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ESG Mutual Funds In India - A Comparative Analysis

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Abstract:

The present research is an attempt to observe how ESG-focused mutual funds differ from traditional non ESG mutual funds in Indian capital market. Existing literature shows mixed results regarding ESG funds' performance; some studies reporting outperformance and others showing underperformance relative to traditional funds. The study's primary concern is return and variability. There are three ESG mutual funds (Axis, ICICI, and Aditya Birla) who contribute more than 70% of total cumulative funds size under ESG theme in Indian market. These three mutual funds scheme has been considered for sample. Using monthly net asset value data from 2020 to 2024 we employed t-tests and f-tests to analyze mean returns and variance differences across three major ESG funds and their equity counterparts. Our findings reveal that ESG and equity funds demonstrate statistically distinct risk profiles, despite comparable mean returns. These findings suggest that ESG screening systematically affects portfolio construction and risk characteristics. Further, composition analysis shows that ESG and equity funds hold materially different portfolios despite both investing in the same equity instruments.

Key Words: ESG, Mutual Funds, Indian Mutual Fund Market, Risk Analysis, Fund Performance

Introduction

The world is evolving over a period of time. The human made mistakes, they learn and try to rectify and accommodate during the process of rectification. One of such attempt of change is 'ESG' based identification of the company. ESG stands for 'Environmental, Social Governance'. The back drop of 'ESG' era can be traced in the labor laws; 'The company is entitled to provide safe and hygiene place of work to their employee.' Over a period of time, it leads to corporate social responsibilities. It recognizes the concept that the company is accountable towards the stakeholders of the society who are not directly attached to company's

‘profit string’. Eventually it ended up into current situation when there are primarily three broad segments named ‘Environmental’, ‘Social’, and ‘Governance’, the factors that companies are supposed to take into account in their day-to-day business activities. In 2004, UN in its report officially recognised ‘ESG’ term. Then onwards the concept has been evolved exponentially. Tom Krantz (2024) stated that;

“ESG is no longer a fringe concept but a household initialism for both companies and investors. Today, ESG data is used to evaluate a company’s performance on specific ESG issues. For instance, carbon emissions per unit of revenue are used to evaluate a businesses’ environmental impact, while employee turnover rates are used to evaluate a company’s labor practices. Asset managers continue to develop a range of ESG strategies and metrics to measure the environmental and social impact of today’s companies. Some strategies focus on excluding industries or organizations that do not meet certain ESG criteria. Others focus on actively selecting companies that have strong ESG profiles.”

The three components of ESG have the following connotations:

Environmental: The term focuses on how a company manages natural resources, addresses climate change, and minimizes its environmental footprint (e.g., reducing pollution, using sustainable resources).

Social: Evaluates a company’s relationships with employees, customers, suppliers, and communities. This includes considerations like best labour practices, human rights, and diversity.

Governance: The term here means issues related to leadership of a company, the transparency of its operations, ethical business practices, executive compensation, and shareholder rights.

Examples of Some Popular global ESG Mutual Funds:

1. Vanguard ESG U.S. Stock ETF (ESGV):

This fund seeks to track the performance of the FTSE US All Cap Choice Index, which includes U.S. companies with strong ESG performance. It excludes companies involved in industries such as tobacco, fossil fuels, and firearms.

2. iShares MSCI KLD 400 Social ETF (DSI):

This ETF targets companies with high ESG ratings according to MSCI, focusing on U.S. companies with positive social and environmental impact.

3. TIAA-CREF Social Choice Equity Fund (TICRX):

This fund focuses on investing in companies that are leaders in ESG factors. The fund emphasizes environmental sustainability, social responsibility, and strong governance.

4. PIMCO ESG Income Fund (PESIX):

A bond fund focusing on debt securities issued by companies with strong ESG performance, allowing investors to target both financial returns and sustainability.

The investment in 'ESG' is to make aware the general people about how responsible the companies are in their business and towards the stakeholders of the society. If investors' sentiment is attached towards the irresponsible behaviour towards the 'ESG' related responsibilities, the companies will be more agile towards their business actions. The only thing board doesn't like in the world is bad balance-sheet and profit and loss account. So if somehow the interest of the society is connected with the same, companies will execute all possible way to make the annual accounts well. In this process 'ESG' responsibilities will also be taken care of. The 'ESG' investments are one aspect into this phenomenon. The broader way to observe how companies are doing in terms of ESG is to measure how well a company or a group of companies are perceived by the stakeholders. One major indicator is how well companies are doing on the stock market. If we want to observe the collective performance of companies, we may use certain indices. The overall performance of ESG based mutual fund will provide a general idea that how well a company or a group of companies are executing their ESG related duties. Further if only ESG Focused based mutual funds behave differently than nonESG based Mutual fund, then we can have established association between ESG related actions and the profit. This way we can empirically set the connection between ESG related actions and the profits. If there is any strong positive association, the other management who are not following ESG related executions will also incentivized to perform well in ESG related actions.

This paper is an attempt to identify how much 'ESG' based mutual funds investments are different from the 'Equity' based mutual funds. Ultimately the investments are done in equity instruments of the companies, so what makes an 'ESG' investments different from only 'equity' investments. This study observed two major components. First, Returns of mutual fund scheme and second the composition of the mutual fund (the pattern of equity instruments holdings of the mutual fund scheme). The Premise is 'even though the investments in equity instruments are done in ESG mutual fund scheme, the selection of instruments are impacted by ESG factors.' This study is an attempt to prove empirically that there is fundamental difference between 'ESG' funds and 'equity' funds. The study examined the NAVs of selected MF schemes on monthly basis. It is found that returns of both the themes are more or less similar, however they share different sets of risk profile. Further while observing the overlapping of equity investments, we found that the two mutual fund schemes are statistically not similar or identical. The average investments in major companies are different for both the schemes on an average for the time frame. The study concludes that there is no significant evidence that we can claim that 'ESG' mutual fund schemes are same as 'Equity' mutual funds schemes. It may invest in selected top thirty to forty companies of the stock exchange, however there has to be some 'ESG' factors that impacted the 'risk profile' and 'investment strategies'.

Literature Review

ESG mutual funds are those funds which concentrate on investment in those companies or assets or projects that meet certain environmental, social, and governance (ESG) norms. The fund managers focus on developing 'a range of ESG strategies and metrics to measure the environmental and social impact of targeted companies (Tom Krantz,2024). These strategies may be based on inclusion or exclusion principle depending on whether the fund managers seek to invest on those industries who typically demonstrate strong performance in these areas or exclude the companies who do not meet certain ESG norms (Tom Krantz,2024). These funds aim to provide financial returns to the unitholders while promoting sustainable and ethical business practices. Investors choose ESG funds to align their portfolios with their values, supporting businesses that have positive impacts on society and the environment.

The most comprehensive evidence supporting ESG's positive financial impact comes from Friede, Busch, and Bassen's seminal (2015) meta-analysis, which examined over 2,200 empirical studies on ESG and corporate financial performance (Friede, Busch, and Bassen's seminal 2015). Endrikat, Guenther, and Hoppe (2018) further reinforced these findings, combining 25 previous meta-analyses. The study demonstrated a highly significant, positive, robust, and bilateral relationship between corporate social/environmental performance and corporate financial performance (Endrikat, Guenther, and Hoppe 2018). ESG funds demonstrate resilience during periods of financial stress Research by Pastor and Vorsatz (2020), Nofsinger and Varma (2014), and De Renzis and Mosson (2024). They consistently found that ESG funds outperformed non-ESG funds during the COVID-19 pandemic.

According to Oliver Wyman (2023) analysis, many ESG funds suffered roughly three to four percentage point underperformance compared with broad equity markets in 2022. Refinitiv (2022) showed that ESG funds experienced an 18% loss in 2022, compared to a 15.8% loss in non-ESG equity funds, with only 31% of actively managed ESG equity funds surpassing their targets in the first half of 2022, compared to 41% of non-ESG funds. Boston Common Asset Management's analysis (2025) found that ESG's underperformance in 2022 was driven by Value's dominance over Growth and exposure to Technology.

Hook's evaluation (2022) at the University of Arkansas concluded that ESG funds offer no statistically significant outperformance over their non-ESG benchmarks after examining holdings, performance, and expense ratios. Hornuf et al.'s meta-analysis (2024) examining the performance of socially responsible investing found that, on average, SRI neither outperforms nor underperforms conventional investments.

All over the world, the growing interest in Environmental, Social, and Governance (ESG) mutual funds reflects a broader shift towards sustainable investing. Research on ESG mutual funds has been evolving, with studies examining their performance, investors' behaviour, and the impact of ESG practices on financial markets.

A significant body of research has examined the financial performance of ESG mutual funds. Studies generally find that ESG funds perform similarly to or slightly better than traditional funds in the long term.

There are five key issues regarding performance of ESG funds at global level:

1. Financial Performance of ESG Funds improves over long period.

The studies show improved financial performance due to ESG is more pronounced in long term period than the short time horizon. Hang et al. (2019) opined that corporate investments in environmental sustainability was almost neutral to corporate financial performance in the short term, but had positive impact over the long run period. Such positive correlation has been supported by Dorfleitner et al., (2018)

2. ESG investing may protect downside particularly at the times of social or economic crisis.

Fernández et al. (2019) found that during the financial crisis (2007-2009), German green mutual funds performed risk-adjusted returns somewhat better than their competitors with conventional funds. However, during non-crisis period, they were equal to conventional funds. (Morningstar, 2020) undertook a study in the first quarter of covid pandemic in 2020 found that majority of ESG Index funds outperformed their competitors with conventional funds.

3. Improved risk management and innovation of ESG funds are key factors to drive Financial Performance.

Factors such as innovation, higher operational efficiency, better risk management are pillars of their success. Vishwanathan et al. (2019) has comprehensively reviewed several studies and indicated that four crucial factors of success of ESG funds are ‘enhancing firm reputation, increasing stakeholder reciprocation, mitigating firm risk, and strengthening innovation capacity’ However separating these factors to understand their impact individually is difficult because of their close associations to each other. Nonetheless there are specific studies available, such as the study of portfolios with lower ESG risks in relation to risk-adjusted performance (Hübel & Scholz, 2020).

4. Management of low carbon future improves financial performance.

A paper by Cheema-Fox et al. (2019) examined the risk-adjusted returns related to ‘decarbonization strategies’ and found that such ‘strategies that lowered carbon emissions more aggressively performed better’. Climate change is a very important global issue that may ‘transform economies and markets through changing regulations, changing consumption patterns, especially generation consumers, and technological advancements’.

5. ESG disclosure may not drive financial performance:

Fatemi et al. (2018) in their study distinguished between ESG disclosures and performance. They found that high ESG performance increased and low ESG performance decreased firm value, but, ESG disclosures on their own had a negative valuation effect. Kim and Yoon (2020) supported the argument that the ESG disclosures did not improve ESG funds’ financial performance.

Comparative Analysis of ESG Mutual Funds: India vs. Abroad

1. Market Maturity:

In developed markets like the U.S. and Europe, ESG funds have been around for over a decade, while in India, they are still emerging. Globally, the ESG space is well-established, with investors having a variety of funds to choose from, such as equity-focused, fixed income, and hybrid funds. In contrast, India has limited offerings but is beginning to catch up.

2. Performance and Risk Factors:

Globally, ESG funds have shown resilience during periods of market volatility, often outperforming traditional funds in crises, particularly those linked to environmental or social concerns (e.g., oil price crashes, climate-related risks). In India, while the growth potential is high, ESG funds often face performance challenges due to the small pool of eligible companies and high volatility in the market.

3. Regulatory Environment:

In developed countries, regulatory frameworks for ESG investing are more robust. For instance, European Union regulations such as SFDR (Sustainable Finance Disclosure Regulation) are advanced, forcing companies and funds to disclose detailed ESG data. India is only beginning to set such standards, which can make investing in ESG funds less transparent and reliable.

4. Investor's Awareness:

In the U.S. and Europe, the adoption of ESG funds is more widespread, driven by institutional investors and retail investors who are increasingly concerned with sustainability. In India, ESG investing is primarily being driven by institutional investors, and the retail market is still nascent due to lower awareness.

Let's summarize the literature in following points.

1. Financial Returns:

Studies on ESG funds show mixed results. Some studies suggest that ESG investments can outperform traditional ones in certain market conditions, especially when companies with strong sustainability practices are rewarded by consumers and investors. However, ESG funds might underperform in the short term in markets where companies focused on traditional sectors like fossil fuels dominate.

2. Risk Management:

ESG funds often emphasize risk management in a broader sense by avoiding industries that could face regulatory scrutiny or public backlash (e.g., tobacco, fossil fuels). Over the long term, this can sometimes help ESG funds avoid significant losses during times when these industries face crises (for example, environmental disasters, regulatory changes).

3. Sustainability vs. Profitability:

The long-term appeal of ESG funds is that they balance sustainability with profitability. Investors looking for a socially responsible portfolio may accept slightly lower returns if they can achieve their personal or institutional values, while others might invest in ESG funds for the promise of a future where sustainable companies thrive.

To sum up, ESG funds might not always outperform traditional funds, but they may offer steady long-term returns, especially if more companies embrace sustainable practices. Moreover, Investors may choose ESG funds not only for potential returns but also to support ethical business practices, such as addressing climate change, promoting diversity, or ensuring better labor practices. The literature on ESG mutual funds shows a growing global trend towards sustainable investing, with ESG mutual funds performing on par with traditional funds in the long term. In India, the ESG fund market is still developing, with challenges in awareness, regulation, and transparency, but the outlook remains.

Research Methodology

Research design is a map that set the track for the objectives. The paper is exploring the 'ESG' theme based mutual fund. It is exploring how these funds, in general, are similar to the 'equity' theme based mutual fund. The research is exploratory in nature. Two mutual funds are considered to be identical if both the mutual funds contain the same proportion of securities. Say for an example, 'A' mutual fund scheme has investments in the security x_1 , x_2 , & x_3 in the ratio of 3:2:1. If 'B' mutual fund scheme is having the investments in securities x_1 , x_2 , & x_3 in the same ratio 3:2:1. We will call them identical mutual fund schemes. We shall call them similar mutual fund schemes till the asset allocation ratio does not change significantly. Considering the same as the premise of the study the criterion has finalized as to determine identicalness cum similarity between mutual fund schemes. Comparison criterion is "how much overlap of assets holdings are?"

The research is quantitative in nature. In India there are nine ESG mutual funds. The list of the same are as Table-1. Out of these nine schemes for 'SBI ESG Exclusionary Strategy Fund', the name changed to the current scheme's name from 'SBI Magnum Fund'. So to avoid the impact of the earlier fund's impact on ESG theme, the SBI ESG fund was excluded from the study. Further, 'Mirae Asset ESG Sector Leaders ETF' fund is derivative of 'NIFTY100 ESG sector Leaders Index'. It is a pure index fund purely based on the NSE index. Since we are studying the impact of the 'ESG' factor and its impact on valuation, the relatively stable and safer strategy of investing in indexing funds needed to be excluded from the study. And that is why we have not considered 'Mirae Asset ESG Sector Leaders ETF' in our study. Thus our total population size reduces from nine to seven. Out Of these seven almost 70% share of total cumulative size is contributed by three MF schemes. They are 'Aditya Birla Sun Life ESG Integration Strategy Fund', 'Axis ESG Integration Strategy Fund', and 'ICICI Prudential ESG Exclusionary Strategy Fund'. So these three studies have been considered for the sample size.

Table:1 The List of ESG theme mutual funds of India

AMC	MF Scheme Name	Inception Date
Aditya Birla Mutual FUnd	Aditya Birla Sun Life ESG Integration Strategy Fund	24-Dec-20
Axis Mutual Fund	Axis ESG Integration Strategy Fund	12-Feb-20
ICICI Prudential Mutual Fund	ICICI Prudential ESG Exclusionary Strategy Fund	09-Oct-20
Invesco India Mutual FUnd	Invesco India ESG Integration Strategy Fund	20-Mar-21
Kotak Mutual Fund	Kotak ESG Exclusionary Strategy Fund	11-Dec-20
Mirae Asset Mutual FUnd	Mirae Asset ESG Sector Leaders ETF	17-Nov-20
Quant Mutual Fund	quant ESG Equity Fund	05-Nov-20
Quantum Mutual Fund	QUANTUM ESG BEST IN CLASS STRATEGY FUND	12-Jul-19
SBI Mutual Fund	SBI ESG Exclusionary Strategy Fund	May--2019

(Source: Names of the MF Schemes are from Crisil Report, Date of the inception are taken from respective mutual fund scheme's document from their respective websites.)

Table: 2 The Selected Mutual Fund Schemes and their Fund Size Data

MF Scheme Name	Inception Date	Fund Size (in Rs. Crore) as on 30/09/2024	% Share in Cumulative Fund Size
Aditya Birla Sun Life ESG Integration Strategy Fund	24-Dec-20	1057	18.12%
Axis ESG Integration Strategy Fund	12-Feb-20	1333	22.85%
ICICI Prudential ESG Exclusionary Strategy Fund	09-Oct-20	1557	26.69%

Invesco India ESG Integration Strategy Fund	20-Mar-21	547	9.38%
Kotak ESG Exclusionary Strategy Fund	11-Dec-20	943	16.16%
quant ESG Equity Fund	05-Nov-20	309	5.30%
QUANTUM ESG BEST IN CLASS STRATEGY FUND	12-Jul-19	88	1.51%

(Source: Author's Calculation. It is based on data available from respective AMC's website data published as per SEBI requirements)

The time series data for NAV is taken from the inception date of the respective mutual fund schemes. The composition of equity holdings is taken on a monthly basis. The data for the investments holdings are taken from the 'monthly portfolio disclosure' reports from respective mutual fund schemes. The AMC are required to publish the data on the public platform as per statutory requirement. We can rely on the data for fairness by considering the premise that misrepresenting portfolio disclosure will attract statutory punishments and penalties. So the AMCs are bound to produce the factual data. The time frame starts from the inception of the respective 'ESG' fund, and it stops on 31st march 2024. The cutoff date is taken at the end of the financial year to exclude any effects from the existing financial year of 2024-25.

The corresponding 'equity' theme based mutual fund schemes are selected on the criteria; 'Since 'ESG' theme investments are primarily done in equity instruments; the MF scheme should have the maximum share of equity investments only.' By considering the same criterion, the three MF schemes have been selected as shown in Table:3. The data collected for 'NAV' and 'composition' are done in the same manner as followed for respective 'ESG MF schemes'.

Table:3 List of Corresponding MF Scheme for Comparison

ESG SCHEME	COMPARITIVE SCHEME
Aditya Birla Sun Life ESG Integration Strategy Fund	Aditya Birla Sun Life Mutual Fund
Axis ESG Integration Strategy Fund	Axis ELSS Tax Saver Fund
ICICI Prudential ESG Exclusionary Strategy Fund	ICICI Prudential Bluechip Fund

Source: Names of the MF Schemes are from Crisil Report and their respective mutual fund's website.

The primary analytical method used in the studies are descriptive statistics for ‘Company wise time series data for share in the scheme on monthly basis for each MF Scheme’(See Analytical Framework Table for overview). To establish similarity between two MF schemes based on ‘Overlap of equity holding’ criterion T test for ‘Mean Holding’ across the time range is used. F-Test is used for Variances in holdings. The Line graphs, and Box Plots are used for visual representation. Pearson correlation in excel has been used for data analysis.

Results and Discussion

The sample of three ESG theme Mutual Funds has been considered for analysis. The corresponding ‘equity’ theme Mutual funds are mentioned in Table:3. The overview of the data are as follows.

Time frame is October 2020 to March 2024. Every month’s end of the working day’s NAV has been considered. The descriptive statistics for each of the six mutual fund schemes’ returns are provided here for reference.

Return for each individual Investment at NAV						
	Aditya Birla Sun Life ESG Integration Strategy Fund	Aditya Birla Sun Life Equity Advantage Fund	Axis ESG Integration Strategy Fund	Axis ELSS Tax Saver Fund	ICICI Prudential ESG Exclusionary Strategy Fund	ICICI Prudential Bluechip Fund
Mean	0.17	0.19	0.22	0.23	0.25	0.32
Standard Error	0.01	0.01	0.02	0.02	0.02	0.01
Median	0.16	0.19	0.20	0.20	0.25	0.30
Mode	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Standard Deviation	0.09	0.09	0.10	0.13	0.11	0.08
Sample Variance	0.01	0.01	0.01	0.02	0.01	0.01
Kurtosis	0.56	-0.43	0.13	0.72	3.12	1.06
Skewness	0.69	0.52	0.59	0.99	-0.87	0.99
Range	0.39	0.34	0.42	0.57	0.63	0.39
Minimum	0.05	0.06	0.08	0.06	-0.15	0.20
Maximum	0.43	0.4	0.49	0.63	0.48	0.58
Sum	6.76	7.22	8.39	8.81	10.37	12.98

Count	39	39	39.00	39.00	41.00	41.00
Confidence Level(95.0%)	0.03	0.03	0.03	0.04	0.03	0.03

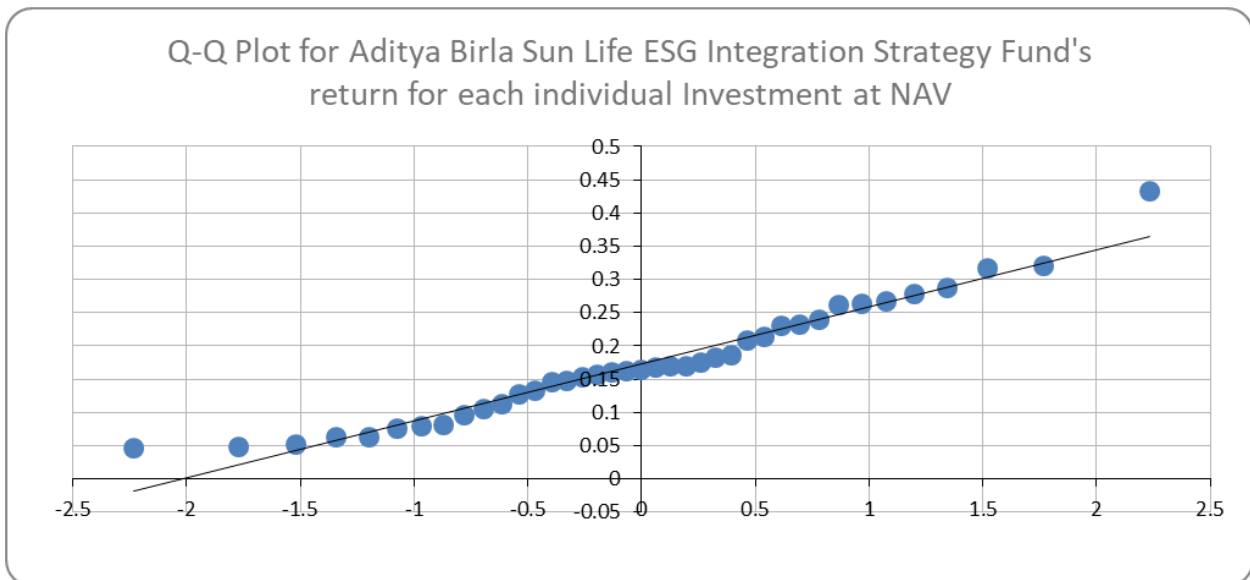
(Source: Author's Calculation)

The normality check summary is as follows for data calculated.

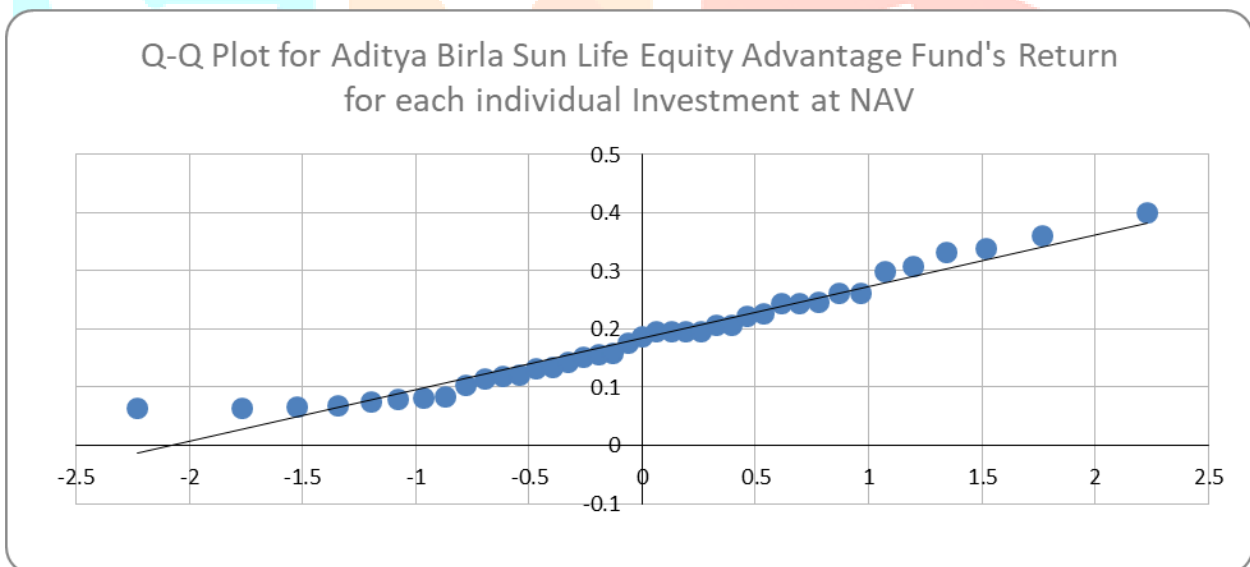
Summary of Normality for all Six Mutual Fund Scheme						
MF Scheme's Name	Sample size	As per QQ Plot Distribution	Shapiro-Wilk Test			
			Statistic	P-Value	Interpretation	
Aditya Birla Sun Life ESG Integration Strategy Fund	39	likely normal	0.96	0.18	Fail to reject H0 (likely normal)	
Aditya Birla Sun Life Equity Advantage Fund	39	likely normal	0.95	0.10	Fail to reject H0 (likely normal)	
Axis ESG Integration Strategy Fund	39	likely normal	0.95	0.07	Fail to reject H0 (likely normal)	
Axis ELSS Tax Saver Fund	39	likely normal	0.93	0.02	Reject H0 (not normal)	
ICICI Prudential ESG Exclusionary Strategy Fund	41	likely normal	0.96	0.21	Fail to reject H0 (likely normal)	
ICICI Prudential Bluechip Fund	41	likely normal	0.93	0.01	Reject H0 (not normal)	

(Source: Author's Calculation)

The Normality of data is checked by observing the Q-Q Plot. Each six's data distribution's QQ Plots are as follows.

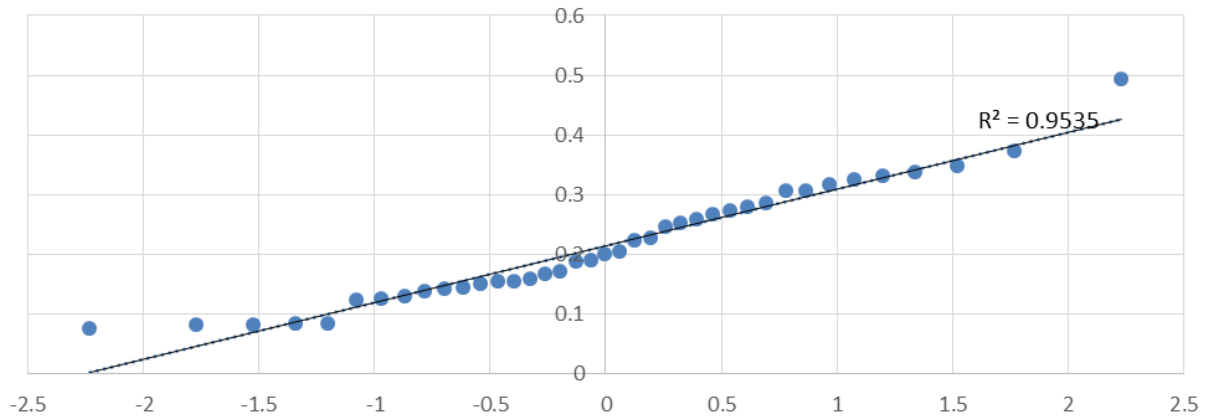


(Source: Author's Calculation)



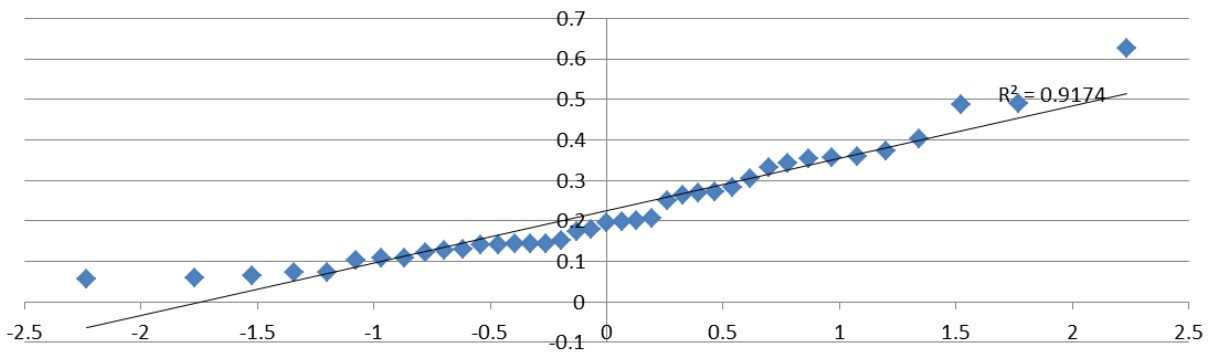
(Source: Author's Calculation)

QQ Plot for 'Axis ESG Integration Strategy Fund's Return for each individual Investment at NAV



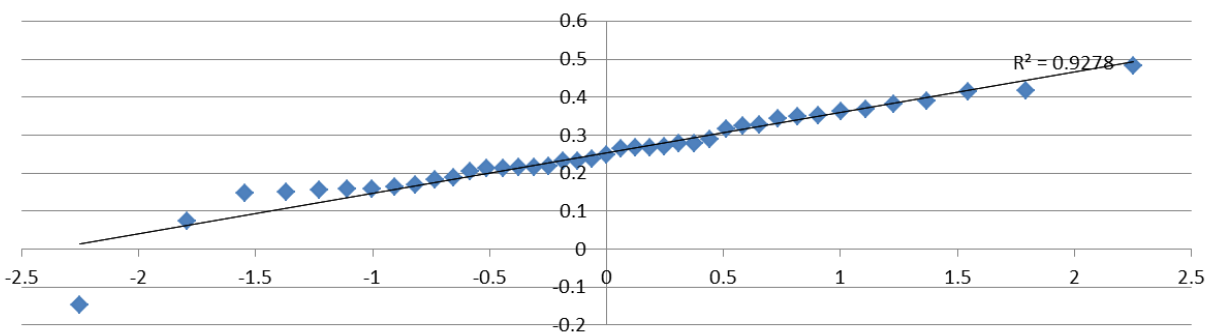
(Source: Author's Calculation)

QQ Plot for Axis ELSS Tax Saver Fund's Return for each individual Investment at NAV

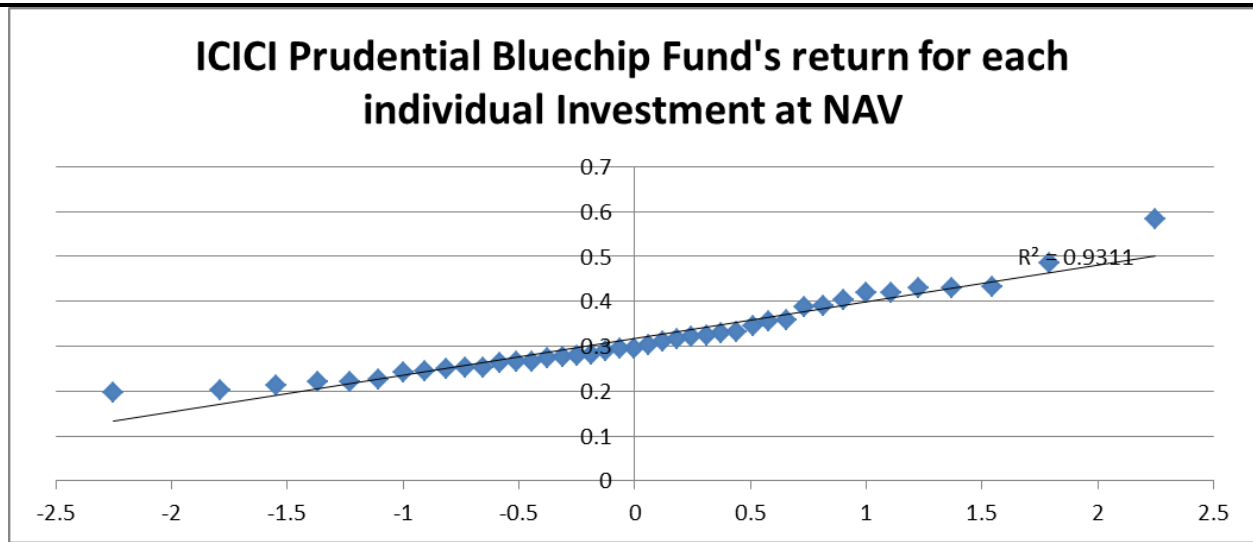


(Source: Author's Calculation)

ICICI Prudential ESG Exclusionary Strategy Fund's return for each individual Investment at NAV



(Source: Author's Calculation)



(Source: Author's Calculation)

Based on QQ plots and shapiro-wilk test, we can conclude that all six mutual fund schemes data can be considered normally distributed.

The t-test and f-test results and their interpretation are as follows.

Test Data for whether there is any statistical significant difference between two funds for 'mean average returns' and 'variances of returns'.

t-Test: Paired Two Sample for Means		
	<i>Axis ESG Integration Strategy Fund</i>	<i>Axis ELSS Tax Saver Fund</i>
Mean	0.22	0.23
Variance	0.01	0.02
Observations	39.00	39.00
Pearson Correlation	0.87	
Hypothesized Difference	Mean	0.00
df	38.00	
t Stat	-0.96	
P(T<=t) one-tail	0.17	
t Critical one-tail	1.69	
P(T<=t) two-tail	0.34	

t Critical two-tail	2.02	
F-Test Two-Sample for Variances		
	<i>Axis ESG Integration Strategy Fund</i>	<i>Axis ELSS Tax Saver Fund</i>
Mean	0.22	0.23
Variance	0.01	0.02
Observations	39.00	39.00
df	38.00	38.00
F	0.52	
P(F<=f) one-tail	0.02	
F Critical one-tail	0.58	
Source: Auhtor's Calculation		

t-Test: Paired Two Sample for Means		
	<i>ICICI Prudential ESG Exclusionary Strategy Fund</i>	<i>ICICI Prudential Bluechip Fund</i>
Mean	0.25	0.32
Variance	0.01	0.01
Observations	41.00	41.00
Pearson Correlation	0.69	
Hypothesized	Mean	
Difference	0.00	
df	40.00	
t Stat	-5.06	
P(T<=t) one-tail	0.00	
t Critical one-tail	1.68	

P(T<=t) two-tail	0.00	
t Critical two-tail	2.02	
F-Test Two-Sample for Variances		
	<i>ICICI Prudential ESG Exclusionary Strategy Fund</i>	<i>ICICI Prudential Bluechip Fund</i>
Mean	0.25	0.32
Variance	0.01	0.01
Observations	41.00	41.00
df	40.00	40.00
F	1.71	
P(F<=f) one-tail	0.05	
F Critical one-tail	1.69	
Source: Auhtor's Calculation		

t-Test: Paired Two Sample for Means		
	<i>Aditya Birla Sun Life ESG Integration Strategy Fund</i>	<i>Aditya Birla Sun Life Equity Advantage Fund</i>
Mean	0.17	0.19
Variance	0.01	0.01
Observations	39.00	39.00
Pearson Correlation	0.75	
Hypothesized	Mean	
Difference	0.00	
df	38.00	
t Stat	-1.16	
P(T<=t) one-tail	0.13	
t Critical one-tail	1.69	

P($T \leq t$) two-tail	0.26	
t Critical two-tail	2.02	
F-Test Two-Sample for Variances		
	<i>Aditya Birla Sun Life ESG Integration Strategy Fund</i>	<i>Aditya Birla Sun Life Equity Advantage Fund</i>
Mean	0.17	0.19
Variance	0.01	0.01
Observations	39.00	39.00
df	38.00	38.00
F	0.94	
P($F \leq f$) one-tail	0.43	
F Critical one-tail	0.58	
Source: Auhtor's Calculation		

Interpretation for t-test and f-test are as follows.

1. Axis ESG and Axis ELSS

The p-value for t-test (0.34, i.e. greater than significance level 0.05) indicates that it fails to reject the null hypothesis (The Means are Equal). So that we can imply that there is no statistically significant difference between the average returns of these two mutual fund schemes. Both schemes appear to deliver comparable average returns to investors over the period examined. From an investor's perspective, this suggests that if the choice between these two funds is based solely on expected average returns, neither fund has a clear advantage over the other in terms of central tendency. The performance levels are essentially equivalent in statistical terms.

The p-value for f-test (0.02, i.e. lower than the significance level 0.05) indicates that it rejects the null hypothesis. (The variance of returns are Equal). This means that variance of returns are significantly different. one fund's returns fluctuate more considerably around its average compared to the other fund. This difference in variance is not due to random chance but represents a genuine statistical difference in the risk profile or volatility of returns between the two schemes. One fund demonstrates more stable returns while the other shows greater variability, even though their average returns may be comparable.

2. ICICI ESG and ICICI Blue Chip funds

The p-value for t-test (less than 0.01) indicates that it rejects the null hypothesis(The Means are Equal). So that we can imply that there is a statistically significant difference between the average returns of these two mutual fund schemes. It demonstrates that the two schemes have performed differently in terms of their central tendency or typical return patterns. One fund has consistently delivered either higher or lower average returns compared to the other scheme over the period.

The p-value for f-test (0.05, i.e. on the significance level 0.05) indicates that it may reject the null hypothesis.(The variance of returns are Equal). This means that variance of returns are significantly different if we follow a strict level of significance at 0.05. it is important to note that this result is at the boundary and represents a case where the evidence for unequal variances is relatively weak compared to the t-test result. In simpler terms, one fund's returns exhibit different levels of volatility or fluctuation around its average compared to the other fund. The difference in risk profile between the two schemes exists, but the statistical evidence for this difference is less compelling than the evidence for different average returns.

3. Aditya Birla ESG and Aditya Birla Equity

The p-value for t-test (0.26, i.e. greater than significance level 0.05) indicates that it fails to reject the null hypothesis(The Means are Equal). So that we can imply that there is no statistically significant difference between the average returns of these two mutual fund schemes. Both schemes appear to deliver comparable average returns to investors over the period examined. The returns are essentially equivalent in statistical terms, suggesting that from a pure return perspective, neither fund has a clear performance advantage over the other.

The p-value for f-test (0.43, i.e. greater than the significance level 0.05) indicates that it fails to reject the null hypothesis. (The variance of returns are Equal). This means that variance of returns are not significantly different. Both funds exhibit similar levels of fluctuation or volatility around their average returns. The risk profiles of the two schemes are statistically equivalent, meaning investors face comparable levels of return uncertainty or variability regardless of which fund they choose.

The insight from the above three points is, “There might be some funds who provide higher average returns with different levels of risk. This risk is indicated by ‘variance in returns.’ This empirical study investigates a fundamental question in sustainable investing: whether Environmental, Social, and Governance (ESG) based mutual funds differ from traditional equity-focused mutual funds. Although both fund categories ultimately invest in equity instruments of listed companies, the research premise suggests that ESG criteria

meaningfully influence investment selection, resulting in different risk-return characteristics and portfolio compositions. The empirical evidence across the three funds comparisons supports the premise. Despite similar average returns in the given cases, ESG funds and traditional equity funds are fundamentally different investment vehicles.

Regarding returns, the evidence is mixed but suggestive. While some ESG funds deliver comparable average returns to equity funds, the ICICI case demonstrates that ESG constraints can produce materially different return profiles when consistently applied. This variation suggests that ESG-based fund selection does impact investment returns, but the direction and magnitude depend on how individual fund managers implement ESG criteria and market conditions during the study period.

Regarding risk profiles, the evidence is more compelling and consistent. Across all three comparisons, risk differentiation was observed or indicated, with ESG funds demonstrating different volatility characteristics than traditional equity funds. This differentiation likely reflects the constraining impact of ESG screening on portfolio construction. By restricting the investment universe to companies meeting ESG standards, fund managers necessarily create portfolios with different concentration patterns, sector weightings, and diversification profiles compared to unconstrained equity funds. These structural differences cause the different risk characteristics, even when average returns remain comparable.

In the portfolio composition analysis, table mentioned below, demonstrates that ESG and equity funds hold materially different portfolios despite both investing in the same equity instrument universe. This finding is the evidence that ESG is not a label applied to standard equity funds. It represents a different investment approach. The selection and weighting of equities is systematically different between fund types, confirming that ESG criteria meaningfully constrain and direct investment decisions.

Fund Name	Total Months	Low Overlap Count	Moderate Overlap Count	High Overlap Count	Avg Jaccard Index
Aditya Birla	41	18	20	3	0.359
Axis	48	48	0	0	0.188
ICICI	40	40	0	0	0.176

In the context of ESG vs 'Equity' theme mutual funds, we can draw the following observations from the above data.

1. The risks associated with 'ESG' funds are having unique characteristics which may not be found in 'Equity' funds. The same can be said in reverse too, that the Risk associated with 'Equity' funds are having unique characteristics which may not be found in 'ESG' funds.
2. The risk profile is different for 'Equity' and 'ESG' funds. This can be observed from the analysis of 'overlap of Equity holdings' across the time frame.

3. This indicates that higher returns in 'ESG' funds must have some factors that push returns higher. The same can be investigated further. The potential factors might be in quantitative factors like 'ESG' impact on cash flows, growth, and risks, and qualitative factors like 'asset manager', and 'investment strategies'.

Limitation of the Study

Returns are calculated on monthly NAVs. It is assumed that most of the systematic investment plans are executed on a monthly basis. This premise leads to the calculation of 'returns' on a monthly basis. The Data for the schemes are for 'Direct investment Growth Option' exclusively. Generally, 'Direct investment Growth option' are having highest NAVs against their counterpart of 'dividend payout option. The difference is primarily due to dividends declared by the mutual fund agencies. The study assumes that investors are not needed for dividend options, and hence invested in 'growth options'. Further, three mutual funds schemes as sample may not represent the whole population especially when 'risk profile' is concerned. This holds true when asset managers of the fund whose data are not taken here may prefer other strategies that influence the risk factor. These limitations do not bring down the findings of the study. The limitations can be manageable while adjusting individual funds' situations.

Conclusion

'ESG' investments are indeed a useful catalyst to make companies alert. It can be used as auto mode mechanism which makes any company accountable. The companies will be always under the radar of investing community. Any sane company will fight with a government institution on any matter, however always try to accommodate with the market forces. The ESG can be prove to be such catalyst and a leading factor which can affect market. Companies don't like to traverse against the market forces. This study is a small attempt to observe that whether there are any 'ESG' exclusive factors that affects companies and their investment decisions. The study observed affirmatively that ESG and equity funds demonstrate statistically distinct risk profiles, despite comparable mean returns. That implies that there has to be ESG related factors that affects the risk profile of the stock. ESG and equity funds hold materially different portfolios despite both investing in the same equity instruments. Thus It implies that there has to be ESG relted factors that affect the investment strategies.

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