

# The Link Between Environmental and Social Costs and a Firm's Value: A Study on Nifty 50 Companies

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## Abstract

With the increase in international regulations for sustainability and a growing interest of the investors, the Securities and Exchange Board of India (SEBI) has mandated that Indian companies follow Business Responsibility and Sustainability Reporting (BRSR) guidelines from fiscal year (FY) 2023, which also includes capital expenditure investments in specific technologies to improve the environmental and social impacts of products and processes. This paper examines how the market value of Indian companies is affected by their Environmental and Social Costs (ENVSCs). The study uses panel data to examine the relationship between firms' value and the ENVSC of Nifty 50 companies from 2021 to 2023. ENVSC has been calculated from the respective integrated annual reports, while the dependent variables, Tobin's Q and earnings per share (EPS), have been taken from their accounting metrics. The empirical work suggests that ENVSC negatively affects firms' value in the short term. The present study used a pooled ordinary least squares (OLS) model to examine the impact of the firms' ENVSC on their market value creation, with results indicating that ENVSC adversely affects firm value. The paper has practical implications for key stakeholders and investors, who must understand environmental and social costs and how they affect the market. This study may also help policymakers develop a fixed percentage of capital expenditure in ENVSC to improve overall sustainability and disparity among companies and sectors. This study adds insightful

information on environmental reporting practices and the effect of ENVSC.

**Keywords:** Environmental and Social Cost (ENVSC), BRSR, Environmental Reporting Practices, Nifty 50, Firms' Value, Tobin's Q

## INTRODUCTION

The growing global focus on sustainability is trying to reshape companies' corporate governance and operational practices, particularly as regulatory frameworks increasingly emphasise the importance of corporate responsibility. Companies are now expected to align their business goals with environmental and social goals to enhance long-term viability and address the concerns of stakeholders, including investors, governments, and society at large. The importance of this shift has been due to the introduction of regulations promoting transparency and accountability in sustainable reporting. Regulatory frameworks such as the European Union's Non-Financial Reporting Directive (NFRD) and the Task Force on Climate-related Financial Disclosures (TCFD) have laid the foundation for international corporate sustainability standards, setting expectations for businesses to mitigate their environmental and social impacts.

In India, the Securities and Exchange Board of India (SEBI) has taken a significant step in this direction

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with the mandate of Business Responsibility and Sustainability Reporting (BRSR), which came into effect from fiscal year (FY) 2023. The BRSR is a significant move to align Indian corporate practices with global sustainability standards and enhance transparency for investors and stakeholders. The BRSR framework requires Indian companies to disclose their sustainability-related activities, with a particular focus on how capital expenditures contribute to improving the environmental and social implications of products and processes (SEBI, 2021). Furthermore, emphasis on capital expenditures highlights the management of financial investment for achieving sustainability goals, as firms must integrate technologies and processes that reduce their environmental and social footprint.

According to research, businesses with higher environmental intensity have lower corporate market valuation, indicating that investors consider environmental concerns to be financially relevant (Freiberg et al., 2024). SEBI created the BRSR guidelines (BRSR Guide) in association with the National Stock Exchange (NSE). These provide comprehensive guidance on BRSR and BRSR questions, which are mapped in the five global reporting frameworks – Global Reporting Initiative (GRI), TCFD, Sustainability Accounting Standards Board (SASB), Sustainable Development Goal (SDG), and Carbon Disclosure Project (CDP). As per the amended SEBI (Listing Obligations and Disclosure Requirements) Regulations, the existing Business Responsibility Report (BRR) is proposed to be replaced by a more detailed and comprehensive BRSR in two phases – a voluntary phase effective from FY 2021–22 and a mandatory phase for the top 1,000 companies effective from FY 2022–23 as per the prescribed format specified by SEBI.

In line with BRSR Principle 2 – Businesses should provide goods and services in a manner that is sustainable and safe – capital expenditures are a critical mechanism for Indian companies to match their operations with sustainability objectives. Investments in technologies and processes that minimise environmental harm and promote social well-being are essential for ensuring that businesses meet regulatory standards and contribute positively to society. For instance, capital expenditures on renewable energy infrastructure, waste management systems, and eco-friendly product design enable companies to reduce their

carbon footprint and adhere to sustainable production practices as mandated by the BRSR framework.

By effectively managing Environmental and Social Costs (ENVSCs), companies can mitigate risks related to environmental degradation, non-compliance, and social unrest, which could otherwise harm their reputation and market value. Although ENVSC may have a negative short-term impact on profitability, it signals long-term commitment to sustainability, which can attract socially responsible investors, improve customer loyalty, and enhance the firm's valuation. Thus, incorporating the costs of sustainability into business strategy is not only aligned with BRSR Principle 2 but is also a pathway to sustainable market value growth.

## LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

In the last two decades, there has been growing academic interest in understanding the connection between firms' environmental outcomes and their reporting of environmental financial data (Wang et al., 2019; Tang et al., 2020; Welbeck et al., 2017). However, the nature of this relationship remains contested. For instance, Chaklader and Gulati (2015) investigated environmental disclosure practices among Indian firms, analysing how various factors influence the Environmental Disclosure Index (EDI). In a similar vein, Fernando et al. (2023) examined the effect of green accounting disclosures on firm value in Southeast Asian mining and agriculture sectors (2017–21), revealing that GRI-aligned disclosures had no significant impact on valuation.

Contrasting findings emerge from Agyemang et al. (2021), whose panel data analysis of Chinese mining companies (2000–18) demonstrated a strong positive correlation between environmental performance and disclosure quality. Meanwhile, Obiora et al. (2022) reported mixed results in Nigeria (2017–21), where environmental disclosures significantly affected return on assets (ROA) and return on equity (ROE) but not return on capital employed (ROCE). In India, Khandelwal and Chaturvedi (2021) found that environmental disclosures positively influenced financial performance metrics (ROA and ROE) among top-listed firms, while Motwani and Gupta (2023) observed that energy sector companies consistently

prioritised climate-related disclosures, particularly CO<sub>2</sub> emissions. Divergent outcomes persist in broader studies. Seles et al. (2019) detected no significant link between Environmental, Social and Governance (ESG) disclosures and environmental performance using generalised method of moments (GMM) analysis, whereas Zhang and Xie (2020) developed an evaluation system for light-polluting industries, concluding that higher environmental performance correlates with superior disclosure quality. These disparities highlight the context-dependent nature of sustainability reporting’s financial implications.

*H1:* ENVSC has a significant positive impact on Tobin’s Q.

*H2:* ENVSC significantly impacts earnings per share (EPS).

## RESEARCH GAP

There is considerable research on environmental disclosure and its specific impact on firm performance globally (for example, studies in Southeast Asia and China). Still, there is a lack of focused studies on how Indian firms, especially the top-listed Nifty 50 companies, are impacted by their ENVSC. In the unique regulatory environment in India, with the recent implementation of BRSR guidelines, there is a gap in the direct link between ENVSC and firm value. This study aims to fill that gap by examining the period of transition between 2021 and 2023.

## OBJECTIVE OF STUDY

- To determine whether there exists a relationship between ENVSC and firms’ value for the top-listed Nifty 50 companies in different sectors in the Indian scenario.
- To determine how ENVSC affects investors’ performance and the overall value of the firm.

## METHODOLOGY

### Research Design

The study has used content analysis for secondary data, which was collected from the integrated annual reports

of Nifty 50 companies. The research was covered for a period of three years from 2021 to 2023. Due to the nature of the bank business, we had to exclude the financial sector, and due to the unavailability of data, the study was restricted to 34 companies.

For dependent variables, Tobin’s Q and EPS were used to calculate the firm’s value. ENVSC is considered as an independent variable, whereas size, ROA, age, cash flow/total asset (CFFA), and dividend per share (DPS) were used as control variables.

### The Econometric Model

To test the connection between ENVSC and firms’ value, we have considered the following estimation models:

$$\text{Tobin's } Q_{it} = \beta_0 + \beta_1 \text{ENVSC}_{it} + \beta_2 \text{ROA}_{it} + \beta_3 \text{CFFA}_{it} + \beta_4 \text{DPS}_{it} + \beta_5 \text{AGE}_{it} + \beta_6 \text{SIZE}_{it} + e \dots\dots\dots [\text{Regression Model 1}]$$

$$\text{EPS}_{it} = \beta_0 + \beta_1 \text{ENVSC}_{it} + \beta_2 \text{ROA}_{it} + \beta_3 \text{CFFA}_{it} + \beta_4 \text{DPS}_{it} + \beta_5 \text{AGE}_{it} + \beta_6 \text{SIZE}_{it} + e \dots\dots\dots [\text{Regression Model 2}]$$

Here,

$\beta_0$  is the intercept of the equation

$\beta_1$  to  $\beta_6$  are the regression coefficients

ENVSC = environmental and social cost

Tobin’s Q = market value/total assets

EPS = earnings per share

ROA = return on assets

CFFA = cash flow/total assets

DPS = dividend per share

AGE = age of the company

Size = logarithm of total assets.

### Variable Descriptions

*ENVSC:* Content analysis represents the conventional and most significant methodological framework for empirical investigations of disclosure practices (Manes-Rossi et

al., 2018; Osei et al., 2019; Tang et al., 2018; Leopizzi et al., 2020). For environmental disclosures, previous studies have also examined the annual reports by using content analysis (Cunningham & Gadenne, 2003; Ahmed & Sulaiman, 2004; Harte & Owen, 1991). Our study also used the content analysis method to derive ENVSC, as BRSR Principle 2 emphasises sustainability in business practices, and understanding the impact of ENVSC on market value is key to implementing this principle effectively. ENVSC includes the costs associated with reducing the company's environmental impact (such as carbon reduction or waste management) and promoting social welfare (such as labour welfare programmes or community engagement). While these costs might initially increase a firm's operational expenses, they are vital for compliance with BRSR Principle 2, which requires sustainable, safe, and responsible business practices.

*Tobin's Q:* Tobin's Q was first introduced by Kaldor (1966) and has been taken as a dependent variable because it considers risk and does not mislead the results as other variables (Lindenberg & Ross, 1981). Tobin's Q serves as a financial metric that compares a company's market valuation to the book value of its assets, providing insight into how corporate decisions influence shareholder value. This ratio was developed by economist James Tobin (1969), recipient of the Nobel Prize, who proposed that the aggregate market value of publicly traded firms should approximate their total replacement costs.

*EPS:* EPS is generally considered an important variable in determining the share price and firm value (Khan et al. 2014). EPS represents the portion of a company's net profits (after taxes and preferred dividends) allocated to each outstanding common share. The calculation involves dividing net income by the weighted average number of shares outstanding during the reporting period, as share quantities may vary over time (Besely, 2006).

*ROA:* Profitability measured by ROA is the degree of financial profits that is derived from its business activities (Nishanthini & Nimalathan, 2014). If the business cannot make an adequate profit, it cannot survive long term. With better financial performance, the company can reward its owners with great returns and benefits, and can also achieve the optimum financial aim of maximising the wealth of the stakeholders (Li & Cui, 2003). It is obtained by dividing net income and total assets (Makri et al., 2014).

*DPS:* DPS is the distribution of net profits to each equity shareholder, whose size is proportional to the total stocks held by the equity shareholder (Yuliati et al., 2014). It is the corporate income that is given to shareholders (Willem, 2016); as per the General Meeting of Shareholders (GMS), dividends are distributed after net profit (Lilianti, 2018).

*CFFA:* Another measure for profitability and a good indicator of liquidity and financial health, CFFA measures how efficiently a company generates cash flow from its assets, indicating the efficiency of asset utilisation in producing cash flows. This ratio helps to assess the company's ability to generate its operational cash flow relative to its total assets. It is calculated by dividing the total cash flow from operating activities by total assets.

*Company Age:* Company age is an important factor for its stakeholders, market valuation, year-on-year experiences, and its overall strategic system. Compared with older and larger businesses with longer-standing relationships with the community and their consumers, newer businesses would need to put in a lot of effort and resources to grow their client base and relationships. Younger firms tend to have lower reputational capital and less stable reputations compared with older firms (Flanagan & O'Shaughnessy, 2005). From a financial perspective, younger firms typically experience greater volatility in cash flows and prioritise growth, leaving limited capital available for ENVSC investments. In comparison, established companies benefit from stable cash flows and accumulated reserves, enabling them to allocate more resources towards corporate social responsibility (CSR) initiatives. This suggests that a firm's capacity for sustainability-related expenditures tends to increase with maturity (Withisuphakorn & Jiraporn, 2016).

*Company Size:* Company size is used for determining disclosure levels (Iatridis, 2013). For measuring company size, there are three main yardsticks: market value (D'Amico et al., 2016), operating income (Giannarakis et al., 2019), and total assets (Welbeck et al., 2017). Market value is the most affected by market fluctuations and is widely uncertain (Liu & Anbumozhi, 2009). Research indicates that operating income often reflects external market conditions more than firm-specific characteristics (Liu, 2020). Consequently, scholars frequently employ total assets as a more stable and reliable metric for assessing corporate scale (Giannarakis et al., 2019;

Welbeck et al., 2017; Fonseka et al., 2019). In alignment with these findings, this investigation adopts the year-end

logarithmic transformation of total assets as the primary indicator of organisational size.

**Table 1: Descriptive Statistics**

	LOG_ENVSC	TOBIN'S Q	LOG_EPS	ROA	LOG_CFFA	LOG_DPS	SIZE	LOG_AGE
MEAN	5.161865	4.645210	3.7145541	13.74404	0.149846	2.957364	10.88898	3.949852
MEDIAN	5.321242	3.505000	3.720741	11.50000	0.133589	2.906599	10.05843	3.901922
MAX	10.01252	19.79973	5.599643	63.17000	0.491072	5.393628	13.78680	4.753590
MIN	-1.087079	0.680000	0.810930	0.450000	-0.000583	0.000000	8.854087	3.044522
STD DEV	2.180335	3.971930	0.985775	10.46343	0.091721	1.152668	1.179674	0.468226

*Interpretation:* Table 1 shows the descriptive statistics with dependent variables Tobin's Q and log of earnings per share (LOG\_EPS). The result shows that ENVSC spending averages 5.16, indicating that the firm spends moderately on its ENVSC. A maximum value of 10.01 shows a large variance, with some firms spending significantly more, and minimum value of -1.08, showing that some firms may have negative or very low costs due to various factors such as reporting differences or underinvestment in sustainability. For Tobin's Q, the average is 4.64, indicating that, on average, firms' market

values are more than four times their replacement costs. The table lists a maximum value of 9.80, which shows that some companies have a much higher market valuation compared with asset replacement costs, and a minimum value of 0.68, implying that for some companies, their market value is less than their asset replacement costs. For EPS, the mean stands at 3.71, reflecting an average profitability level across the firms. A maximum value of 5.60 indicates that some firms have significantly higher earnings, and a minimum value of 0.81 reflects firms with very low or negative earnings.

**Table 2: Pearson Correlation Analysis**

	LOG_ENVSC	TOBIN'S Q	LOG_EPS	ROA	SIZE	CFFA	LOG_AGE	LOG_DPS
LOG_ENVSC	1.000000							
TOBIN'S Q	-0.2823435	1.000000						
LOG_EPS	-0.2948769	0.09636342	1.000000					
ROA	0.02259855	0.37181545	0.24186548	1.000000				
SIZE	0.47180683	-0.4783333	-0.1705673	-0.2130851	1.000000			
CFFA	-0.1695254	0.35190112	0.33358123	0.3284693	-0.3081094	1.000000		
LOG_AGE	-0.2697787	0.04066466	-0.1939358	-0.0268613	-0.1311944	-0.0240743	1.000000	
LOG_DPS	-0.3227234	0.23758981	0.74642451	0.40416702	-0.3998866	0.50151722	-0.0972445	1.000000

*Interpretation:* Table 2 shows the relationship between LOG\_ENVSC and other variables, such as Tobin's Q, LOG\_EPS, ROA, SIZE, and other firm-level control variables. Correlation between ENVSC and Tobin's Q of -0.2823 highlights a negative relationship between the two. As firms spend more on ENVSC, their market valuation (as measured by Tobin's Q) decreases.

ENVSC and EPS correlate at -0.2949, showing a negative relationship between the two. Higher ENVSC is associated with lower EPS, suggesting that increased spending on sustainability impacts short-term profitability. Also, the correlation of Tobin's Q and EPS is 0.0964, a weak positive relationship. This suggests that as Tobin's Q increases, EPS may also increase, but the

relationship is not very strong. A correlation of 0.3718 shows a moderate positive relationship. Companies with higher ROAs have higher Tobin's Q ratios. The relation between size and Tobin's Q is -0.4783, indicating a

strong negative relationship. Larger companies tend to have lower Tobin's Q ratios, potentially because larger companies have higher asset replacement costs relative to market value.

**Table 3: Regression Result**

*Dependent Variable = Tobin's Q*

Variable	Coefficient	Std Error	t-Stat	Prob
LOG_ENVSC	-0.340709	0.191806	-1.776318	0.0790
ROA	0.120022	0.037356	3.212917	0.0018
CFAA	6.194180	4.285137	1.445504	0.1518
LOG_DPS	-0.724749	0.390508	-1.855915	0.0667
AGE	-0.736096	0.766090	-0.960847	0.3392
SIZE	-1.354005	0.349070	-3.878795	0.0002
C	23.72263	5.44256	4.357368	0.0000
	R-squared		0.349547	
	Adjusted R-squared		0.306660	
	F-statistic		8.150427	
	Prob (F-statistic)		0.000000	

*Interpretation:* There is a negative relationship between ENVSC and Tobin's Q, with the coefficient being significant at a 10% significance level ( $p = 0.079$ ). This means that for every increase per unit in LOG\_ENVSC, Tobin's Q decreases by 0.3407 units, suggesting that higher ENVSC negatively impacts firm valuation (Tobin's Q). ROA of a p value 0.0018 is positive and significant at a 1% level, indicating that firms with higher ROAs tend to have higher market valuation. Size has a negative and significant impact, indicating

that larger firms tend to have lower Tobin's Q, possibly because of higher asset replacement costs. DPS has a negative and significant result at the 10% level. This also suggests that higher dividend payments reduce market valuation, possibly because firms paying high dividends may have fewer funds to reinvest in growth. R-squared of 0.3495, meaning the model explains about 34.95% of the variation in Tobin's Q. Adjusted R-squared of 0.3067 shows a modest fit of the model to the data.

**Table 4: Regression Analysis**

*Dependent Variable = LOG\_EPS*

Variable	Coefficient	Std Error	t-Stat	Prob
LOG_ENVSC	-0.080587	0.037135	-2.170121	0.0327
ROA	-0.300924	0.007162	-0.288479	0.7737
CFAA	-0.218494	0.848373	-0.257545	0.7974
LOG_DPS	0.659267	0.075508	8.731047	0.0000
AGE	-0.300924	0.150007	-2.006069	0.0480
SIZE	0.160529	0.067714	2.370705	0.0200
C	1.682571	1.065134	1.579680	0.1178
	R-squared		0.610832	
	Adjusted R-squared		0.583993	
	F-statistic		22.75895	
	Prob (F-statistic)		0.000000	

*Interpretation:* There is a negative and significant relationship between ENVSC and EPS, significant at the 5% level. For every unit increase in LOG\_ENVSC, EPS decreases by 0.0806 units, indicating that higher ENVSCs reduce a firm's profitability, i.e., EPS. Size of the companies have a positive and significant relationship, suggesting that larger firms tend to have higher EPS, potentially due to economies of scale or better financial resources. DPS has a positive and significant relationship, suggesting that firms with higher dividend payments tend to have higher EPS, possibly because such firms are profitable enough to pay dividends. R-squared is at 0.6108, indicating the model explains 61.08% of the variation in EPS, which is a much stronger fit compared with Tobin's Q model. Adjusted R-squared is at 0.5840, showing a strong model fit for explaining EPS variability.

## CONCLUSION

Firms with higher environmental and social responsibilities are increasingly seen as sustainable investments, and their actions can significantly influence their financial performance and market evaluations. In the study for Tobin's Q, the results show a significant negative relationship, suggesting that firms with higher ENVSC experience lower market valuations (Tobin's Q). This indicates that, in the short term, investors may view increased spending on environmental and social initiatives as a cost burden, potentially leading to a decline in market value (Freiberg et al., 2024). Similarly, the negative and significant impact of ENVSC on EPS implies that such expenditures reduce a firm's short-term profitability. As companies allocate more resources to meet sustainability obligations, it can result in reduced earnings, reflecting the cost of compliance with new regulations such as the BRSR guidelines (SEBI, 2021). While ENVSCs negatively impact the firm value and profitability, this reflects the costs associated with transitioning towards more sustainable business practices. Several empirical studies have revealed contrasting findings regarding the association between environmental performance and disclosure practices. While some research has identified an inverse correlation between these variables (Belhaj & Damak-Ayadi, 2011; Clarkson et al., 2008), other studies by Al-Tuwaijri et al. (2004), Acar and Temiz (2020), and Seles et al. (2019) reported statistically insignificant

relationships, particularly in the context of Indian corporations' environmental reporting.

The short-term negative impact of ENVSC on firm value happens because these investments, similar to adopting sustainable technologies or improving social welfare, immediately increase a company's expenses. This reduces profits in the short run, as the financial benefits of these initiatives take time to appear. Investors often prioritise quick financial returns, so they may view these costs as a burden, leading to a drop in market value (Tobin's Q) and profitability (EPS). In addition, companies face high transition costs when adjusting to new sustainability regulations, which further hurts their short-term financial performance. The findings highlight the importance of balancing sustainability expenditures with financial performance. Over time, firms that manage their ENVSC effectively may be able to enhance their reputation, attract socially responsible investors, and ultimately improve their long-term market value and profitability. However, the initial financial strain emphasises the need for policymakers to consider phased or sector-specific guidelines to support firms in this transition towards sustainable business practices.

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