

Do ESG scores influence institutional ownership? Evidence from Indian listed companies

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Abstract

In the evolving landscape of sustainable investing, Environmental, Social, and Governance (ESG) factors have become crucial in shaping institutional investment decisions. This paper examines the impact of ESG scores on the ownership patterns of Foreign Institutional Investors (FII) and Domestic Institutional Investors (DII) in the Indian market from 2017 to 2022. Utilizing a balanced panel data set of 80 companies, we investigate the relationship between ESG scores and institutional ownership. Our findings reveal that Governance (G) scores have a consistent and positive impact on FII ownership, indicating that foreign investors value strong corporate governance in their investment considerations. In contrast, Environmental (E) and Social (S) scores do not show a significant influence on the ownership of both FII and DII. The study also highlights that traditional financial metrics like Profit after Tax (PAT) margins have a significant correlation with FII ownership, affirming the importance of financial performance in investment decisions. The absence of a significant relationship between ESG scores and DII ownership suggests a divergence in the investment criteria between FIIs and DIIs, or potential disparities in ESG integration and reporting within the domestic sphere.¹

1 Introduction

The concept of ESG investing has undergone a profound evolution over the past two decades, transitioning from a niche ethical choice to a fundamental criterion in the strategic asset allocation of institutional investors worldwide. The drive towards sustainable investment practices has been largely propelled by a growing recognition of the material impacts that environmental, social, and governance factors can have on financial performance and risk exposure.

Global trends in ESG investing have shown a marked upsurge, with the value of assets applying ESG data to drive investment decisions increasing more than fourfold since 2012, surpassing \$40 trillion in 2020 according to Bloomberg. India, mirroring this trajectory, has seen its ESG investment market burgeon, with assets under management (AUM) in ESG funds rising from \$ 330 million in 2019 to \$1.3 billion in June 2023 (Aventus-Capital 2023).

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The integration of ESG factors into investment analysis and decision-making reflects a paradigm shift in investor priorities. The United Nations-supported Principles for Responsible Investment (PRI), as of 2021, reported over 3,000 signatories with a combined AUM exceeding \$100 trillion, signalling the widespread institutional commitment to ESG principles. In the Indian context, the market for ESG investments has been projected by the India Brand Equity Foundation to expand significantly, with a compounded annual growth rate of 76% from FY 2016-17 to FY 2020-21 (IBEF 2022).

The underpinnings of this shift are multifaceted. A BNP Paribas survey (2019) on global ESG investments provided insights into the motivations driving the ESG investment surge. Among the 347 institutional investors surveyed, 62% were actively integrating ESG considerations into their investment strategy, citing improved long-term returns (52%), brand and reputation (47%) and reduced reputational and operational risk (37%) as primary factors. This foresight is corroborated by the FTSE Russell’s (2023) survey, where 80% of asset owners globally were found to be investing sustainably, albeit slightly below the 88% reported in the preceding year.

The Indian investment landscape has echoed this global pattern. The nation’s regulatory framework has evolved to support the ESG ethos, with the Securities and Exchange Board of India (SEBI) mandating the top 1,000 listed entities by market capitalization to adhere to the Business Responsibility and Sustainability Reporting (BRSR) starting from FY22-23. Internationally, similar initiatives have been seen with the European Union’s Corporate Sustainability Reporting Directive (CSRD) set to cover around 50,000 companies from FY24 onwards, reflecting a global momentum towards transparency in ESG reporting and its influence on investment decisions (“Corporate Sustainability Reporting” 2023).

Amidst this backdrop, the relationship between ESG scores and institutional ownership in India presents an intriguing avenue for research. Institutional investors have traditionally been gatekeepers of large-scale capital allocation, and their evolving investment thesis, which increasingly incorporates ESG considerations, is reshaping the corporate landscape in India.

This paper seeks to explore the depth of this relationship, examining whether and how ESG scores influence the proportion of institutional ownership in Indian firms. We delve into the dynamics of foreign and domestic institutional investment vis-à-vis ESG scores over a six-year period. We also scrutinize the governance pillar within ESG frameworks and its potential effect on equity returns, thus offering a nuanced view of how governance interacts with institutional investment patterns. Through this analysis, we aim to contribute to the literature by providing comprehensive insights into the interplay between ESG scores and institutional investment behaviors in the context of the Indian market, an area that, while gaining global attention, is still nascent in empirical research.

The subsequent sections are structured as follows: Section 2 discusses the background of ESG investing across the world and Indian ownership patterns over the years, as well as existing literature regarding the relationship between ESG and firm characteristics. Section 3 describes the data used and methodology applied for the analysis, Section 4 lays out the results obtained and Section 5 summarizes the findings of the study.

2 Background and Literature Review

2.1 Evolution of ESG investing

The inception of ‘ESG’ as a term and a concept in financial markets can be traced back to the seminal report “Who Cares Wins - Connecting Financial Markets to a Changing World,” released in 2004 by a coalition comprising the International Finance Corporation, UN Global Compact, and the Swiss Government. This foundational document posited that integrating Environmental, Social, and Governance considerations into capital market operations would not only yield better societal outcomes but also enhance the sustainability and performance of businesses.

Since the release of the “Who Cares Wins” report and the subsequent Freshfield Report by UNEP FI in 2005, which made a strong case for ESG in financial markets, there has been a noticeable shift towards incorporating these factors into mainstream investment practices. The establishment of the Principles for Responsible Investment (PRI) at the New York Stock Exchange in 2006 marked a pivotal moment in ESG history. As of March 2022, the PRI has garnered support from over 4,900 signatories, managing assets in excess of \$121.3 trillion.

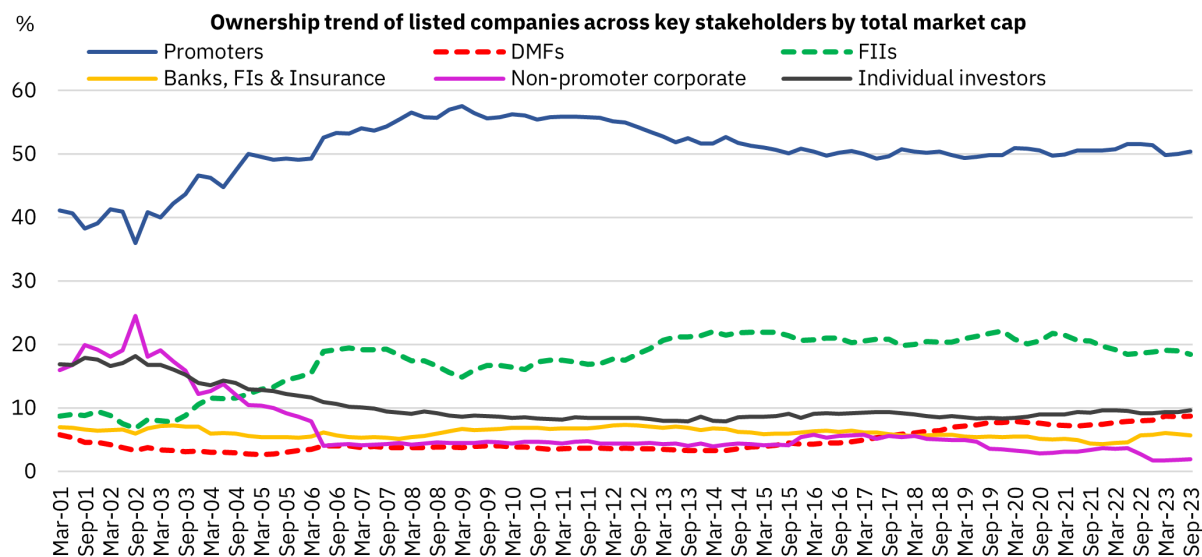
The integration of ESG considerations into business operations gained further momentum following the COP26 event. The establishment of the International Sustainability Standards Board (ISSB) under the IFRS Foundation in November 2021 was a significant step towards creating a global standard for ESG reporting. According to Bloomberg estimates, by 2025, ESG investments are projected to comprise over one-third of the total global AUM, amounting to approximately \$53 trillion.

The surge in ESG investments initially stemmed from developed regions, notably Europe and the USA, with Global Sustainable Investment Review (2020) data indicating a combined AUM of \$35.3 trillion across major markets, including Europe, the USA, Canada, Japan, and Australia. Asia is anticipated to be the next significant region for ESG investment growth, with countries like India playing a crucial role in this expansion.

Despite the global trend towards mandatory ESG disclosure, many regions still rely on voluntary reporting frameworks. However, at least 25 countries have now mandated corporate ESG disclosure. Malaysia was at the forefront, mandating ESG reporting for all publicly listed companies in 2016. The United Kingdom followed suit, introducing mandatory climate-related financial disclosures in April 2022. The European Union overhauled its ESG reporting directives with the Corporate Sustainability Reporting Directive (CSRD), affecting around 50,000 companies starting from FY24.

India’s first step towards adoption of ESG reporting was facilitated by the Ministry of Corporate Affairs through the National Voluntary Guidelines (NVGs) on Corporate Social Responsibility (CSR) in 2009. This was followed by SEBI mandating the filing of Business Responsibility Report (BRR) based on NVGs along with annual reports for the top 100 listed companies in 2012, later extended to the top 500 listed companies in 2015, and further to 1000 companies in 2019. During this period, CSR was made compulsory under the Companies Act 2013.

The evolution continued with SEBI replacing the BRR with the Business Responsibility and Sustainability Report (BRSR) in May 2021, aligning Indian regulations with global standards. This



Source: NSE India Ownership Tracker Sep 2023

change was influenced by the National Guidelines on Responsible Business Conduct (NGRBC), which provides a comprehensive framework for measuring corporate performance on ESG metrics. Research by CRISIL on ESG scores for 225 listed Indian companies found that firms with better ESG standings outperform their sector peers by an average of nine points, emphasizing the tangible benefits of ESG integration.

2.2 Ownership landscape in India

A discernible trend in the ownership landscape in India is the prominent position of promoters, whose ownership share has remained consistently the highest among all stakeholders. Promoters—both public (Government) and private—owned ~40% of the total market cap of listed companies in 2001, rising to all-time high of ~58% by 2009. A large part of this increase was led by rising public promoter ownership, partly attributed to listing of several public-sector companies during this period. Promoter share tapered off gradually since then, coinciding with the SEBI’s decision to increase minimum required free float from 10% to 25% in 2010. That said, this drop has been primarily led by a sharp decline in Government share over the years, and strategically so with the aim of expanding public partnership in the ownership of CPSEs (Central Public Sector Enterprises) and augmenting its resources for higher expenditure towards economic development. Individual investors were the second largest owners of Indian equities back in early 2001, with a ~18% share in total market capitalisation and ~29% in free float market capitalisation. That said, they saw their share falling sharply over the decade to an all-time low of 8% of total market cap in 2010 and has remained fairly steady since then until the onset of the COVID-10 pandemic in early 2020. This suggests a market that is still maturing in terms of retail participation. The overall trend points towards an evolving landscape of ownership distribution with implications for corporate governance, market stability, and the strategic direction of listed companies in India.

Foreign Institutional Investors (FIIs) show a gradual upward trend in their ownership stake, albeit with some fluctuations. The drop in retail share during the first decade of this century (2001-2010) was largely taken up by FIIs that saw a sharp increase in their share until the GFC. In fact, FIIs became the largest non-promoter owners of Indian equities by 2005, attributed to robust foreign capital inflows during this period—a consequence of strengthened global risk-on environment and India’s strong economic performance. During the following decade until the pandemic, FII share remained fairly rangebound. The trend for Domestic Mutual Funds (DMFs) appears relatively stable with a slight uptick towards the end, indicating a growing domestic retail investment culture.

2.3 Literature Review

An institutional investor is defined as a company or organization that invests money on behalf of clients or members. Hedge funds, mutual funds, pension funds and endowments are some examples of institutional investors. Literature presents that different institutions have different investment objectives hence their influence of performance also varies. They play a role in monitoring and influence decisions.

Early research by Gillan and Starks (2000) laid the groundwork for understanding the role of institutional investors in governance, positing that such investors have incentives to monitor management due to their substantial holdings. This was complemented by the work of Gompers, Ishii, and Metrick (2003), who found a strong correlation between corporate governance and stock returns, suggesting that institutions might prefer companies with better governance structures.

Dyck et al. (2019) explores whether institutional investors in aggregate are a driving force behind firms’ Environmental and Social performance using global evidence. Their findings suggest that institutional ownership is positively associated with ESG performance across different countries, indicating a potential causal effect of investor scrutiny on corporate sustainability practices. Moreover, Khan, Serafeim, and Yoon (2016) demonstrated that firms with good performance on material sustainability issues — those most relevant to their business — have return-wise outperformed firms with poor ratings on these issues.

Recent studies, such as Sahu et al. (2023), have highlighted the nuanced ways in which institutional ownership can impact various aspects of firm performance, particularly emphasizing the role of governance. Krueger, Sautner, and Starks (2020) further investigated the topic by analysing how institutional investors engage with companies on environmental and social issues. They found that such engagement was associated with subsequent improvements in ESG performance, highlighting the active role that investors can play. Chung, Firth, and Kim (2002) and McCahery, Sautner, and Starks (2016) find that institutional investors carry out monitoring and intervention behind the scenes in order to influence firm level decision making.

This view is contrasted by researchers like Kochhar and David (1996), David, Kochhar, and Levitas (1996) and Almazan, Hartzell, and Starks (2005) who have argued that the pressure-sensitive institutions viz. banks, insurance companies, and non-bank trusts, do not act against managers to preserve their business relationship with the companies.

The relationship between ESG performance and institutional investment is further explored in

the work of Zahid et al. (2023), who investigate the impact of common institutional ownership (CIO) on ESG performance. The paper distinguishes CIO from institutional investors in two aspects: (i) their objective is not solely focused on maximizing the value of their individual holdings, but rather on optimizing the overall value of their investment portfolio and (ii) CIO possess greater information at both corporate and industry level. Evidence from empirical results shows that CIO enhances the corporate ESG performance through its ability to influence Governance practices in a firm and by providing avenues for fund acquisition.

Pedersen, Fitzgibbons, and Pomorski (2021) take a different approach by constructing an ESG-efficient frontier, examining how investors with different levels of ESG awareness might alter their investment portfolios to maximize returns relative to ESG performance. Lopez-de-Silanes, McCahery, and Pudschedl (2022) studies the effect of ESG scores on the portfolio allocations of institutional investors based on balanced data of US publicly listed companies from Bloomberg and Sustainalytics across 2013-2018. They find that institutional investor holdings are strongly driven by the ESG quality of companies and investors are driven to add high quality ESG companies to their portfolios.

In the Indian context, studies have begun to explore the influence of ESG factors on investment decisions, although the research remains less mature than in Western markets. The focus in the Indian backdrop has largely been on the relationship of ownership with the governance aspect, with no consensus on the outcome. For instance, Arora and Dharwadkar (2011) examined the relationship between corporate governance practices and institutional investment in India, finding that institutions do take governance into account when making investment decisions, which could imply similar consideration for broader ESG factors. On the other hand, Sarkar and Sarkar (2000) find no evidence of domestic mutual funds in India being active in terms of the governance of companies they invest in. Mohanty (2002) finds that even though Indian institutional investors have higher holdings in firms with better corporate governance scores, this is actually due to the better financial performance of said companies, and not due to any direct linkage.

Given the relatively nascent stage of ESG integration in India, there is ample scope for research to explore how these global findings translate within the Indian market. Our study aims to contribute to this body of literature by examining the specific relationship between ESG scores and institutional ownership in the Indian context.

3 Data and methodology

Our study examines a dataset of 80 listed Indian companies monitored over a six-year period from 2017 to 2022 to investigate the relationship between institutional ownership and ESG scores. These companies are chosen based on the availability of ESG scores over this six-year time frame. The market cap of these companies vary from Rs 2 bn to Rs 17.8trn. We employ a panel regression framework, which is well-suited for analyzing data that spans multiple time periods for the same entities. Given the consistent presence of these companies throughout the study period, we have a balanced panel dataset.

Our dependent variable is the institutional ownership percentage, which combines the holdings of Foreign Institutional Investors (FII) and Domestic Institutional Investors (DII). Our key inde-

Table 1: Variable description

Variable	Description
<i>fii_share</i>	Percentage of shares held by Foreign Institutional Investors
<i>dii_share</i>	Percentage of shares held by Domestic Institutional Investors
<i>e_score</i>	Refinitiv Environmental Pillar Score
<i>s_score</i>	Refinitiv Sustainability Pillar Score
<i>g_score</i>	Refinitiv Governance Pillar Score
<i>esg</i>	Refinitiv Combined score for all pillars
<i>pat_margins</i>	Profit After Tax Margins: Net Income/Net Sales
<i>mcap_quatile</i>	Floating Market Capitalization
<i>pe_ntm</i>	Projected Price to Earnings ratio for the next 12 months
<i>returns_one</i>	Returns generated by the firm's shares over the previous 12 months

pendent variables are the ESG scores, both consolidated and disaggregated into Environmental (E), Social (S), and Governance (G) pillars.

To account for firm-level heterogeneity, we control for several firm-specific factors:

- Profit after Tax (PAT) margins: A profitability metric that could influence investment attractiveness.
- Floating market capitalization: Represents the portion of market capitalization available for trade, excluding promoter ownership.
- One-year returns: Provides a measure of the market performance of the firm's stock over the previous fiscal year, reflecting investor sentiment and potential growth prospects.
- Twelve month forward Price to Earnings Ratio: Provides a measure of expectations of performance of the company over the next 12 months.

The ESG scores are extracted from Refinitiv Eikon, with scores ranging from 0 to 100, reflecting a firm's ESG performance relative to industry peers. These scores are synthesized from 186 key performance indicators, which are part of the broader set of 630 data points used in the scoring process. These data points are grouped into 10 categories under the respective "E", "S" and "G" heads, which are then used to generate scores on each of these three pillars. The ESG pillar score is a relative sum of the category weights. While these weights are same across sectors for the Governance category, they vary across sectors for the Environmental and Social categories.

Data on ownership is taken from CMIE Prowess. FII ownership is calculated as the percentage of total shares of a firm held by FIIs. DII ownership is the percentage of total shares held by domestic mutual funds, banks, insurance and financial institutions and other institutional promoters.

A dummy variable is used to represent the quartile to which a firm belongs in terms of floating market cap of all firms in the given year.

PAT margins are calculated by normalizing the net income of the firm in the fiscal year by the net sales during the corresponding period, sourced from Refinitiv. This measures the percentage of net profit generated by the company for each unit of revenue generated. 12-month forward P/E ratio is sourced from Refinitiv as well. Ownership percentage, yearly returns, 12-month forward P/E and market cap are taken as on the end of each financial year, i.e., March 31st. PAT margin and ESG scores for the corresponding fiscal year are considered.

The preliminary model, referred to as the Pooled Model, is as follows:

$$\begin{aligned} institutional_share_{it} = & \beta_0 + \beta_1 score_{it} + \beta_2 pat_margins_{it} + \beta_3 pe_ntm_{it} + \beta_4 returns_one_{it} \\ & + \sum_j \beta_j mcap_float_{ijt} + \epsilon_{it} \end{aligned}$$

Recognizing that institutional investors may exhibit sectoral preferences, we introduce a set of dummy variables representing the Global Industry Classification Standard (GICS) sectors to which the firms belong. This augmented model is termed the Sector Fixed Effects Model.

$$\begin{aligned} institutional_share_{it} = & \beta_0 + \beta_1 score_{it} + \beta_2 pat_margins_{it} + \beta_3 pe_ntm_{it} + \beta_4 returns_one_{it} \\ & + \sum_j \beta_j mcap_float_{jit} + \sum_k \beta_j sector_{kit} + \epsilon_{it} \end{aligned}$$

In the subsequent model, to capture potential temporal effects, we include time fixed effects. These account for macroeconomic factors or events impacting all firms across the board during specific periods. This model is designated as the Time FE Model.

$$\begin{aligned} institutional_share_{it} = & \beta_0 + \beta_1 score_{it} + \beta_2 pat_margins_{it} + \beta_3 pe_ntm_{it} + \beta_4 returns_one_{it} \\ & + \sum_j \beta_j mcap_float_{jit} + \sum_k \beta_j sector_{kit} + \sum_l \beta_l sector_{lit} + \epsilon_{it} \end{aligned}$$

The sample consists of a diverse set of companies, which show wide variety across the environment, social and governance pillars, as is evidenced by the ESG Score ranging from 20 to 89. Out of these three, environment shows the highest variability with a standard deviation of 24.1, while on the sustainability front the deviation is significantly lower at 17.5.

Table 2: Summary statistics

Statistic	Mean	St. Dev.	Min	Max
fii_share	20.5	14.1	0.2	68.3
dii_share	16.8	11.1	0.8	76.3
esg	53.4	14.5	20.0	88.9
e_score	49.4	24.2	0.0	97.3
s_score	62.8	17.6	13.0	93.7
g_score	52.8	24.1	4.2	97.5
pat_margin	13.1	17.9	-221.7	72.9
pe_ntm	20.8	14.6	2.6	111.9
return_one	0.1	0.5	-2.4	2.1

ESG score over the years have improved for India Inc. from an average score of 49.1 in FY17 to 58.1 in FY22. Among the sub-components, companies on an average have done better on the social pillar, followed by governance and finally environmental.

We also observe sectoral and inter-temporal differentiation in the scores. Communication services was the worst performing sector in terms of ESG scores in 2017 and remained at that position even in 2022. While real estate witnessed a massive improvement in the score during the period of our study (up from 44 to 81 in six years), becoming the best performing sector in terms of ESG in FY22, financial companies continue to deteriorate over the same period.

4 Results

In the Pooled model, without sector controls or time fixed effects, the ESG score seems to have a positive and statistically significant relationship with FII ownership but not with DII ownership. This suggests that FIIs consider ESG scores in their investment decisions, whereas DIIs might not prioritize ESG in the same way or to the same extent. The P/E ratio and market capitalization quartiles are not consistently significant across FII and DII ownership, suggesting that these financial metrics might influence investment decisions differently for FIIs and DIIs.

The Time FE model includes both sector dummies and time fixed effects. In this model, the coefficient of the ESG score for FII and DII ownership remains positive and statistically significant, though the magnitude of the effect has decreased compared to the Pooled model. This indicates that over time, the importance of ESG scores to FIIs has remained consistent after accounting for unobserved time-specific effects.

Overall, the results suggest that ESG scores are a consistent factor in FII investment decisions but less so for DIIs (Table: 3). Profitability (measured by PAT margin) is important to FIIs. The varying significance of other financial metrics across different models suggests that these factors may influence FII and DII investment decisions differently over time or across sectors. Additionally, the introduction of sector and time fixed effects provides a more nuanced understanding of the factors driving institutional ownership in Indian companies.

Running a model without the ESG score serves as a baseline to understand the influence of other factors on institutional ownership. It helps to isolate the effect of variables like profitability, market capitalization, and financial performance from the ESG score. This comparison is crucial to establish whether ESG has an incremental effect over and above these traditional financial metrics.

Without considering ESG scores, traditional financial metrics like profitability appear to influence institutional ownership to some extent (Table: 6 in Appendix), but this effect is not consistent across all models. This implies that while financial fundamentals are important, they may not be the sole drivers of institutional investment. Institutional investors may consider a wider range of factors or that these specific financial metrics do not capture the nuances of their investment criteria. Additionally, the mixed results for sector dummies suggest that industry factors may be relevant, but their impact is not uniform across sectors or types of institutional investors.

Table 3: Models with ESG score as main independent variable of interest

	<i>Dependent variable:</i>					
	fii_share			dii_share		
	Pooled	Sector FE	Time FE	Pooled	Sector FE	Time FE
	(1)	(2)	(3)	(4)	(5)	(6)
esg	0.126*** (0.044)	0.146*** (0.043)	0.077** (0.038)	-0.010 (0.034)	-0.0004 (0.034)	0.057** (0.028)
pat_margin	0.218*** (0.045)	0.143*** (0.047)	0.173*** (0.041)	0.022 (0.035)	0.007 (0.037)	-0.020 (0.030)
return_one	-2.938** (1.338)	-3.107** (1.303)	-0.609 (1.752)	0.958 (1.030)	1.197 (1.039)	-4.537*** (1.280)
pe_ntm	0.046 (0.044)	0.106** (0.052)	0.078* (0.046)	-0.173*** (0.034)	-0.207*** (0.042)	-0.180*** (0.033)
mcap_quartile2	5.888*** (1.774)	7.961*** (1.733)	8.069*** (1.514)	2.116 (1.366)	2.122 (1.383)	2.179** (1.107)
mcap_quartile3	2.296 (1.768)	3.729** (1.831)	3.937** (1.608)	4.263*** (1.361)	4.710*** (1.460)	4.965*** (1.175)
mcap_quartile4	5.632*** (1.873)	5.918*** (1.863)	6.342*** (1.647)	8.781*** (1.442)	9.226*** (1.486)	9.468*** (1.203)
consumer_discretionary		-1.575 (2.596)	-1.910 (2.269)		3.984* (2.071)	4.038** (1.658)
consumer_staples		-10.812*** (2.926)	-10.485*** (2.555)		5.840** (2.334)	5.460*** (1.867)
energy		-8.212*** (2.694)	-8.776*** (2.354)		0.767 (2.149)	1.061 (1.720)
financials		3.863* (2.277)	3.035 (1.991)		4.234** (1.816)	4.768*** (1.455)
health_care		-2.109 (2.555)	-2.108 (2.231)		6.437*** (2.038)	6.275*** (1.630)
industrials		-5.037* (2.759)	-5.283** (2.413)		5.888*** (2.201)	6.469*** (1.763)
materials		-4.501* (2.660)	-5.502** (2.326)		3.913* (2.122)	5.147*** (1.700)
real_estate		-7.078 (5.642)	-6.030 (4.930)		-0.900 (4.501)	-1.304 (3.603)
utilities		-5.959* (3.222)	-6.676** (2.813)		6.830*** (2.570)	7.365*** (2.056)
Constant	6.790** (2.650)	7.157** (3.440)		16.654*** (2.040)	12.802*** (2.744)	
R ²	0.126	0.220	0.267	0.139	0.175	0.269
Adjusted R ²	0.112	0.193	0.233	0.126	0.147	0.235

This table shows the estimated coefficients (and standard errors in parenthesis) from OLS panel regressions of institutional ownership on ESG score and other control variables. Columns 1 to 3 show the results for the FII ownership share, and columns 4 to 6 show the results for DII ownership. Institutional ownership is calculated as the percentage of the firm's outstanding shares held by institutional investors. Models (2) and (5) include sector fixed effects, while (3) and (6) include both sector and time fixed effects, with communication services as the baseline sector. Dummies are created to indicate floating market cap-wise quartile of the company in the given year, with higher quartiles indicating higher market cap. *, **, and *** indicate statistical significance at the 10, 5, and 1 percent levels respectively.

We next try to identify if any of the E, S or G scores separately influence the investment decisions of institutions. For the E and S scores (Tables 7 & 8 in Appendix), we find that there is no significant effect. However, we find more interesting results for G (Table: 4).

Across the regression models, the governance score consistently shows a significant positive effect on FII ownership, indicating that FIIs place importance on governance quality in their investment decisions. Profitability, as measured by the PAT margin, also positively influences FII ownership. However, these variables do not exhibit a significant impact on DII ownership, suggesting that DIIs may not prioritize governance factors as highly as FIIs in their investment strategies. The other control variables, including one-year return and market capitalization quartiles, generally do not show a significant relationship with ownership for either FIIs or DIIs.

These results seem to be in line with Parikh et al. (2023), who finds that out of the three individual components of ESG, the governance pillar scores have a positive effect on equity returns for companies.

Table 4: Models with G score as main independent variable of interest

	<i>Dependent variable:</i>					
	fii_share			dii_share		
	Pooled	Sector FE	Time FE	Pooled	Sector FE	Time FE
	(1)	(2)	(3)	(4)	(5)	(6)
g_score	0.172*** (0.026)	0.158*** (0.027)	0.145*** (0.023)	-0.007 (0.020)	-0.001 (0.022)	0.012 (0.018)
pat_margin	0.216*** (0.043)	0.151*** (0.046)	0.185*** (0.040)	0.022 (0.035)	0.007 (0.037)	-0.022 (0.030)
return_one	-2.782** (1.284)	-2.971** (1.267)	-0.878 (1.690)	0.938 (1.026)	1.197 (1.035)	-4.480*** (1.286)
pe_ntm	-0.027 (0.044)	0.046 (0.051)	0.029 (0.044)	-0.170*** (0.035)	-0.207*** (0.042)	-0.190*** (0.034)
mcap_quartile2	5.031*** (1.713)	6.973*** (1.705)	6.923*** (1.472)	2.129 (1.369)	2.128 (1.393)	2.285** (1.120)
mcap_quartile3	1.642 (1.697)	3.270* (1.782)	3.139** (1.544)	4.257*** (1.356)	4.714*** (1.456)	5.245*** (1.175)
mcap_quartile4	5.540*** (1.755)	6.005*** (1.768)	5.737*** (1.540)	8.726*** (1.402)	9.229*** (1.444)	10.046*** (1.172)
consumer_discretionary		-0.302 (2.539)	-0.099 (2.191)		3.974* (2.075)	3.624** (1.667)
consumer_staples		-8.766*** (2.885)	-8.480*** (2.488)		5.828** (2.357)	5.507*** (1.893)
energy		-4.711* (2.730)	-4.971** (2.358)		0.745 (2.230)	0.876 (1.794)
financials		4.805** (2.222)	4.434** (1.917)		4.226** (1.815)	4.392*** (1.458)
health_care		-1.749 (2.495)	-1.569 (2.151)		6.434*** (2.038)	6.127*** (1.636)
industrials		-2.252 (2.753)	-2.379 (2.379)		5.872*** (2.249)	6.449*** (1.810)
materials		-3.812 (2.599)	-4.506** (2.246)		3.907* (2.123)	4.947*** (1.708)
real_estate		-4.930 (5.507)	-4.378 (4.752)		-0.909 (4.499)	-0.822 (3.615)
utilities		-2.334 (3.234)	-2.809 (2.791)		6.809** (2.642)	7.228*** (2.123)
Constant	6.377*** (1.797)	6.617** (2.790)		16.414*** (1.436)	12.823*** (2.279)	
R ²	0.188	0.256	0.318	0.139	0.175	0.263
Adjusted R ²	0.176	0.230	0.287	0.126	0.147	0.229

This table shows the estimated coefficients (and standard errors in parenthesis) from OLS panel regressions of institutional ownership on G score and other control variables. Columns 1 to 3 show the results for the FII ownership share, and columns 4 to 6 show the results for DII ownership. Institutional ownership is calculated as the percentage of the firm's outstanding shares held by institutional investors. Models (2) and (5) include sector fixed effects, while (3) and (6) include both sector and time fixed effects, with communication services as the baseline sector. Dummies are created to indicate floating market cap-wise quartile of the company in the given year, with higher quartiles indicating higher market cap. *, **, and *** indicate statistical significance at the 10, 5, and 1 percent levels respectively.

Since the period of study is for six years, the variation in institutional ownership over time may not have been significant enough in order to accurately identify the effect of changes in these scores on ownership. To deal with this potential drawback, we take first differences of variables and carry out the analysis again.

Table 5: Models with difference of ESG score as main independent variable of interest

	<i>Dependent variable:</i>					
	fii_diff			dii_diff		
	Pooled	Sector FE	Time FE	Pooled	Sector FE	Time FE
(1)	(2)	(3)	(4)	(5)	(6)	
esg_diff	0.134** (0.053)	0.145*** (0.054)	0.035 (0.038)	-0.127** (0.051)	-0.139*** (0.052)	-0.034 (0.036)
pe_ntm	0.031 (0.035)	0.062 (0.043)	0.034 (0.029)	-0.029 (0.034)	-0.053 (0.041)	-0.026 (0.028)
return_one	0.515 (1.067)	0.337 (1.091)	1.345 (1.171)	-0.535 (1.032)	-0.404 (1.052)	0.288 (1.137)
inc_diff	-0.0002 (0.0003)	-0.0002 (0.0004)	-0.0001 (0.0002)	0.0003 (0.0003)	0.0003 (0.0003)	0.0001 (0.0002)
mcap_quartile2	1.545 (1.421)	1.945 (1.459)	1.945** (0.977)	-1.076 (1.373)	-1.550 (1.407)	-1.608* (0.949)
mcap_quartile3	0.795 (1.430)	1.108 (1.532)	0.714 (1.034)	0.144 (1.382)	-0.161 (1.477)	-0.030 (1.004)
mcap_quartile4	1.157 (1.433)	0.920 (1.483)	0.864 (1.010)	-0.093 (1.385)	0.240 (1.430)	-0.053 (0.980)
consumer_discretionary		-2.096 (2.209)	-1.701 (1.482)		1.777 (2.131)	1.558 (1.439)
consumer_staples		-2.932 (2.521)	-2.342 (1.688)		2.677 (2.431)	2.118 (1.639)
energy		-1.025 (2.289)	-1.336 (1.536)		2.305 (2.207)	2.799* (1.491)
financials		0.206 (1.927)	-0.092 (1.295)		-0.348 (1.858)	0.133 (1.257)
health_care		-1.809 (2.222)	-1.372 (1.488)		2.432 (2.143)	2.043 (1.445)
industrials		-2.083 (2.391)	-1.950 (1.604)		2.345 (2.305)	2.019 (1.557)
materials		-1.307 (2.263)	-1.525 (1.515)		0.866 (2.182)	1.038 (1.471)
real_estate		-3.103 (4.885)	-2.098 (3.274)		3.235 (4.711)	2.018 (3.179)
utilities		-0.552 (2.771)	-0.920 (1.857)		0.580 (2.672)	1.057 (1.803)
Constant	1.421 (1.201)	1.787 (2.017)		-1.736 (1.160)	-2.331 (1.945)	
R ²	0.027	0.035	0.030	0.026	0.039	0.033
Adjusted R ²	0.009	-0.005	-0.021	0.008	-0.002	-0.018

This table shows the estimated coefficients (and standard errors in parenthesis) from OLS panel regressions of change in institutional ownership on change in ESG score and other control variables. Columns 1 to 3 show the results for the FII ownership share, and columns 4 to 6 show the results for DII ownership. Institutional ownership is calculated as the percentage of the firm's outstanding shares held by institutional investors. Models (2) and (5) include sector fixed effects, while (3) and (6) include both sector and time fixed effects, with communication services as the baseline sector. Dummies are created to indicate floating market cap-wise quartile of the company in the given year, with higher quartiles indicating higher market cap. *, **, and *** indicate statistical significance at the 10, 5, and 1 percent levels respectively.

The 12-month ahead P/E ratio, one-year returns and market cap dummy variables remain unchanged. Instead of PAT margins, we now look at the year-on-year growth of profit (net-income). The equation therefore becomes

$$\Delta institutional_share_{it} = \beta_0 + \Delta\beta_1 score_{it} + \Delta\beta_2 \log(profit)_{it} + \beta_3 pe_ntm_{it} + \beta_4 returns_one_{it} + \sum_j \beta_j mcap_float_{ijt} + \epsilon_{it}$$

The revised specification investigates the relationship between the changes in ESG scores and changes in FII and DII ownership percentages. This specification can provide insights into how shifts in a company's ESG performance might influence institutional investment behaviors over

time. There are certain advantages to the specification (1) It captures the dynamic effects of changes in ESG performance on the decision-making process of institutional investors (2) It better reflects the responsiveness of investors to an improvement or a deterioration in a firm's ESG practices. However, changes do not capture the absolute level of ESG or ownership, which can be an important determinant of investment decisions. Year-to-year changes can introduce volatility and noise into the analysis, making it harder to detect underlying patterns.

For the change in FII ownership (`fii_diff`) in Table 5, the change in ESG score (`esg_diff`) is positively correlated in the Pooled and Sector FE models, suggesting that increases in ESG scores are associated with increases in FII ownership. This relationship remains statistically significant in the Sector FE model, indicating that sectoral characteristics play a role in this relationship. However, the significance of the ESG score diminishes in the Time FE model.

The change in DII ownership (`dii_diff`) show a significant negative relationship with changes in ESG scores in pooled and Sector FE models. This suggests that increases in ESG scores are associated with decreasing DII ownership.

This might suggest ESG scores as being associated with decreasing DII ownership. That said, it is to be noted that for the Indian markets, an increase (decrease) in FII ownership has been found to be strongly correlated with a decrease (increase) in DII, regardless of cause. In this context, the negative magnitude of the ESG coefficient indicates an exchange of ownership between the two institutional categories.

When carrying out this analysis with E, S and G pillar scores separately (Tables 10, 11 and 12), we find that none of the scores are significant. The lack of statistical significance for these changes in scores in all models suggests that, based on the data and time frame studied, fluctuations in specific ESG pillars do not have a discernible impact on the ownership percentages of FIIs and DIIs. One might conclude that institutional investors may not differentiate between the specific ESG pillars when adjusting their ownership stakes, or they may place a more nuanced emphasis on ESG factors that is not captured by the score changes alone.

In summary, the non-significant results for the 'E', 'S', and 'G' scores in relation to FII and DII ownership changes suggest that institutional investors may not react to year-on-year ESG score changes in isolation. These investors might take a more holistic view of ESG or consider additional factors not captured by the individual ESG pillar scores. It could also indicate the need for a longer-term perspective to understand the true impact of ESG on ownership decisions, or a more refined model that accounts for a wider array of variables and potential non-linearities in the relationship between ESG factors and institutional investment behavior.

While the change-based specification provides useful insights into the dynamic effects of ESG on institutional ownership, it should be employed with an understanding of its limitations and in conjunction with other analyses that consider absolute levels to provide a more complete picture of institutional investment behaviours.

5 Conclusion

We delved into the intricate relationship between Environmental, Social, and Governance (ESG) scores and the ownership patterns of institutional investors in the Indian context. Against a

backdrop of increasing legislative emphasis on ESG factors globally and within India, our study aimed to discern whether such non-financial metrics sway the investment decisions of FIIs and DIIs.

Our analysis, employing a panel data approach over a six-year period, provided a granular examination of the individual ESG components—Environmental (E), Social (S), and Governance (G)—in relation to institutional ownership. The findings revealed a clear and consistent influence of the G score on FII ownership, signaling an alignment with the global trajectory towards recognizing governance as a pivotal component of sustainable investing. This is reflective of a broader trend encapsulated in seminal initiatives such as the United Nations supported Principles for Responsible Investment (PRI), which underscores the financial relevance of governance practices.

However, the E and S components of ESG did not exhibit a significant impact on FII or DII ownership. This may suggest that the current focus of institutional investors, particularly FIIs, is predominantly on governance aspects within the ESG spectrum. For DIIs, the absence of significant findings across ESG components indicates a potential divergence in investment rationale or a lag in the integration of ESG considerations into investment strategies, which may be due to the emergent nature of ESG reporting and awareness within the domestic investment community.

The strength of this study lies in its specificity and relevance to the Indian market, which is at a critical juncture of ESG integration. The robustness of the regression models and the inclusion of a comprehensive set of control variables enhance the credibility of the findings. However, a notable limitation is the study's focus on a six-year period, which may not capture the long-term implications of ESG factors on institutional ownership. Additionally, the non-significant results for E and S scores suggest that these aspects of ESG may require different methodological approaches or more nuanced metrics for a more accurate assessment.

To further enrich our model, we may consider additional variables such as corporate governance indices, debt ratios, and firm age, which can also influence institutional investment decisions. Moreover, interaction terms between ESG scores and sector dummies could be included to examine if the impact of ESG on ownership varies by sector.

Future research should consider longitudinal studies to capture the evolution of ESG integration in investment strategies over extended periods. Qualitative research could complement quantitative findings, offering deeper insights into the decision-making processes of institutional investors. Furthermore, a cross-country comparative analysis could contextualize the Indian experience within the global ESG landscape.

In conclusion, while governance quality is affirmed as a key determinant of FII ownership, the role of environmental and social factors remains less clear. The evolving legislative landscape and the dynamic nature of ESG integration call for ongoing scholarly attention to ESG investing within the Indian market and beyond.

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7 Appendix

Table 6: Model with no ESG score among independent variables

	<i>Dependent variable:</i>					
	Pooled	fii_share			dii_share	
		Sector FE	Time FE	Sector FE	Time FE	
(1)	(2)	(3)	(4)	(5)	(6)	
pat_margin	0.209*** (0.045)	0.133*** (0.047)	0.168*** (0.041)	0.022 (0.035)	0.007 (0.037)	-0.023 (0.030)
return_one	-2.603* (1.343)	-2.688** (1.312)	-0.486 (1.757)	0.931 (1.025)	1.196 (1.034)	-4.447*** (1.284)
pe_ntm	0.044 (0.045)	0.092* (0.053)	0.070 (0.046)	-0.173*** (0.034)	-0.207*** (0.041)	-0.186*** (0.033)
mcap_quartile2	6.399*** (1.779)	8.544*** (1.744)	8.381*** (1.511)	2.075 (1.358)	2.120 (1.374)	2.407** (1.105)
mcap_quartile3	3.068* (1.761)	4.711** (1.828)	4.472*** (1.591)	4.201*** (1.344)	4.707*** (1.440)	5.356*** (1.163)
mcap_quartile4	7.060*** (1.821)	7.713*** (1.806)	7.311*** (1.580)	8.665*** (1.389)	9.221*** (1.423)	10.177*** (1.155)
consumer_discretionary		-3.215 (2.579)	-2.781 (2.235)		3.989* (2.032)	3.401** (1.633)
consumer_staples		-11.172*** (2.957)	-10.670*** (2.562)		5.841** (2.330)	5.325*** (1.872)
energy		-9.664*** (2.689)	-9.551*** (2.330)		0.771 (2.119)	0.494 (1.703)
financials		2.453 (2.263)	2.275 (1.961)		4.238** (1.784)	4.212*** (1.433)
health_care		-2.667 (2.578)	-2.405 (2.233)		6.439*** (2.032)	6.057*** (1.632)
industrials		-5.831** (2.780)	-5.686** (2.412)		5.891*** (2.191)	6.174*** (1.763)
materials		-5.318** (2.679)	-5.938** (2.324)		3.915* (2.111)	4.828*** (1.698)
real_estate		-6.146 (5.699)	-5.498 (4.940)		-0.902 (4.491)	-0.915 (3.610)
utilities		-7.282** (3.233)	-7.385*** (2.800)		6.834*** (2.548)	6.847*** (2.047)
Constant	12.979*** (1.576)	15.449*** (2.432)		16.152*** (1.202)	12.778*** (1.917)	
R ²	0.110	0.201	0.261	0.139	0.175	0.262
Adjusted R ²	0.099	0.175	0.228	0.128	0.148	0.230

This table shows the estimated coefficients (and standard errors in parenthesis) from OLS panel regressions of institutional ownership on all control variables other than ESG scores (combined and separate). Columns 1 to 3 show the results for the FII ownership share, and columns 4 to 6 show the results for DII ownership. Institutional ownership is calculated as the percentage of the firm's outstanding shares held by institutional investors. Models (2) and (5) include sector fixed effects, while (3) and (6) include both sector and time fixed effects, with communication services as the baseline sector. Dummies are created to indicate floating market cap-wise quartile of the company in the given year, with higher quartiles indicating higher market cap. *, **, and *** indicate statistical significance at the 10, 5, and 1 percent levels respectively.

Table 7: Models with E score as main independent variable of interest

	<i>Dependent variable:</i>					
	fii_share			dii_share		
	Pooled	Sector FE	Time FE	Pooled	Sector FE	Time FE
(1)	(2)	(3)	(4)	(5)	(6)	
e_score	-0.021 (0.028)	0.035 (0.029)	-0.017 (0.026)	0.019 (0.021)	0.023 (0.023)	0.064*** (0.019)
pat_margin	0.201*** (0.047)	0.141*** (0.048)	0.164*** (0.042)	0.030 (0.036)	0.012 (0.038)	-0.008 (0.030)
return_one	-2.531* (1.347)	-2.796** (1.314)	-0.508 (1.758)	0.866 (1.028)	1.126 (1.036)	-4.360*** (1.270)
pe_ntm	0.039 (0.045)	0.106** (0.054)	0.063 (0.047)	-0.168*** (0.035)	-0.198*** (0.043)	-0.159*** (0.034)
mcap_quartile2	6.558*** (1.793)	8.392*** (1.747)	8.458*** (1.517)	1.932 (1.368)	2.022 (1.378)	2.113* (1.096)
mcap_quartile3	3.429* (1.828)	4.185** (1.876)	4.734*** (1.644)	3.876*** (1.394)	4.365*** (1.479)	4.358*** (1.188)
mcap_quartile4	7.585*** (1.954)	6.807*** (1.948)	7.755*** (1.728)	8.193*** (1.491)	8.633*** (1.536)	8.484*** (1.248)
consumer_discretionary		-3.073 (2.580)	-2.852 (2.239)		4.081** (2.034)	3.670** (1.617)
consumer_staples		-11.421*** (2.962)	-10.547*** (2.571)		5.679** (2.335)	4.855*** (1.857)
energy		-9.707*** (2.688)	-9.537*** (2.332)		0.742 (2.119)	0.440 (1.684)
financials		2.977 (2.302)	2.023 (2.002)		4.578** (1.815)	5.173*** (1.446)
health_care		-2.599 (2.577)	-2.439 (2.235)		6.484*** (2.032)	6.186*** (1.614)
industrials		-6.288** (2.803)	-5.458** (2.440)		5.593** (2.210)	5.303*** (1.763)
materials		-5.513** (2.682)	-5.846** (2.330)		3.789* (2.114)	4.476*** (1.683)
real_estate		-6.607 (5.708)	-5.261 (4.957)		-1.202 (4.500)	-1.819 (3.580)
utilities		-7.159** (3.233)	-7.447*** (2.804)		6.914*** (2.549)	7.086*** (2.025)
Constant	13.960*** (2.057)	13.635*** (2.842)		15.269*** (1.570)	11.599*** (2.241)	
R ²	0.111	0.203	0.261	0.140	0.177	0.280
Adjusted R ²	0.098	0.176	0.227	0.127	0.148	0.247

This table shows the estimated coefficients (and standard errors in parenthesis) from OLS panel regressions of institutional ownership on E score and other control variables. Columns 1 to 3 show the results for the FII ownership share, and columns 4 to 6 show the results for DII ownership. Institutional ownership is calculated as the percentage of the firm's outstanding shares held by institutional investors. Models (2) and (5) include sector fixed effects, while (3) and (6) include both sector and time fixed effects, with communication services as the baseline sector. Dummies are created to indicate floating market cap-wise quartile of the company in the given year, with higher quartiles indicating higher market cap. *, **, and *** indicate statistical significance at the 10, 5, and 1 percent levels respectively.

Table 8: Models with S score as main independent variable of interest

	<i>Dependent variable:</i>					
	fii_share			dii_share		
	Pooled	Sector FE	Time FE	Pooled	Sector FE	Time FE
	(1)	(2)	(3)	(4)	(5)	(6)
s_score	-0.040 (0.038)	0.003 (0.039)	-0.049 (0.035)	0.011 (0.029)	0.019 (0.030)	0.056** (0.025)
pat_margin	0.207*** (0.046)	0.133*** (0.047)	0.166*** (0.041)	0.023 (0.035)	0.008 (0.037)	-0.020 (0.030)
return_one	-2.493* (1.347)	-2.698** (1.318)	-0.448 (1.755)	0.900 (1.029)	1.141 (1.038)	-4.489*** (1.279)
pe_ntm	0.034 (0.046)	0.093* (0.054)	0.054 (0.047)	-0.170*** (0.035)	-0.201*** (0.043)	-0.168*** (0.034)
mcap_quartile2	6.438*** (1.779)	8.542*** (1.746)	8.410*** (1.510)	2.064 (1.359)	2.113 (1.375)	2.374** (1.100)
mcap_quartile3	3.402* (1.789)	4.680** (1.866)	4.955*** (1.626)	4.105*** (1.367)	4.530*** (1.470)	4.806*** (1.184)
mcap_quartile4	7.719*** (1.926)	7.653*** (1.935)	8.207*** (1.701)	8.477*** (1.471)	8.887*** (1.524)	9.156*** (1.239)
consumer_discretionary		-3.170 (2.635)	-3.449 (2.281)		4.242** (2.075)	4.162** (1.662)
consumer_staples		-11.180*** (2.962)	-10.538*** (2.561)		5.793** (2.333)	5.174*** (1.866)
energy		-9.656*** (2.693)	-9.679*** (2.329)		0.816 (2.122)	0.640 (1.697)
financials		2.485 (2.295)	1.811 (1.986)		4.413** (1.807)	4.740*** (1.447)
health_care		-2.668 (2.581)	-2.399 (2.231)		6.436*** (2.033)	6.050*** (1.625)
industrials		-5.824** (2.784)	-5.771** (2.411)		5.930*** (2.193)	6.271*** (1.756)
materials		-5.301** (2.689)	-6.188*** (2.328)		4.010* (2.118)	5.114*** (1.696)
real_estate		-6.190 (5.728)	-4.830 (4.957)		-1.148 (4.511)	-1.677 (3.611)
utilities		-7.275** (3.238)	-7.497*** (2.798)		6.874*** (2.551)	6.975*** (2.039)
Constant	15.469*** (2.850)	15.224*** (3.567)		15.439*** (2.177)	11.520*** (2.810)	
R ²	0.112	0.201	0.264	0.139	0.176	0.270
Adjusted R ²	0.099	0.173	0.230	0.126	0.147	0.236

This table shows the estimated coefficients (and standard errors in parenthesis) from OLS panel regressions of institutional ownership on S score and other control variables. Columns 1 to 3 show the results for the FII ownership share, and columns 4 to 6 show the results for DII ownership. Institutional ownership is calculated as the percentage of the firm's outstanding shares held by institutional investors. Models (2) and (5) include sector fixed effects, while (3) and (6) include both sector and time fixed effects, with communication services as the baseline sector. Dummies are created to indicate floating market cap-wise quartile of the company in the given year, with higher quartiles indicating higher market cap. *, **, and *** indicate statistical significance at the 10, 5, and 1 percent levels respectively.

Table 9: Model in difference with no ESG score among independent variables

	<i>Dependent variable:</i>					
	fii_diff			dii_diff		
	Pooled	Sector FE	Time FE	Pooled	Sector FE	Time FE
	(1)	(2)	(3)	(4)	(5)	(6)
pe_ntm	0.034 (0.035)	0.061 (0.043)	0.033 (0.029)	-0.032 (0.034)	-0.052 (0.041)	-0.026 (0.028)
return_one	0.775 (1.070)	0.642 (1.094)	1.369 (1.170)	-0.780 (1.033)	-0.696 (1.055)	0.264 (1.136)
inc_diff	-0.0002 (0.0004)	-0.0002 (0.0004)	-0.0001 (0.0002)	0.0003 (0.0003)	0.0003 (0.0003)	0.0001 (0.0002)
mcap_quartile2	1.508 (1.431)	1.856 (1.470)	1.925** (0.976)	-1.041 (1.382)	-1.466 (1.417)	-1.587* (0.948)
mcap_quartile3	0.389 (1.431)	0.567 (1.531)	0.591 (1.025)	0.526 (1.382)	0.356 (1.476)	0.092 (0.995)
mcap_quartile4	0.942 (1.440)	0.750 (1.493)	0.832 (1.009)	0.110 (1.391)	0.402 (1.440)	-0.021 (0.980)
consumer_discretionary		-1.813 (2.225)	-1.639 (1.480)		1.506 (2.145)	1.497 (1.437)
consumer_staples		-2.923 (2.542)	-2.343 (1.688)		2.669 (2.450)	2.120 (1.639)
energy		-1.180 (2.306)	-1.377 (1.535)		2.453 (2.223)	2.840* (1.490)
financials		-0.140 (1.938)	-0.179 (1.291)		-0.018 (1.869)	0.219 (1.254)
health_care		-1.442 (2.236)	-1.286 (1.485)		2.081 (2.156)	1.958 (1.441)
industrials		-2.179 (2.410)	-1.969 (1.603)		2.436 (2.323)	2.037 (1.557)
materials		-1.385 (2.281)	-1.541 (1.515)		0.940 (2.199)	1.053 (1.471)
real_estate		-2.425 (4.918)	-1.933 (3.268)		2.587 (4.742)	1.855 (3.173)
utilities		-0.776 (2.793)	-0.976 (1.855)		0.794 (2.692)	1.112 (1.801)
Constant	1.661 (1.205)	2.212 (2.027)		-1.963* (1.164)	-2.736 (1.954)	
R ²	0.010	0.017	0.028	0.011	0.021	0.030
Adjusted R ²	-0.005	-0.022	-0.021	-0.004	-0.017	-0.018

This table shows the estimated coefficients (and standard errors in parenthesis) from OLS panel regressions of change in institutional ownership on control variables. Columns 1 to 3 show the results for the FII ownership share, and columns 4 to 6 show the results for DII ownership. Institutional ownership is calculated as the percentage of the firm's outstanding shares held by institutional investors. Models (2) and (5) include sector fixed effects, while (3) and (6) include both sector and time fixed effects, with communication services as the baseline sector. Dummies are created to indicate floating market cap-wise quartile of the company in the given year, with higher quartiles indicating higher market cap. *, **, and *** indicate statistical significance at the 10, 5, and 1 percent levels respectively.

Table 10: Models with difference of E score as main independent variable of interest

	<i>Dependent variable:</i>					
	fii_diff			dii_diff		
	Pooled	Sector FE	Time FE	Pooled	Sector FE	Time FE
(1)	(2)	(3)	(4)	(5)	(6)	
e_diff	0.005 (0.062)	0.011 (0.064)	0.011 (0.043)	-0.023 (0.060)	-0.031 (0.062)	-0.025 (0.042)
pe_ntm	0.034 (0.036)	0.060 (0.043)	0.033 (0.029)	-0.030 (0.034)	-0.051 (0.042)	-0.025 (0.028)
return_one	0.775 (1.071)	0.640 (1.095)	1.380 (1.172)	-0.781 (1.035)	-0.691 (1.056)	0.238 (1.138)
inc_diff	-0.0002 (0.0004)	-0.0002 (0.0004)	-0.0001 (0.0002)	0.0003 (0.0003)	0.0003 (0.0003)	0.0001 (0.0002)
mcap_quartile2	1.511 (1.433)	1.860 (1.472)	1.928** (0.978)	-1.054 (1.384)	-1.476 (1.419)	-1.595* (0.949)
mcap_quartile3	0.403 (1.441)	0.585 (1.536)	0.606 (1.028)	0.469 (1.392)	0.307 (1.481)	0.057 (0.998)
mcap_quartile4	0.952 (1.447)	0.757 (1.496)	0.836 (1.010)	0.067 (1.397)	0.383 (1.442)	-0.030 (0.981)
consumer_discretionary		-1.833 (2.231)	-1.657 (1.483)		1.561 (2.150)	1.539 (1.440)
consumer_staples		-2.947 (2.548)	-2.366 (1.692)		2.734 (2.456)	2.172 (1.643)
energy		-1.167 (2.310)	-1.364 (1.538)		2.419 (2.227)	2.809* (1.492)
financials		-0.163 (1.945)	-0.200 (1.296)		0.045 (1.875)	0.267 (1.257)
health_care		-1.509 (2.270)	-1.349 (1.507)		2.261 (2.188)	2.104 (1.463)
industrials		-2.224 (2.426)	-2.013 (1.615)		2.559 (2.339)	2.141 (1.568)
materials		-1.393 (2.285)	-1.549 (1.517)		0.963 (2.202)	1.073 (1.472)
real_estate		-2.536 (4.964)	-2.040 (3.299)		2.887 (4.784)	2.104 (3.202)
utilities		-0.769 (2.796)	-0.968 (1.858)		0.775 (2.695)	1.094 (1.803)
Constant	1.643 (1.224)	2.193 (2.033)		-1.887 (1.182)	-2.684 (1.959)	
R ²	0.010	0.017	0.028	0.011	0.022	0.031
Adjusted R ²	-0.007	-0.024	-0.023	-0.007	-0.019	-0.020

This table shows the estimated coefficients (and standard errors in parenthesis) from OLS panel regressions of change in institutional ownership on change in E score and other control variables. Columns 1 to 3 show the results for the FII ownership share, and columns 4 to 6 show the results for DII ownership. Institutional ownership is calculated as the percentage of the firm's outstanding shares held by institutional investors. Models (2) and (5) include sector fixed effects, while (3) and (6) include both sector and time fixed effects, with communication services as the baseline sector. Dummies are created to indicate floating market cap-wise quartile of the company in the given year, with higher quartiles indicating higher market cap. *, **, and *** indicate statistical significance at the 10, 5, and 1 percent levels respectively.

Table 11: Models with difference of S score as main independent variable of interest

	<i>Dependent variable:</i>					
	fii_diff			dii_diff		
	Pooled	Sector FE	Time FE	Pooled	Sector FE	Time FE
(1)	(2)	(3)	(4)	(5)	(6)	
s_diff	-0.057 (0.069)	-0.049 (0.071)	0.064 (0.048)	0.053 (0.067)	0.049 (0.069)	-0.056 (0.046)
pe_ntm	0.034 (0.035)	0.058 (0.043)	0.036 (0.029)	-0.032 (0.034)	-0.049 (0.042)	-0.028 (0.028)
return_one	0.857 (1.075)	0.719 (1.100)	1.314 (1.170)	-0.857 (1.038)	-0.773 (1.061)	0.312 (1.136)
inc_diff	-0.0002 (0.0004)	-0.0002 (0.0004)	-0.00005 (0.0002)	0.0003 (0.0003)	0.0003 (0.0003)	0.0001 (0.0002)
mcap_quartile2	1.567 (1.433)	1.902 (1.473)	1.862* (0.977)	-1.097 (1.385)	-1.512 (1.420)	-1.533 (0.949)
mcap_quartile3	0.382 (1.432)	0.558 (1.532)	0.596 (1.024)	0.533 (1.383)	0.364 (1.477)	0.088 (0.994)
mcap_quartile4	0.949 (1.441)	0.785 (1.495)	0.777 (1.009)	0.103 (1.392)	0.367 (1.442)	0.027 (0.980)
consumer_discretionary		-1.720 (2.231)	-1.755 (1.481)		1.413 (2.150)	1.598 (1.438)
consumer_staples		-2.882 (2.544)	-2.393 (1.687)		2.628 (2.453)	2.164 (1.638)
energy		-1.308 (2.316)	-1.205 (1.539)		2.582 (2.232)	2.690* (1.495)
financials		-0.173 (1.940)	-0.131 (1.291)		0.016 (1.870)	0.177 (1.254)
health_care		-1.346 (2.242)	-1.411 (1.486)		1.985 (2.161)	2.067 (1.443)
industrials		-2.060 (2.418)	-2.128 (1.606)		2.317 (2.331)	2.177 (1.560)
materials		-1.353 (2.283)	-1.584 (1.514)		0.908 (2.201)	1.091 (1.470)
real_estate		-2.169 (4.936)	-2.272 (3.275)		2.330 (4.758)	2.151 (3.181)
utilities		-0.851 (2.797)	-0.875 (1.855)		0.869 (2.696)	1.024 (1.802)
Constant	1.759 (1.212)	2.320 (2.035)		-2.055* (1.171)	-2.845 (1.962)	
R ²	0.012	0.018	0.032	0.012	0.022	0.034
Adjusted R ²	-0.006	-0.023	-0.019	-0.005	-0.019	-0.017

This table shows the estimated coefficients (and standard errors in parenthesis) from OLS panel regressions of change in institutional ownership on change in S score and other control variables. Columns 1 to 3 show the results for the FII ownership share, and columns 4 to 6 show the results for DII ownership. Institutional ownership is calculated as the percentage of the firm's outstanding shares held by institutional investors. Models (2) and (5) include sector fixed effects, while (3) and (6) include both sector and time fixed effects, with communication services as the baseline sector. Dummies are created to indicate floating market cap-wise quartile of the company in the given year, with higher quartiles indicating higher market cap. *, **, and *** indicate statistical significance at the 10, 5, and 1 percent levels respectively.

Table 12: Models with difference of G score as main independent variable of interest

	<i>Dependent variable:</i>					
	fii_diff			dii_diff		
	Pooled	Sector FE	Time FE	Pooled	Sector FE	Time FE
(1)	(2)	(3)	(4)	(5)	(6)	
g_diff	0.003 (0.050)	0.010 (0.051)	0.019 (0.034)	-0.017 (0.048)	-0.021 (0.049)	-0.023 (0.033)
pe_ntm	0.034 (0.035)	0.061 (0.043)	0.034 (0.029)	-0.032 (0.034)	-0.053 (0.042)	-0.027 (0.028)
return_one	0.769 (1.075)	0.624 (1.099)	1.374 (1.171)	-0.751 (1.038)	-0.657 (1.060)	0.258 (1.137)
inc_diff	-0.0002 (0.0004)	-0.0002 (0.0004)	-0.0001 (0.0002)	0.0003 (0.0003)	0.0003 (0.0003)	0.0001 (0.0002)
mcap_quartile2	1.508 (1.433)	1.858 (1.472)	1.928** (0.977)	-1.041 (1.384)	-1.470 (1.419)	-1.591* (0.949)
mcap_quartile3	0.390 (1.433)	0.571 (1.533)	0.594 (1.026)	0.524 (1.384)	0.347 (1.478)	0.089 (0.996)
mcap_quartile4	0.937 (1.444)	0.734 (1.498)	0.792 (1.012)	0.134 (1.395)	0.437 (1.444)	0.027 (0.983)
consumer_discretionary		-1.825 (2.229)	-1.658 (1.482)		1.532 (2.148)	1.520 (1.438)
consumer_staples		-2.950 (2.549)	-2.395 (1.692)		2.726 (2.457)	2.182 (1.643)
energy		-1.176 (2.309)	-1.366 (1.536)		2.446 (2.226)	2.826* (1.491)
financials		-0.136 (1.941)	-0.167 (1.293)		-0.027 (1.871)	0.204 (1.255)
health_care		-1.451 (2.239)	-1.303 (1.486)		2.100 (2.158)	1.977 (1.443)
industrials		-2.186 (2.413)	-1.987 (1.605)		2.452 (2.326)	2.060 (1.558)
materials		-1.418 (2.290)	-1.606 (1.521)		1.010 (2.208)	1.131 (1.476)
real_estate		-2.457 (4.927)	-2.001 (3.273)		2.655 (4.749)	1.937 (3.178)
utilities		-0.769 (2.796)	-0.960 (1.857)		0.780 (2.695)	1.093 (1.803)
Constant	1.654 (1.212)	2.191 (2.033)		-1.927 (1.170)	-2.693 (1.959)	
R ²	0.010	0.017	0.029	0.011	0.021	0.032
Adjusted R ²	-0.007	-0.024	-0.023	-0.007	-0.020	-0.020

This table shows the estimated coefficients (and standard errors in parenthesis) from OLS panel regressions of change in institutional ownership on change in G score and other control variables. Columns 1 to 3 show the results for the FII ownership share, and columns 4 to 6 show the results for DII ownership. Institutional ownership is calculated as the percentage of the firm's outstanding shares held by institutional investors. Models (2) and (5) include sector fixed effects, while (3) and (6) include both sector and time fixed effects, with communication services as the baseline sector. Dummies are created to indicate floating market cap-wise quartile of the company in the given year, with higher quartiles indicating higher market cap. *, **, and *** indicate statistical significance at the 10, 5, and 1 percent levels respectively.