

Is ESG a New Anecdote to Investment Decisions for Indian Investors: An ARDL Approach?

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Abstract

The purpose of this study is to evaluate the linkage between Environmental, Social, and Governance (ESG) ratings and the stock performance of the top 15 Indian companies with low-ESG-risk as well as the top 15 Indian companies with high-ESG-risk. The existing literature on whether ESG leads to better stock performance is mixed. There are studies that exhibit a positive or negative relationship between ESG and stock performance, while others deny the same. However, the findings of the present study state that a better ESG-compliant company impacts its stock performance positively. The Autoregressive Distributed Lag (ARDL) co-integration approach is used in the study to determine the relationship between ESG and stock performance in Indian companies. The primary outcome of the current study is that the ESG factor should be considered simultaneously with other factors when deciding on investment strategies. Additionally, an ESG-compliant company can further play its part in tackling the climate change issue.

Keywords: ESG score, stock performance, ARDL approach

JEL Classifications: G11, C1, Q56, G41

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1. INTRODUCTION

Conventionally, to develop any investment strategy, investors or portfolio managers rely heavily on either fundamental analysis, technical analysis, or both. Data from these two approaches has helped in making better investment decisions. The evolving and advanced technologies, such as advanced algo software and AI, coupled with the easy accessibility of the data and the technologies to process it, have made it tough to beat the market. However, in the recent past, investors or portfolio analysts were not restricted to fundamental and technical analysis that only talked about companies' performance in the past but were also considering ESG data to peek into the future as well as take well-informed decisions while deciding on an investment strategy.

ESG works as a framework that helps all the stakeholders have an idea of how a company deals with potential risks and converts them into opportunities regarding sustainability challenges, whether they are economic, social, or environmental. The term "ESG" gets its first mention in the UN Global Compact Initiative's "Who Cares Wins" report in 2004. Previously, there were many terms that carried the same meaning, such as "socially responsible investment," "corporate social responsibility," and "corporate sustainability," among others. ESG, on the other hand, began to establish itself as a far more proactive (rather than reactive) movement. Since then, it has developed into an exhaustive framework that incorporates key elements related to sustainable aspects as well as how governance mechanisms could potentially be modified to ensure maximum interested parties well-being. ESG has become a frequently discussed issue among asset managers (Broadstock et al., 2021) and retail investors because of how important the framework has become in the investment community. There are two reasons that are getting their attention in relation to ESG investing. Firstly, ESG investing leads to practices of socially responsible investment, and secondly, it is the reason behind the increasing perception that ESG investment generates better returns than conventional investment and decreases portfolio risk at the same time (Broadstock et al., 2021).

“The businesses that trace and furnish environment data (such as harmful emissions, utilization of water, and waste treatment), social data (such as employer-employee relationships, product and service-related information, and customer-related data), and governance-related data (such as corruption) have increased exponentially over the past 25 years” (Yadav, 2019). Over the last decade, investor enthusiasm for ESG data has grown at a good pace (Amel-Zadeh & Serafeim, 2018). Interestingly, in 2019, ESG-based funds touched a record value of US\$30 trillion. Third-party organizations¹ find that the ESG rating is gaining the attention of the financing institution before financing a company.

Despite this, there is growing concern, particularly among investors, about whether companies with low-risk ESG scores (i.e., highly ESG-compliant companies) can outperform companies with high-risk ESG scores (i.e., less ESG-compliant companies) in terms of stock performance. Many studies have found that companies in hazardous industries, such as tobacco and alcohol, outperform socially sensitive companies. Furthermore, the above finding has led to the general impression that corporate efforts to

¹ According to Huber et al (2017) the eight significant ESG rating providers include “Bloomberg ESG Data Services, Corporate Knights Global 100, Dow Jones Sustainability Index (DJSI), ISS, MSCI ESG Research, RepRisk, Sustainalytics Company ESG Reports, and Thomson Reuters ESG Research Data.”

address social and environmental issues result in lower shareholder value (Kotsantonis et al., 2016).

Furthermore, it is not only a retail investor's or asset manager's perception, but it has also piqued the interest of corporates, particularly in seeing the viability of ESG on their organization's profitability. Wong et.al. (2021), for example, examine the impact of external ESG rating from a third party on the value of a company.

The literature on the subject discusses whether engaging in ESG activities is beneficial (Ferrell et al., 2016; Flammer, 2015; Gillan et al., 2021). Some studies' findings show apprehension over ESG, as the authors believe that overinvestment in ESG-related activities only benefit the top management at the expense of shareholders' money and does not add value to their wealth (Benabou & Tirole, 2010; Krüger, 2015). On the contrary, there are some studies that are of the view that ESG adds value to well-managed companies and assists in generating better returns (Engelhardt et al., 2021; McWilliams et al., 2006). In support of these claims, a wide range of data available in the earlier studies show a connection between a company's ESG investment and its equity returns, particularly in times of economic uncertainty, as well as between ESG and business profitability. In their study, Lins et al. (2017) found that firms that enjoy higher ESG ratings are resilient to volatility in the secondary market during economic emergencies and generate better returns than less ESG-compliant companies. However, Bae et al. (2021) and Demers et al. (2020) demonstrated in their research that there are no linkages between COVID-19 and a company's stock performance. In this regard, the present paper tries to answer two relevant research questions:

First, is there a connection between a company's low-ESG-risk score and its stock returns? Second, do ESG leaders (low-ESG-risk companies) outperform ESG laggards (high-ESG-risk companies) in terms of financial performance?

In India, there have been many times when the economy fell apart, as when GST and demonetization happened, followed by the COVID-19 pandemic, and this prompted the present study in the Indian context. In this regard, the study focuses on the Indian context to determine the influence of the ESG rating on the profitability and stock returns of the top fifteen listed companies in terms of the high-risk ESG company (that is, companies rated poorly on the ESG front) score and the top fifteen companies with a low-ESG-risk score (that is, companies rated highly on the ESG front) score provided by Sustainalytics (Morningstar). A high-ESG-risk score given by Sustainalytics (Morningstar) means the company is doing badly on the ESG front, i.e., they are less ESG compliant, and vice versa.

The structure of this paper is organized as follows: In Section 2, the study has employed a theoretical background; Section 3 presents data and methodology; Section 4 presents findings and discussion; and Section 5 ends with the conclusion.

2. THEORETICAL BACKGROUND

There are many critical elements, such as MARKE CAP (Banz, 1981) Price to Earnings (Basu, 1983) Debt to Equity (Bhandari, 1988) Book to Market (Consolandi et al., 2022), and others highlighted by previous research, that are considered important before making any investment decision from the perspective of an investor and gauging the performance of the stock from the perspective of an analyst. All of the work mentioned above primarily considered conventional investment considerations while ignoring ethical investment elements like ESG.

Investors have started to give more attention to ESG investing in the last two decades across the globe, and therefore, ESG investing is now gaining traction along with other factors as well. Friede et al. (2015) wrote in their paper that researchers, analysts, and academics have done several studies since 1970 to determine the relationship between ESG and the financial performance of businesses. The arrival of the ESG factor describes how mainstream capital markets are now accepting ESG integration into sustainable investments. However, the adoption of ESG investing is still in its nascent stage.

Since ESG investing has started to gain traction in recent times, it is now gaining the attention of researchers, and as a result, numerous studies are being conducted on ESG investing and how it affects stock performance and a company's financial performance (e.g., Ferrell et al., 2016; Flammer, 2015; Gillan et al., 2021; Velte, 2017).

Even though many studies and investigations have been done and are still being done, the results of these studies often contradict each other. Some studies (e.g., Clark et al., 2014; Friede et al., 2015; Wong et al., 2021) find a positive relationship between the firm's performance on the ESG parameter and its financial status. Furthermore, these studies (Lee & Faff, 2009; Van De Velde et al., 2005) reflect that more CSR spending is responsible for lower levels of idiosyncratic risks, a higher BE/ME ratio (e.g., Galema et al., 2008), desirable credit approvals (e.g., Goss & Roberts, 2011; Nandy & Lodh, 2012), and a cheaper financing cost (Bae et al., 2021; Lee & Faff, 2009). In research (Maiti, 2021) which considered three-factor models, that is, market, size, and ESG factor, they did better than the Fama-French three-factor model. A higher rating for ESG, environment, social, and governance factors implies that portfolios based on these factors outclass traditional size and value-focused portfolios in all cases. In other words, because ESG factors play a critical role in determining stock performance, they should be given special consideration when making investment strategies.

Contrary to the findings of the abovementioned studies, there are many studies (such as Clark et al., 2014; Revelli & Viviani, 2015; Van Beurden & Gössling, 2008) that deny the positive relationship between ESG rating and firms' stock performance. They state that those outcomes are conflicting and irrational. Additionally, conventional shareholder theory is of the view that high outlays on CSR activities are just social work at the expense of investors' money (Hu et al., 2018). This is because they believe that firms that are not socially sensitive enjoy a cheaper cost of financing and, therefore, eventually enjoy better returns than the socially sensitive firms as well (Carnahan et al., 2010). Turning ESG into numbers raises further concerns about the reliability of ESG investing, and different definitions of ESG provided by different organizations exacerbate the problem (Borgers et al., 2013; Orlitzky, 2013). An evident fear that is visible in the theories of those who are concerned about the overemphasis on ESG investing is that this overemphasis may lead to overinvestment in the social sector at the cost of investors' hard-earned money. They believe that organizations with better CSR or ESG disclosures have not performed better on corporate governance (e.g., Barnea & Rubin, 2010) and suffered comparatively high financing cost (e.g., Richardson & Welker, 2001).

It is observed in India that when the pandemic hit the nation, the ESG-compliant companies showed more resilience than the other companies. The NIFTY 100 ESG index has outperformed the NIFTY 100 index (see Annexure A2). Apart from this, there have been many collapse periods, for example, when the GST and demonetization were introduced. The ESG leaders' companies showed better strength than the Nifty 100 companies. This has prompted an ongoing investigation of the empirical relationship between ESG and the stock performance of companies.

3. DATA AND METHODOLOGY

The study used secondary data from 30 publicly traded (on the National Stock Exchange of India) Indian companies (see Table A) from different sectors, including energy, IT, automation, infrastructure, and the financial sector, among others, and the period of study started from FY 2015-16 to FY 2021-22. Out of 30 companies, 15 are low-ESG-risk companies (that is, companies with a low ESG score), and the rest 15 are high-ESG-risk companies (that is, companies with high ESG scores) for the last seven financial years, that is, from FY 2015-16 to FY 2021-22. We used ESG ratings from the Sustainalytics (Morningstar) database to gauge a company's ESG performance. The study used the Sustainalytics' database for ESG ratings for the last seven years. The ESG ratings given by Sustainalytics include all three parameters, that is, environment, social, and governance, in different sub-dimensions. A high-ESG-risk company is given a high ESG score, and vice versa. The environmental performance of a company incorporates resource utilization, emissions, and innovations. Employees, human values, peer groups, and product responsibility are the sub-dimensions used to measure social performance, and management, stakeholders, and CSR strategy are used to evaluate governance performance (see Annexure A1). By including stock, accounting, and financial data from Money Control and Screener, the study expands the dataset even further.

Table 1: Name of the Companies Selected:

Sr.No.	High ESG Risk Companies	Low ESG Risk Companies
1	BPCL	OFSS
2	ONGC	Hero Motocorp
3	Sun Pharma	Adani Ports
4	Grasim Industries	Bosch
5	NTPC	Wipro
6	Adani Enterprises	Tech Mahindra
7	Reliance Industries	Eicher Motor
8	Asian Paints	HCL
9	Cipla	Titan
10	Coal India	TCS
11	Reddy Lab	Infosys
12	Hindalco	L&T
13	IndusInd Bank	Bajaj Finance
14	State Bank of India	Coforge
15	Tata Consumer	Mindtree

Source: Authors' Compilation

The study used the ESG score to determine the impact on the stock returns of an Indian company, and therefore it employed the autoregressive distributed lag (ARDL) co-integration method to achieve the said objective. In the model, the dependent variable of interest is the returns generated by the stock price, and our primary independent variables of interest are ESG, Gross Profit Margin (GPM), EV/EBITDA, Earning Per Share (EPS), and Gross Profit Margin. ESG was assigned as a dummy variable and assigned 0 for high-ESG-risk companies and 1 for low-ESG-risk companies. The deployment of the ARDL approach is appropriate for investigation with a large set of factors because its co-integration approach has the advantage of confirming the existence

of long-run relationships between factors with different orders of integration, while the findings of the analysis are robust to incorrect order of integration specifications.

The study used the following equation for ARDL model.

$$\Delta Y_t = \sum_{i=1}^{p-1} \beta_i \Delta Y_{t-i} + \sum_{j=1}^k \sum_{l_j=0}^{q_j-1} \delta_{j,l_j} \Delta X_{j,t-l_j} + \gamma Y_{t-1} + \sum_{j=1}^k \phi_j X_{j,t-1} + u_t \quad (1)$$

where Y_t is the dependent variable of the ARDL model, which is the closing stock return in this study; $X_{j,t}$, $j = 1, k$ are the explanatory variables that include Gross Profit Margin (GPM), Earning Per Share (EPS), Operating Profit Margin (OPM), EV/EBITDA and Size; Z_t is an $s \times 1$ vector of deterministic variables such as ESG variable; Δ is the first difference operator; u_t is the error term; β and $\delta_{j,l}$ are the coefficients of the terms that indicate short-term relationships; γ and ϕ_j are the coefficients of the terms that indicate long-run relationships; p and q_j represent optimal lags for the variables Y_t and $X_{j,t}$ identified based on information criteria.

If the co-integration test results show that the variables under consideration have long-run relationships, an error correction model (ECM) is used, and its equation is:

$$\Delta Y_t = \sum_{i=1}^{p-1} \beta'_i \Delta Y_{t-i} + \sum_{j=1}^k \sum_{l_j=0}^{q_j-1} \delta'_{j,l_j} \Delta X_{j,t-l_j} + \theta ECT_{t-1} + u'_t \quad (2)$$

where θ denotes the coefficient of the error-correction term (ECT). As the speed with which the dependent variable returns to equilibrium after an internal shock is caused, this coefficient must be statistically significant, negative, and sub-unitary.

4. FINDINGS AND DISCUSSION

Tables 2 and 3 summarize the statistics for our dataset. The mean GPM of high-ESG-risk companies stood at 57.51%, whereas the mean GPM of low-ESG-risk companies stood at around 83%. It is evident from these numbers that low-ESG-risk companies have registered much better gross profit margins.

Table 2. Descriptive Statistics for the High-ESG-risk Companies

	Size (Crores)	GPM (%)	OPM (%)	EV/EBITDA	EPS	Return
Mean	18,310	57.51	19.41	16.75	7.6	4.2
Median	5,929	52.9	17.55	13.8	4.6	3.7
Mode	1,866	100	7.31	13	3.3	N/A
Standard Deviation	24,570	32.39	13.77	12.47	11.59	19.65

Source: Authors' calculation

Similarly, the low-ESG-risk companies have outperformed the high-ESG-risk companies on the operating profit margins front. Where high-ESG-risk companies' average OPM stands at 19.41%, low-ESG-risk companies' stands at 28.79%. Consequently, a high ESG-risk company's valuation is lower than that of a low-ESG-risk company. This can also be corroborated by the fact that the earning per share capacity of

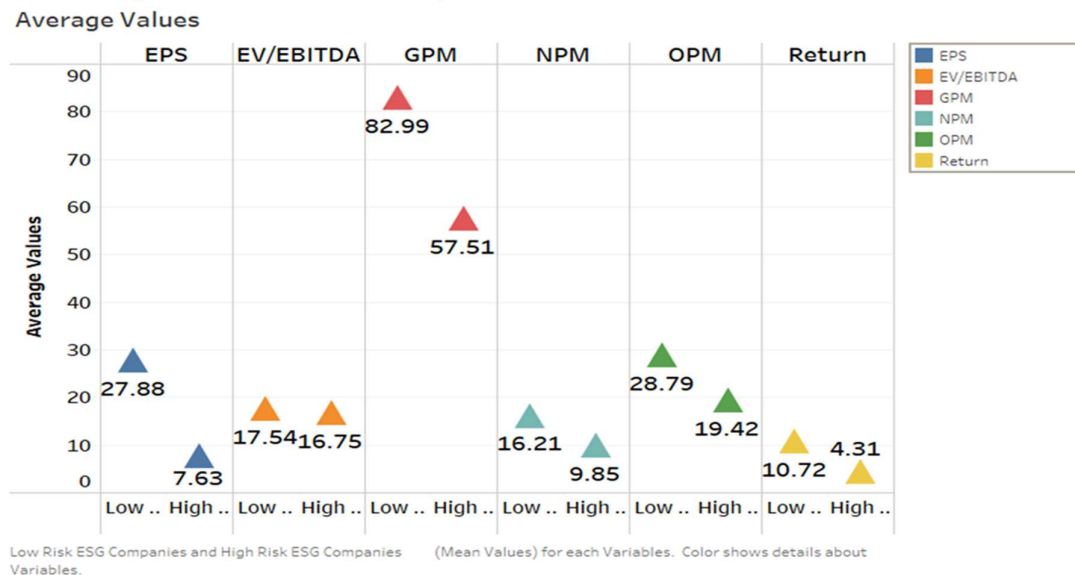
low-ESG-risk companies is much better than that of high-ESG-risk companies. Besides, ESG-compliant companies' stock has also generated a better return than ESG-defiant companies. This indicates why ESG-compliant companies' valuations are higher than those of ESG-defiant companies.

Table 3: Descriptive Statistics for the Low Risk ESG Companies

	Size (Crores)	GPM (%)	OPM (%)	EV/EBITDA	EPS	Return
Mean	7851.57	82.99	28.79	17.54	27.88	10.72
Median	4681	99.27	21.19	13.9	13.28	2.78
Mode	1203	100	30	13	14.14	N/A
Standard Deviation	8624.95	25.74	53.24	11.76	43.53	18.24

Source: Authors' calculation

Figure 1: Overview of Companies' Performance on Selected Parameters



Source: Authors' calculation

Table 4: ARDL Regression Results of Both Group

	Model 1 (2, 0, 1, 1, 0, 1, 0)	Model 2 (2, 0, 1, 1, 1, 0)	Model 3 (2, 0, 1, 1, 0)	Model 4 (2, 1, 1, 0)
Regressor	Coefficient	Coefficient	Coefficient	Coefficient
RETURN (-1)	-0.019517 (0.5619)	-0.018071 (0.5905)	-0.017862 (0.5948)	-0.017719 (0.5976)
RETURN (-2)	0.088419 (0.0088)	0.088910 (0.0084)	0.087936 (0.0091)	0.088569 (0.0085)
EPS	-0.002154 (0.9168)	-0.006806 (0.7303)	-0.009776 (0.6183)	
ESG	-35.43877 (0.0531)	-36.15980 (0.0481)	-36.42973 (0.0464)	-36.31272 (0.0470)
ESG (-1)	35.48614 (0.0524)	35.68860 (0.0510)	36.05849 (0.0486)	36.13605 (0.0480)
EV	1.065947 (0.0000)	1.053678 (0.0000)	1.051337 (0.0000)	1.052813 (0.0000)
EV (-1)	-0.898541 (0.0000)	-0.897851 (0.0000)	-0.894801 (0.0000)	-0.898005 (0.0000)
GPM	0.018512 (0.4349)			
OPM	0.003474 (0.8308)	0.004937 (0.7599)		
OPM (-1)	-0.025289 (0.1234)	-0.023509 (0.1480)		
SIZE	0.435662 (0.3013)	0.383280 (0.3568)	0.412060 (0.3201)	0.417852 (0.3130)
C	-3.388950 (0.4769)	-1.184960 (0.7575)	-1.883827 (0.6144)	-2.177975 (0.5551)

Note: The p-values in the parenthesis shows significance at 5% significance level

Source: Authors' calculation

The study tries to find out the best models by dropping out the insignificant variables. In Model 1 (see Table 4), we have taken all the explanatory variables to gauge their impact on the explained variable, which is stock market performance. The optimal lag has been chosen on the basis of AIC (Akaike Information Criterion) criteria. Thereafter, we have dropped the variables Gross Profit Margin, Operating Profit Margin, and Earning Per Share capacity of firms in Model 2, Model 3, and Model 4, respectively. It is evident from the results that the company with high-ESG-risk scores have a negative and significant impact on stock performance; in other words, companies in low-risk zones in terms of ESG parameters are generating better returns in comparison to companies with high-risk ESG scores. The p-values of the ESG variable in all the models stand at less than or equal to 0.05 which corroborates the above statement. Keeping other factors constant, an ESG (-1) p-value of less than 0.05, reflecting previous-year high ESG scores (indicating poor ESG compliance), has a positive impact on company stock performance, indicating that investors do not consider ESG as an important factor before making an investment decision.

Besides, EV which means EV/EBITDA, which is used to determine the valuation of a company has shown a significant and positive impact on the stock performance of the firms, as well as having p-values of < 0.05 in all the models. Put it simply, a unit change in EV leads to around a 1.06-unit positive change in the returns generated by the stock price. This may be attributed to the investors' sentiments that companies with higher valuations are generally better, either fundamentally, technically, or both, which

puts these companies in demand and ultimately leads to better stock performance of these companies.

Table 5: Short-run Error-correction Representation of the Selected ARDL Model

Regressor	Model 1 (2, 0, 1, 1, 0, 1, 0)	Model 2 (2, 0, 1, 1, 1, 0)
	Coefficient	Coefficient
D (RETURN (-1))	-0.088419 (0.0081)	-0.088910 (0.0078)
D(ESG)	-35.43877 (0.0511)	-36.15980 (0.0466)
D(EV)	1.065947 (0.0000)	1.053678 (0.0000)
D(OPM)	0.003474 (0.7728)	0.004937 (0.6817)
CointEq(-1)*	-0.931099 (0.0000)	-0.929161 (0.0000)
Adjusted R-squared	0.543807	0.543470
Durbin-Watson stat	2.017032	2.017517
Akaike info criterion	8.618656	8.619395
Schwarz criterion	8.646884	8.647623

Note: The p-values in the parenthesis shows significance at 5% significance level

Source: Authors' calculation

In Table 5, the study used the Error Correction Model to determine the short-run adjustment, and the result shows that the error-correction term (ECT) is clearly significant and the coefficient of ECT_{t-1} (CointEq (-1)) is -0.931099, indicating that almost 93% of the deviation between the long-run and the short-run is corrected in a day. As evident in Table 5, India's stock market corrects (as evident in both models) each period's deviance from its long-term trend in performance (return) by 93%. The long-run bound test (see Table 6) has been employed to test whether, in a long-run relationship, there exists a relationship between the variables or not. The results from the table indicate a co-integration relationship between the explained and explanatory variables with a significance of 5%. In simple words, it states that there exists a long-run relationship between the dependent and independent variables.

Table 6: Bound Test of Co-integration

Model	F-statistics	Significance Level	Bounds test Critical Values*	
			K=6 I(0)	I(1)
Model-1	47.93	1 %	2.88	3.99
		5 %	2.27	3.28
		10 %	2.88	2.94
Model	54.72	1%	3.06	4.15
		5%	2.39	3.38
		10 %	2.08	3

Source: Authors' calculation

5. CONCLUSION

In recent years, ESG investing has gained traction, and portfolio managers and investors are paying more attention to the ESG criteria of a company prior to making investment strategies; conventional parameters are no longer the only data they evaluate. This study aims to observe the correlation between ESG scores and the stock performance of Indian companies. From fiscal years 2015-16 to 2021-22. The study contrasts the stock performance of companies with high-ESG-risk scores with those with low-ESG-risk scores. ARDL findings reflect that ESG does have a significant effect on the stock performance of Indian companies. The ESG-high-compliant companies have generated more returns than those that are low-compliant. The descriptive statistics have also corroborated that the average return generated by ESG-compliant companies is better than that of ESG-defiant companies.

Besides ESG, EV/EBITDA has also shown a significant and positive impact on stock performance. In other words, companies with higher valuations tend to generate higher returns. The findings add to the body of literature arguing that investors should take ESG factors into account when evaluating a company's stock performance. Furthermore, sustainability is an important factor not only in attracting investors but also in obtaining financing for business needs from financial institutions other than shareholders, as they consider sustainable use of funds to be an important factor before funding companies, and that will bring down the cost of financing to some extent as well. Therefore, corporates should try to be ESG leaders rather than ESG laggards.

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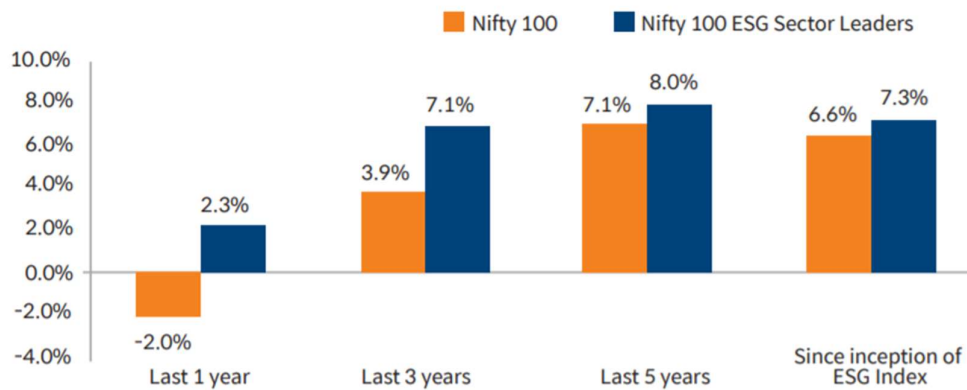
ANNEXURE

A1: Sustainability's Impact Metrics Framework and Examples of ESG Issues



Source: Sustainability

A2: Comparison of Nifty 100 and Nifty 100 ESG returns as on 31st January 2021.



Source: NSE

A3: Variables Descriptions and their Sources

Variables	Descriptions	Source
Gross Profit Margin	On a quarterly basis, the difference between revenue and the cost of goods sold expressed as a percentage of total revenue	Moneycontrol
Size	Total Sales of the Company on quarterly basis	Moneycontrol
Earnings Per Share	Profit generated by the company that is distributed among its outstanding shares on a quarterly basis	Moneycontrol
Operating Profit Margin	After deducting the variable costs of production on a quarterly basis, the amount of profit that a company makes off of each rupee of sales	Moneycontrol
ESG scores	Company's performance on ESG parameter.	Sustainalytics
Return	Returns generated by company's stock on quarterly basis	Screener

Source: Authors' compilation