414)	
IWD (t- stat)	RUSSELL 1000 VALUE	-0.00578571 (-0.19843)	0.957143892	0.977274602
			(103.271)	
IWF (t- stat)	RUSSELL 1000 GROWTH	-0.1043286 (-1.17902)	0.66426736	0.710027373
			(24.64251)	
IWO (t- stat)	RUSSELL 2000 GROWTH	-6.87605E-03 (-0.21835)	0.955417504 (96.39494)	0.974004148
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IWP (t- stat)	RUSSELL MIDCAP GROWTH	-0.0075966 (-0.21724)	0.950777825 (83.70083)	0.965811158
IWW	RUSSELL 3000 VALUE	-5 52584E-03	0.963907427	0.985545736
(t- stat)	RUSSELE 5000 VALUE	(-0.2357)	(130.0368)	0.705545750

Table IV This Table presents the results of index funds and indexes returns regression: $Rpt = \alpha + \beta Rbt + \epsilon t$ during the period 01/07/2008 to 30/06/2009. Rpt represents the return of index fund portfolio, while Rbt is the index portfolio return.

INDEX FUND	INDEX	ALPHA (%)	BETA	R-SQUARE
VPMCX (T-STAT)	S & P 500	-0.032 (-0.677)	0.892637 (53.26308)	0.91961
VEIPX (T-STAT)	RUSSELL 1000 VALUE	-4.4E-03 (-0.2229)	0.880204 (141.5022)	0.987766
VGEQX (T-STAT)	RUSSELL 1000 GROWTH	-0.156 (-1.74339)	0.690921 (25.27442)	0.720342
VEXPX (T-STAT)	RUSSELL 2000 GROWTH	-0.032 (-1.32228)	0.881639 (114.6754)	0.98149
VHCOX (T-STAT)	RUSSELL MIDCAP GROWTH	-0.027 (-0.55739)	0.839894 (52.96046)	0.918763
VUVLX (T-STAT)	RUSSELL 3000 VALUE	-0.032 (-1.28591)	0.958332 (122.6396)	0.983779

Table V This Table presents the estimations of ETT's tracking error.						
ETF	INDEX	Standard Errors of Regression (1) (TE1) %	Standard Deviation of Returns Difference (TE2) (%)			
IVV	S & P 500	0.2799675	0.0148747			
IWD	RUSSELL 1000 VALUE	0.4607688	0.036239436			
IWF	RUSSELL 1000 GROWTH	1.3990663	0.005000334			
IWO	RUSSELL 2000 GROWTH	0.4977956	0.000421			
IWP	RUSSELL MIDCAP GROWTH	0.5526082	0.000516			
IWW	RUSSELL 3000 VALUE	0.3704958	0.000236			

Table V This Table presents the estimations of ETFs tracking error.

Table VI This Table presents the estimations of Index funds tracking error.

INDEX FUND	INDEX	Standard Errors of Regression (1) (TE1) %	Standard Deviation of Returns Difference (TE2) (%)
VPMCX	S & P 500	0.757	0.105182474
VEIPX	RUSSELL 1000 VALUE	0.3092	0.037583428
VGEQX	RUSSELL 1000 GROWTH	1.4188	0.480423911
VEXPX	RUSSELL 2000 GROWTH	0.3861	0.04591915
VHCOX	RUSSELL MIDCAP GROWTH	0.7715	0.132259653
VUVLX	RUSSELL 3000 VALUE	0.3906	0.026777164

Table VII

ETFs	INDEX FUNDS	EXPENSE RATIO ETFS (%)	EXPENSE RATIO INDEX FUNDS (%)
IVV	VPMCX	0.09	.49
IWD	VEIPX	.15	.36
IWF	VGEQX	.20	.51
IWO	VEXPX	.25	.51
IWP	VHCOX	.25	.50
IWW	VUVLX	.25	.52