

A STUDY ON PERFORMANCE EVALUATION OF SELECTED EXCHANGE TRADED FUNDS LISTED ON NATIONAL STOCK EXCHANGE IN INDIA

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ABSTRACT

This study empirically examines the performance of selected Exchange Traded Funds listed in the national stock exchange in India. A sample of twelve ETFs consisting of equity, gold and indices exchange traded fund listed in the national stock exchange in India. The study has analyzed the performance of selected ETFs with the help of risk-adjusted methods adjust returns in order to take an account of differences in risk levels between the managed portfolio and the benchmark portfolio. The major methods are the Sharpe ratio, Treynor ratio, Jensen's alpha, Information ratio, Modigliani and Modigliani, Treynor Square, R squared and FAMA'S over a period of six years from January 2014 to December 2019.

Keywords: Exchange Traded Funds, Performance Evaluation, Portfolio, Risk and Return, Sharpe Ratio, Treynor Ratio, Jensen's Alpha, Modigliani and Modigliani.

Introduction

The first ETF created in the United States was launched in 1993. After nearly a decade in 2001, in India first ETF—the Nifty ETF Fund or Nifty BeEs, launched by benchmark mutual fund. An Exchange Traded Fund, which is traded on recognized stock exchange just like stocks and ETFs are buying and selling in real time at a price that fluctuates throughout the day. The different types of ETFs trading in Indian markets are equity ETFs, debt ETFs, commodity ETFs, overseas equity index and gold ETFs. An initial part of any investment decision-making process should be the evaluation of portfolio performance, whether an investor himself make his own investment decision or employ a manager to make them. The acceptance of modern portfolio theory in the early 1960s investors were aware how to quantify and measure risk in terms of variability of returns which has changed evaluation process from only a rate of return calculation to risk and return adjusted measures.

Review Literature

Svetina and Wahal (2008) examined the performance of selected sample of 584 domestic and international equities and fixed income ETFs. The findings show that number of average ETFs were underperformance in their benchmark.

Prashanta Athma and Raj Kumar (2011) studies covers the trends and progress of ETFs and Index Funds in India and to evaluate the performance of ETFs v/s Index Funds in India. The study is based on secondary data collected from different sources and covering a period of five years from 2005 to 2009 to evaluate the performance of select ETFs and Index Funds in India. The tools used for evaluating the performance of selected funds are NAV, risk, return, expenses ratio, tracking error, reward to variability, and differential return. The statistical tools like Standard Deviation, Beta, Alpha, R-squared and Sharpe Ratio are used for data analysis. From the study, it is concluded that ETFs have given a better opportunity for the small investors in terms of a diversified portfolio by investing a small amount of money, low expense ratio, reduced tracking error, lower risk and volatility as compared to Index Funds and ETFs can become a best investment alternative among different investment alternatives in India.

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Swati Garg and Dr. Y. P. Singh (2013) empirically examined the performance of two competitive financial instruments available to Indian investors, namely ETFs and Index Funds. The study was based on secondary data from June 2006 to December 2009 to evaluate the performance; a set of five ETFs and Index Funds that in pairs track the same benchmark indices have been analyzed. From this particular study, it was found that selected ETFs tracking ability and performance was better over long-term investment horizon, similarly, potential disadvantage of ETFs from very short-term investor's point of view.

S.Narend (2014) studied the performance of ETFs and index funds using tracking error. The analysis revealed that that tracking error was higher for ETFs when compared to index mutual funds. It was also discovered that both index funds and ETFs have not been able to provide excess returns over the benchmark. From the study, it is found that ETFs, index funds have outperformed in terms of tracking error and Jensen's alpha, whereas, in terms of active returns, ETFs have performed better than index funds.

Gerasimos G. Rompotis (2015) evaluated the performance of ETFs and mutual fund in terms of expenses and return, the findings shows that the performance of the ETFs is better than mutual fund in terms of the return and expenses.

Objectives

- To examine the growth and performance of exchange traded funds in India in the context of investment.
- To compare and evaluate the performance of selected exchange traded funds traded on national stock exchange in India by using risk- adjusted return performance measures.

Research Methodology

- **Data:** The study is based on the secondary data. Secondary data sources include websites, newspapers, SEBI manuals and textbooks. There are 12 ETFs consisting of equity, gold and indices ETFs traded on NSE in India for a period of six years from 2014 to 2019 to evaluate the performance of selected ETFs are calculated with the help of risk-adjusted methods.
- **Sample Size:** The present study selected 12 ETFs consist equity, gold and indices includes ICICI Prudential Nifty ETF, Goldman Satche CNX Nifty, Nippon India ETF Nifty BeES, Kotak Nifty Exchange Traded Fund SBI ETF Gold, ICICI Gold ETF, HDFC Gold ETF, Kotak gold Exchange Traded Fund, ICICI Prudential Nifty 100, Motilal Oswal Nifty 100, Nippon India PSU Bank and Reliance Nifty 100 ETF.

Tools Used

Performance evaluation of selected funds is calculated with the help of risk-adjusted methods. The risk-adjusted methods make adjustments to returns in order to take account of the differences in risk levels between the managed portfolio and the benchmark portfolio. While there are many such methods, the most notable are the Sharpe ratio, Treynor ratio, Jensen's alpha, Information ratio, Modigliani and Modigliani, Treynor Squared, R squared and FAMA'S model.

S.No	Tools	Formula	Description
1	Sharpe Ratio	$\frac{R_p - R_f}{\rho}$	Sharpe ratio or reward-to-volatility ratio is a risk adjusted measure of portfolio performance. It measures the amount of portfolio's excess return per one unit of total risk measured by the standard deviation.
2	Treynor Ratio	$\frac{R_p - R_f}{\rho}$	Treynor ratio is a risk-adjusted measure of portfolio performance. It measures the amount of portfolio's excess return per one unit of systematic risk measured by beta.
3	Jensen's alpha	$R_i - R_f + i(R_m - R_f)$	Jensen's alpha (alpha) is a risk-adjusted measure, average return on portfolio over and above predicted by the CAPM.
4	Information Ratio	$\frac{\bar{e}}{(\sigma_e)^2}$	Information ratio measures portfolio's excess return relative to market per one unit of tracking error. It measures abnormal return per unit of risk.
5	Modigliani Squared	$SR_p^2 - m + R_f$	M2 is a hypothetical measure of risk-adjusted return relative to market. It says, what the return should be if the portfolio's SD equaled the market's SD. Market M ² = market return. Therefore, portfolio desires M ² return market return.

6	Treynor Squared	$TRp = m+Rf$	T2 is a hypothetical measure of risk-adjusted return relative to market. It says, what the return should be if the portfolio's beta equaled the market's beta.
7	R2		R squared is a statistical measure that represents how closely fund's performance correlates with the performance of the benchmark index.
8	FAMA'S	$\frac{R_i - R_f}{m(R_m - R_f)}$	Fama's portfolio performance model is an extension of Jensen's model which compares the performance of fund in terms of returns with the required rate of return including the total risk (standard deviation) associated with it.

Data Analysis and Interpretation

Table 1: Table showing Risk and Return of selected Exchange Traded Funds

Funds	Average Return	Variance	Standard Deviation	Beta	Systematic Risk	Nonsystematic Risk
Nifty 50	0.811	14.288	3.780	1	0	0
ICICI Prudential Nifty ETF	0.956	24.290	4.929	1.094	17.100	7.190
Goldman Sache CNX Nifty	0.158	14.951	3.867	0.580	4.806	10.145
Nippon India ETF Nifty BeES	0.770	15.180	3.896	1.010	14.575	0.605
Kotak Nifty ETF	0.923	15.514	3.939	0.980	13.722	1.792
SBI ETF Gold	0.363	13.932	3.733	-0.333	1.584	12.348
ICICI Gold	-0.766	131.787	11.48	-0.462	3.050	128.737
HDFC Gold ETF	0.342	13.704	3.704	-0.360	1.852	11.852
Kotak Gold ETF	0.428	14.850	3.854	-0.328	1.537	13.313
ICICI Prudential Nifty 100	0.646	31.758	5.635	1.011	14.604	17.154
Motilal Oswal Nifty 100	1.365	46.697	6.834	0.154	0.339	46.358
Nippon India PSU Bank	-0.004	93.332	9.661	1.644	38.617	54.715
Reliance Nifty 100 ETF	0.870	21.264	4.611	0.923	12.172	9.092

Interpretation

- Average Return:** From the above table 1, it can be observed that among sample ETFs Motilal Oswal Nifty 100, ICICI prudential nifty ETF, Kotak Nifty ETF and Reliance Nifty 100 ETFs are outperformed in the market index in terms of return and remaining funds are underperformance to the benchmark return.
- Standard Deviation:** Standard deviation is used to measure the variation in an individual from the average expected return over a certain period. From the above table 1, it is found that among selected ETFs ICICI GOLD having highest SD of 11.48% and HDFC Gold ETF has the lowest SD of 3.704% and rest of the selected funds are having a moderate risk.
- Beta:** Systematic risk of each fund measured by beta. Beta is a measure of volatility and can be defined as the tendency of a fund's return to respond to swings in the market. Nifty 50 market beta is 1. We can find beta with more than one in the case of Goldman Sache CNX nifty, Nippon India ETF Nifty BeES, ICICI Prudential Nifty 100 and Nippon India PSU Bank implying highest risk than market risk. Goldman Sache CNX nifty, Kotak Nifty ETF Motilal Oswal Nifty 100 and Reliance Nifty 100 ETF having a risk lower than the market risk as their beta value less than one and rest of the ETFs indicating negative beta value.
- Risk and Return Grid:** Risk Return Grid, as a tool of analysis, which helps the investor to the analysis of the fund risk behavior.
 - High Return and High Risk:** Under this category all selected funds returns, as well as the standard deviations, are higher than that of the market.
 - High Return and Low Risk:** Under this category, selected funds returns are higher than the market, but their standard deviations are lower than that of the market.
 - Low Return and Low Risk:** Under this category selected funds returns are less than the average market return and their standard deviations are also lower than that of the market.
 - Low Return and High Risk:** In this category, selected funds returns are lower than that of the market, but their standard deviations are higher than that of the market.

Table 2a: Table showing Risk and Return Grid

S. No.	Fund	High Return High Risk	High Return Low Risk	Low Return Low Risk	Low Return High Risk
1	ICICI Prudential Nifty ETF	1	0	0	0
2	Goldman Satche CNX nifty	0	0	1	0
3	Nippon India ETF Nifty BeES	1	0	0	0
4	Kotak Nifty ETF	1	0	0	0
5	SBI ETF Gold	0	0	1	0
6	ICICI Gold	0	0	0	1
7	HDFC Gold ETF	0	1	0	0
8	Kotak Gold ETF	1	0	0	0
9	ICICI Prudential Nifty 100	1	0	0	0
10	Motilal Oswal Nifty 100	1	0	0	0
11	Nippon India PSU Bank	0	0	0	1
12	Reliance Nifty 100 ETF	0	1	0	0
	Total	6	2	2	2

Table 2b: Table showing Risk and Return Grid

Return	High	High Return and High Risk (6)	High Return and Low Risk (2)
		ICICI Prudential Nifty ETF Nippon India ETF Nifty BeES ICICI Prudential Nifty 100 Motilal Oswal Nifty 100 Kotak Nifty ETF Kotak Gold ETF	Reliance Nifty 100 ETF HDFC Gold ETF
Low	Low	Low return and high risk	Low return and low risk
		Nippon India PSU Bank ICICI Gold ETF	Goldman Satche CNX Nifty SBI Gold ETF
Risk		High	Low

From the above tables 2a and b, it is found that risk seeker is an investor who is willing to take more risk to earn a higher return from the analysis, it is clear that ICICI Prudential Nifty ETF, Nippon India ETF Nifty BeES, ICICI Prudential Nifty 100, Motilal Oswal Nifty 100, Kotak Nifty ETF and Kotak Gold ETF are suitable to risk seeker investor to earn high return with high risk. Risk neutral investor is an investor neither risk seeker nor risk-averse investor so Reliance Nifty 100 ETF and HDFC Gold ETF are with high return and Nippon India PSU Bank ICICI Gold ETF are suitable with low return and high risk. Risk-averse investor is an investor who prefers lower return with less risk so Goldman Satche CNX Nifty and SBI Gold ETF are most preferable by risk-averse investor with low return with low risk.

Table 3: Table showing performance of selected Exchange Traded Funds using different risk adjusted performance models

Funds	Sharpe's Ratio	Treynor's Ratio	Jensen's Ratio	Sortino	Information Ratio	M2	T2	R2	FAMA'S
Nifty 50	0.070	0.265	0	0.115	0	0	0	0	0
ICICI Prudential Nifty ETF	0.083	0.375	0.120	0.169	1.666	0.860	0.788	0.704	0.064
Goldman Satche CNX Nifty	-0.100	-0.669	-0.542	-0.178	-5.341	0.167	0.123	0.321	-0.596
Nippon India ETF Nifty BeES	0.057	0.222	-0.044	0.095	-7.265	0.763	0.768	0.961	-0.043
Kotak Nifty ETF	0.096	0.385	0.117	0.175	6.531	0.908	0.931	0.885	0.109
SBI ETF Gold	-0.049	0.550	-0.095	-0.082	-0.767	0.361	1.096	0.114	-0.434
ICICI Gold	-0.114	2.840	-1.189	-0.092	-0.924	0.114	3.386	0.024	-2.128
HDFC Gold ETF	-0.055	0.567	-0.108	-0.091	-0.915	0.338	1.113	0.135	-0.290
Kotak Gold ETF	-0.031	0.360	-0.031	-0.053	-0.233	0.430	0.906	0.103	-0.394
ICICI Prudential Nifty 100	0.018	0.099	-0.168	0.028	-0.981	0.613	0.645	0.460	-0.288
Motilal Oswal Nifty 100	0.120	5.318	0.778	0.176	1.679	0.999	5.864	0.008	0.497
Nippon India PSU Bank	-0.057	-0.332	-0.986	-0.110	-1.802	0.331	0.546	0.414	-0.925
Reliance Nifty 100 ETF	0.070	0.351	0.079	0.134	0.870	0.812	0.897	0.572	0.197

Sharpe Ratio

Sharpe ratio is a risk-adjusted measure of portfolio performance. It measures the amount of portfolio's excess return (risk premium) per one unit of total risk measured by the standard deviation. From the above table 3, we found that based on Sharpe ratio outperformed funds are Motilal Oswal Nifty 100 occupied Rank 1st with 0.120 followed by Kotak nifty ETF with 0.096 compare to index return of 0.070. ICICI Gold ETF was least performance with negative 0.114 followed by Goldman Satche CNX nifty with -0.010.

Treynor Ratio

Treynor ratio measures the amount of portfolio's excess return per one unit of systematic risk measured by beta. From the above table 3, we found that based on Treynor ratio best performers are Motilal Oswal Nifty 100 with 5.318 followed by ICICI Gold ETF with 2.840 and least performers are Goldman Satche CNX nifty with -0.669 followed by Nippon India PSU Bank -0.332.

Jensen's Alpha

Jensen's Alpha is a measure of superior performance that compares the realized excess returns with risk-adjusted returns. Every investor expects the highest positive alpha. The positive alpha indicates superior performance of funds. Highest positive alpha was achieved by Motilal Oswal Nifty 100 with 0.778 followed by ICICI prudential nifty ETF with 0.120, Kotak Nifty ETF with 0.117 and Reliance Nifty 100 ETF with 0.079. The rest of sample funds were underperformed with a negative alpha value.

Sortino's Ratio

Sortino's ratio measures amount of portfolio's excess return (risk premium) per one unit of total risk measured by downside deviation, it assesses the risk of returns falling below a particular expected return by the investors. In terms of Sortino's ratio, Motilal Oswal Nifty 100 had first rank by 0.176 followed by Kotak Nifty ETF with 0.175. Whereas, least performance by Goldman Satche CNX Nifty with a negative ratio of 0.178 followed by Nippon India PSU Bank -0.110.

Information Ratio

Information ratio measures portfolio's excess return (alpha) relative to market per one unit of tracking error (residual risk). Positive information ratio indicates the portfolio has beaten the market. Among the selected ETFs Motilal Oswal Nifty 100, ICICI Prudential nifty ETF, Kotak Nifty ETF and Reliance Nifty 100 ETF beat the market with positive value. Rest of sample funds were underperformed with negative value.

Modigliani and Modigliani Measure

M2 is a measure of risk-adjusted return relative to the market. M2 of particular fund comparison to market index average return. Therefore, fund desires M2 return greater than the market return. ICICI prudential nifty ETF, Kotak Nifty ETF Motilal Oswal Nifty 100 and Reliance Nifty 100 ETF funds were outperformed funds because of M2 of those funds greater than the market return. Among the selected sample, rest of the funds was underperformed to market index.

Treynor Squared

T2 measure, risk-adjusted return on selected funds and the market portfolio by considering degree of systematic risk (beta). On a systematic risk-adjusted basis, the highest T2 was achieved by Motilal Oswal Nifty 100 by 5.864 followed by ICICI GOLD of 3.386. Goldman Satche CNX nifty was the least performer by negative 0.123.

R Squared

R2 statistically measures and represents how closely funds' performance correlates with the performance of the benchmark index. R2 value ranges between 85 and 100 have a performance record that funds closely correlated with index. Nippon India ETF Nifty BeES and Kotak Nifty ETF are closely correlated with index by R2 value of 0.961 and 0.885, respectively. Rest of the funds R2 value was less than 0.70 which indicate those funds were not performing like index.

FAMA'S Model

Fama's model of fund performance considers total risk (standard deviation) associated with the fund. Based on Fama's model most preferred funds were Motilal Oswal Nifty 100 with highest value of 0.497 followed by Reliance Nifty 100 ETF with a value of 0.197, rest some of the sample funds were least performance with a least positive value and maximum funds secured the negative value.

Table 4: Table showing Correlations between Alternative Portfolio Performance Measures

	S.R	T.R	J.R	I.R	M2	T2	R2	FAMA
S.R	---	---	---	---	---	---	---	---
T.R	0.245	---	---	---	---	---	---	---
J.R	0.816	0.333	---	---	---	---	---	---
I.R	0.472	0.279	0.375	---	---	---	---	---
M2	1.000	0.278	0.816	0.472	---	---	---	---
T2	0.278	1.000	0.333	0.279	0.278	---	---	---
R2	0.536	-0.490	0.152	0.019	0.536	-0.490	---	---
FAMA	0.830	0.033	0.920	0.282	0.830	0.033	0.398	---

Above table 4, consists the matrix of rank correlation among the selected risk adjusted performance measures; the result indicates all measures are positively correlated except Treynor ratio to R2 and T2 to R2. The selected measures are proved that the consistent of portfolio performance as a whole but they distinct each other an individual level.

Table 5: Table showing Performance based Ranking of Selected Exchange Traded Funds

ETFs	AR	S.D	Beta	RSD	S.R	T.R	J.R	Sortino	I.R	M^2	T^2	R^2	FAMA'S	Total	Rank
Kotak Nifty	3	7	8	3	2	5	3	9	1	2	5	2	3	46	1
MotilalOswal Nifty 100	1	11	5	11	1	1	1	2	2	1	1	12	1	49	2
ICICI Prud Nifty	2	9	12	4	3	6	2	5	3	3	8	3	4	60	3
Reliance Nifty 100	4	8	7	5	4	8	4	6	4	4	7	4	2	66	4
HDFC Gold	10	1	2	7	10	3	9	10	8	9	3	8	8	88	6
Nippon India	6	6	10	2	6	10	7	7	13	5	9	1	6	87	5
SBI Gold	9	2	3	8	9	4	8	12	7	8	4	9	10	90	7
Kotak Gold	8	4	4	9	8	7	6	11	6	7	6	10	9	93	8
Nifty 50	5	3	9	1	5	9	5	8	5	13	12	13	5	90	7
ICICI Prudential Nifty100	7	10	11	10	7	11	10	4	10	6	10	5	7	111	9
ICICI Gold	13	13	1	13	13	2	13	1	9	12	2	11	13	126	10
Goldman Sache CNX	11	5	6	6	12	13	11	13	12	11	13	7	11	131	11
Nippon India PSUB	12	12	13	12	11	12	12	3	11	10	11	6	12	146	12

Ranking of the selected 12 funds shows the difference in evaluation through the risk-adjusted performance measure with the help of Sharpe ratio, Treynor ratio, Jensen's alpha, Information ratio, Modigliani and Modigliani, Treynor Squared, R squared and FAMA'S model (Table 5). With the help of selected performance measure, we found that Kotak Nifty ETFs as the best performer that secured the first rank, followed by Motilal Oswal Nifty 100rankedsecond and ICICI prudential Nifty ETF was third rank holder. Whereas, Nippon India PSUBank as the least performer secured 12th rank followed by Goldman Sache CNX and ICICI Gold ETFS ranked as 11th and 10th, respectively, and rest of sample funds were considered as the average performer.

Table 6a:Table showing Overall Performance Selected Exchange Traded Funds

Tools	Measures	Equity ETFs			Gold ETFs			Indices ETFs		
		Nos	%	Performance	Nos	%	Performance	Nos	%	Performance
Sharpe Ratio	< 0	1	25	L	4	100	L	1	25	L
	> 0 to 1	3	75	M	0	0	M	3	75	M
	> 1	0	0	B	0	0	B	0	0	B
Treynor Ratio	< 0	1	25	L	0	0	L	1	25	L
	> 0 to 1	3	75	M	3	75	M	2	50	M
	> 1	0	0	B	1	25	B	1	25	B
Jensen Ratio	< 0	2	50	L	4	100	L	2	50	L
	> 0 to 1	2	50	M	0	0	M	2	50	M
	> 1	0	0	B	0	0	B	0	0	B
Sortino Ratio	< 0	1	25	L	4	100	L	1	25	L
	> 0 to 1	3	75	M	0	0	M	3	75	M
	> 1	0	0	B	0	0	B	0	0	B
Information Ratio	< 0	2	50	L	4	100	L	2	50	L
	> 0 to 1	0	0	M	0	0	M	1	25	M
	> 1	2	50	B	0	0	B	1	25	B

M2	< 0	0	0	L	0	0	L	0	0	L
	> 0 to 1	4	100	M	4	100	M	4	100	M
	> 1	0	0	B	0	0	B	0	0	B
T2	< 0	1	25	L	0	0	L	0	0	L
	> 0 to 1	3	75	M	1	25	M	3	75	M
	> 1	0	0	B	3	75	B	1	25	B
R2	< 0	0	0	L	0	0	L	0	0	L
	> 0 to 1	4	100	M	4	100	M	4	100	M
	> 1	0	0	B	0	0	B	0	0	B
FAMA'S	< 0	2	50	L	4	100	L	2	50	L
	> 0 to 1	2	50	M	0	0	M	2	50	M
	> 1	0	.0	B	0	0	B	0	0	B

L: Low Performance, M: Medium Performance and B: Better Performance

Table 6b: Table showing Better Performance, Medium Performance, Low Performance and Overall Performance of selected ETFs

Particular	Equity ETFs		Gold ETFs		Indices ETFs		Over all	
	Nos	%	Nos	%	Nos	%	Nos	%
Better Performance	2	5.55	4	11.12	3	8.33	9	8.33
Medium Performance	24	66.66	12	33.33	24	66.67	60	55.55
Low Performance	10	27.77	20	55.55	9	25	39	36.12
Total	36	100	36	100	36	100	108	100

From the above tables 6a and b, it is found that maximum selected equity ETFs achieved positive values of an average performance 66.66% and rest of 33.33% consists better and low performance. In terms of gold ETFs, 55.55% of low performance in all selected risk adjusted performance measures and rest of 45.45% achieved with average and better performance. Whereas, in indices ETFs majority of funds achieved by average performance of 55.55% and rest of 45.45% consists better and average performance. In terms of overall selected ETFs, around 63.88% have positive value which indicates maximum funds that were outperformed to the benchmark, whereas, 36.12% have a negative value which indicates some of few funds were underperforming to their benchmark.

Findings

- In terms of Sharpe ratio, majority of equity and indices ETFs have demonstrated superior performance and underperformance have been observed in case of gold ETFs.
- In terms of Treynor ratio, majority of equity, gold and indices ETFs showed better performance. The positive alpha value indicates out performance than market in Jensen ratio average equity and indices ETFs shows outperformance. All four gold ETFs showed inferior performance. In terms of Sortino's ratio, majority of equity and indices ETFs have demonstrated superior performance and underperformance have been observed in case of gold ETFs. From the analysis, it can be summarized that 50% of equity and indices ETFs outperform to their benchmark. Whereas, rest of 50% equity, indices and all four gold ETFs show underperformance to their benchmark.
- In terms of T2, majority of gold ETFs have superior performance to their benchmark. Equity and indices ETFs have inferior performance to their benchmark.
- From the analysis, it can be summarized that majority of equity ETFs correlates with the performance of the benchmark index. Gold and indices ETFs have not correlated with benchmark index which indicates funds and market are moving in opposite direction.
- In FAMA'S model, average number of selected equity and indices ETFs has outperformed, rest equity; indices and all selected four ETFs have inferior performance.

From the study, it can be concluding that when we compare all selected 12 funds with each other with the help of all selected nine risks adjusted measures, 63.88% have a positive value which indicates maximum funds were outperformed to the benchmark. Whereas, 36.12% have negative value which indicates some of few funds were underperform to their benchmark.

Conclusion

In this study, 12 ETFs and Nifty 50 as a benchmark were selected to analyze performance with the help of risk-adjusted return for the purpose of secondary data that was extracted from various sources. The analysis revealed that in terms of performance evaluation with the help of risk adjusted method. Further risk and return was analyzed using standard deviation, beta and residual standard

deviation, alpha, Sharpe ratio, Treynor ratio, Jensen ratio, Information ratio, M2, T2, R squared and FAMA'S model. Through the analysis, it was found that the majority of equity and indices ETFs had better and average performance. Gold ETFs shows inferior performance due to negative return and beta values. Finally, among selected sample funds majority of funds achieved average 55.55% in terms of all risk adjusted performance measures which indicates majority of funds outperformed to their benchmark, the rest of 36.12% negative value indicates few selected funds were underperformed to their benchmark. ETFs are best investment avenues to small investor as a small amount of investment with average rate of return for both short-term and long-term time horizons.

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