Executive Ownership and Sustainability Performance

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Abstract

Executive ownership addresses agency problems by aligning the financial goals of management and shareholders. We explore whether executive ownership fosters a non-financial sustainability footprint as well. We find that executive ownership is negatively associated with US firms' environmental and social performance. A quasi-natural experiment shows that the inverse relationship between executive ownership and sustainability performance is causal. Executive ownership schemes can thus be detrimental for firms aiming to maximize stakeholder value by addressing environmental and social challenges. Executive compensation should rather include incentives explicitly linked to sustainability goals.

JEL Classification : G32, M14, Q56.

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1 Introduction

The year 2020 marked the 50th anniversary of the publication of a controversial *New York Times* op-ed by Milton Friedman claiming that "the only responsibility of corporations is to make profits" (Friedman, 1970). Friedman's view became a reference point for the neoclassical economic paradigm considering environmental, social, and governance (ESG) activities by firms unnecessary and inconsistent with the ultimate corporate goal of profit maximization (Hao and Renneboog 2020). In this vein, several scholars argue that ESG activities should be regarded essentially as a manifestation of agency problems (Benabou and Tirole 2010; Masulis and Reza 2015; Cheng, Hong, and Shue 2016; Bebchuk and Tallarita 2020) because managers engage in ESG initiatives that benefit themselves and promote their philanthropic reputation at the expense of shareholders (Krüger 2015).

The present research contributes to this debate first by investigating the relationship between executive ownership and environmental and social (E&S) firm performance. Academic literature has extensively examined the relationship between executive equity ownership and firm performance, especially through the lens of agency theory; however, the specific impact on E&S performance has received scant attention. Executive ownership is assumed to be a mitigation instrument to reconcile diverging interests between owners and managers (Jensen and Meckling 1976; Shleifer and Vishny 1997). Empirical evidence supports the view that firm performance is positively associated with executive ownership (Mehran 1995), although several questions about compensation policies and shareholders' value remain unanswered (Edmans and Gabaix 2016). By focussing specifically on executive ownership, this research examines the behaviour of decision-makers in pursuing sustainability performance contingent on the degree to which their

interests are aligned with shareholders. If an executive as a shareholder values the E&S footprint, the higher is the percentage of the share capital held and the greater is the incentive to enhance the sustainability footprint, and vice versa. Eventually, the stakeholder value maximization would prevail over the (purely financial) shareholder value maximization. In our sample, we find the opposite: E&S performance has a strong negative association with executive ownership. This finding adds a key element to the controversial debate about the existing disagreement between investors and directors on how to maximize firm value (Edmans, Gosling, and Jenter 2021): who really cares about ESG?

Our analysis primarily employs the Thomson Reuters ESG database to collect firm-level sustainability data. This dataset allows us to source E&S performance scores comprising separate key performance indicators (KPIs) referring to the respective environmental (E) and social (S) categories. We compute E&S scores to track how firms operate in the environment and societies. We merge our E&S scores from Thomson Reuters Eikon ESG with executive ownership data from ExecuComp, as well as financial fundamentals data from Compustat North America, to construct a base sample of 742 US firms from 2002 to 2019.

The baseline experiment inspects the proposition of whether executive ownership is a driving force behind firm E&S performance, while implementing control variables believed to directly influence the latter and enforcing fixed effects. We find the association between lagged executive ownership and E&S performance to be negatively related. Our results are both statistically and economically significant: a one standard deviation increase in executive ownership is correlated with a 13.1% decrease in the E&S performance score. These findings complement extant literature on institutional ownership, which reports that US institutional investors exert no impact on E&S performance (Dyck et al. 2019), by supporting the idea that US executives with an equity interest

indeed exert an impact on E&S: when US institutional investors do not matter for E&S performance, executive ownership is relevant, having a negative impact on sustainability performance. We also contribute to the recent literature suggesting a trade-off between sustainability and financial performance (Gantchev, Giannetti, and Li 2021b; 2021a).

For a more granular interpretation of our results, we separate environmental (E) from social (S) performance scores, as the motives behind the two can differ considerably. We find that the association between executive ownership and environmental performance and social performance remains negatively related, even when separating E from S. We also find the association between insider trading and E&S performance to be negatively related. Our results are both statistically and economically significant: a one standard deviation increase in insider trading is correlated with a 10.4% decrease in the E&S performance score. Even when E and S are separated, the association between insider trading and environmental performance and social performance remains negatively related.

These results suggest that agency theory dominates in the US, and when managers are also shareholders, we observe a lower corporate effort in the E&S footprint. Nonetheless, the question about the direction of causality between executive ownership and sustainability performance remains open. One explanation could be that executives do not care as much about E&S when they are shareholders, because they do not directly obtain financial rewards from them; so, when they have an equity interest in the firm, they reduce investments in E&S activities. Yet an alternative direction of causality could be that managers self-select companies for which E&S is less important, and they aim to work and have more equity in such companies.

To address this issue, we take advantage of an exogenous shock to the cost of E&S for shareholders: the 2003 capital gains and dividend tax cut. Following the literature (Masulis and

Reza 2015; Cheng, Hong, and Shue 2016), we use the tax reform as an exogenous shock that increases private costs of pursuing E&S goals for shareholding executives. If executive ownership has a negative influence on the sustainability performance of firms, we expect the already significant, negative relationship to be strengthened following the exogenous shock. Our test confirms this hypothesis.

Our research contributes to several strands of literature. First, we offer new evidence to the corporate social responsibility (CSR) branch of literature (Kitzmueller and Shimshack 2012; Ferrell, Liang, and Renneboog 2016). In particular, our research contributes to the debate about firm executives and CSR (Masulis and Reza 2015; Cronqvist and Yu 2017; Davidson, Dey, and Smith 2018), supporting the theory that agency problems play a role in executive-shareholders' decisions to pursue E&S performance. However, by focussing specifically on executive ownership rather than firms or manager characteristics, we examine the behaviour of decision-makers in E&S pursuance contingent on the degree to which their interests are aligned with shareholders. Second, as we consider the shareholder structure in our tests, we advance research showing that investors play a significant role in firms' E&S policies (Dimson, Karakaş, and Li 2015; Dyck et al. 2019; Hartzmark and Sussman 2019). We provide novel evidence to this field as we focus on a crucial kind of investors, executive themselves, thus assessing a framework in which the conflicts between managers and shareholders should be minimized. Finally, from a broader perspective, this research contributes to the literature on the impact of informal and cultural rules of the game for finance and economics (Elster 1989; Benabou and Tirole 2010). We complement studies suggesting the importance of a society's culture and values for a range of economic outcomes (Guiso, Sapienza, and Zingales 2006; 2009), by showing that executives in the US environment are more sensitive to financial than E&S performance and that they trade off between the two.

The remainder of this paper proceeds as follows: Section 2 presents the methodology and data. Section 3 describes the main results and the robustness tests. Section 4 concludes.

2 Methodology and Data

Previous research observes a positive relationship between institutional ownership and E&S performance, though results are controversial for US companies and investors (Dyck et al. 2019; Hartzmark and Sussman 2019). Concurrently, insider ownership aligns executives' interests with shareholders, thereby incentivizing actions that increase shareholder value. However, executives could potentially be motivated to pursue E&S performance for other stakeholders' aims, including private benefits (Masulis and Reza 2015; Cronqvist and Yu 2017).

We expect the relationship between executive ownership and E&S performance to be negative because the US context stresses agency problems, as suggested by the evidence that the positive relationship between institutional investor ownership and E&S is not documented for the US market. When interests of executives and shareholders are aligned, executives have less incentives to foster E&S policies for their own private benefits, because they share the financial cost of such policies. This leads us to our first hypothesis that E&S sustainability performance diminishes with the increase in the share of the capital owned by executives.

The baseline model we use to test the relationship between executive ownership and E&S performance is a linear regression model. The model regresses firms' E&S performance on the lagged total executive ownership as follows:

$$Log(ESG\ Score)_{i,t} = \alpha + \beta(EO)_{i,t-1} + \gamma Controls_{i,t-1} + \kappa_i + \delta_t + \varepsilon_{i,t}. \quad (1)$$

The dependent variable is the log of the *ESG Score* of firm *i* in year *t*. The *ESG Score* reflects the data available from Refinitiv for the fiscal year *t*[1]. The main independent variable is the total percentage of executive ownership (*EO*) in year *t-1*. We use lagged executive ownership to account for the time necessary to implement changes within the firm. The coefficient of main interest is β, which expresses the average percentage change in the *ESG Score* for every percentage point change in executive ownership.

The controls in the model are firm-level variables in year *t-1*; κ and δ denote industry and year fixed effects, respectively, in line with previous studies (Dyck et al. 2019). We control for firm size, as there is evidence that it predicts institutional ownership and that larger firms are subject to more external pressures; as a consequence, they may have higher E&S performance as result of their size (Dyck et al. 2019). We also incorporate asset tangibility, leverage, Tobin's Q and profitability, as previous research has found that financial slack is related to firm investments in social activities (Hong, Kubik, and Scheinkman 2012). Finally, we control for research and development (R&D) because research has shown that the level of intellectual property investment of a firm is positively related to its corporate giving, which is a subset of E&S performance (Masulis and Reza 2015). Last, as our dataset is panel data, we use a fixed effects model to control for variation related to unobserved heterogeneity. The model incorporates industry and time fixed effects, with a variety of combinations, to account for other common shocks that can affect firms over time.

Our second test exploits an exogenous shock to the cost borne by executives when extracting private benefits, to assess the causal interpretation of executive ownership on E&S performance. Specifically, we use the 2003 US capital gains and dividend tax reform as a quasi-natural event to investigate the causal direction of the relationship between executive ownership and E&S performance. The reform reduced the dividend tax rate from 35% to 15%. As a result, the personal wealth of shareholding executives is influenced by the financial performance of their firms to a greater extent: every dollar of profit diverted to private benefits, including investments in E&S for personal reward, will cost them 20 cents more than before, which should influence their decisions about E&S when they are also shareholders. Importantly, the literature on executive ownership that has also used this tax reform has documented that it has no predicted effect on E&S performance (Masulis and Reza 2015). Should E&S performance positively influence firm cash flows and, thus, value, the quasi-natural event would arguably encourage executives to seek further E&S performance, because, following the reform, the firm financial performance has a greater impact on executive-shareholders' private wealth.

By contrast, if the E&S activity is mainly driven by private motives, the tax reform would have a negative impact on executive-shareholders, because the (private) cost of extracting private benefits from E&S achievements would increase. Indeed, the relationship between executive ownership and E&S should become more negative following the tax cut and would constitute

evidence of agency conflicts. Our expectation is that the negative association between E&S performance and executive ownership is an indicator of agency problems. Therefore, we expect this negative association to be strengthened following the exogenous reform, which increases the cost of executives' private benefits.

We adopt a difference-in-differences approach (DID) to test the causality chain between executive ownership and sustainability performance. Our model relates to the 2003 reform and is expanded as follows:

$$Log(E\&S\ Score)_{it} = \alpha + \beta_1 EO_{i,t-1} xPost + \beta_2 Post + \beta_3 EO_{i,t-1} + \gamma Controls_{i,t-1} + \kappa_i + \varepsilon_t. (2)$$

The variable *Post* tracks the introduction of the tax reform: it is equal to 1 for the years 2003 and 2004 and 0 for previous years. This dummy variable accounts for the unconditional change in E&S performance and also absorbs the time fixed effects around the years of the reform. The DID interaction variable is equal to *Post* multiplied by *Executive Ownership* (*EO*). The DID coefficient (β_1) is the main coefficient of interest and reports how the relationship between executive ownership and E&S performance changes as a result of the tax reform. To address issues regarding serial correlation, we collapse the two-year post-event data into one observation per firm (Bertrand, Duflo, and Mullainathan 2004). All the remaining variables in the model are the same as in the econometric specification from equation (1). Refinitiv coverage of ESG indicators is limited before 2003. Therefore, to run the test of equation (2), we rely on a different dataset (MSCI KLD ESG) that reports its own E&S score with a sufficient coverage since 2001[2].

2.1 **Data and summary statistics**

We collect firm-level sustainability data from the Refinitiv ESG database. The Refinitiv ESG score measures a company's ESG performance based on verifiable reported data in the public domain. The ESG score is a combination of three pillar scores: *Environmental* (*E*), *Social* (*S*) and *Governance* (*G*). These scores are based on 178 indicators, grouped into 10 categories[3].

The sample analyzed comprises US companies with a market capitalization of more than 100 million as of the end of December 2019. The time horizon of our research spans from 2002 to 2019, which covers all available data.

Table I displays the summary statistics of the ESG scores. The overall *ESG Score* can range from a minimum of 0 to a maximum of 100. Our raw data report an average score of 37.5 for 16,336 pooled observations. The *Environmental (E)* Score is smaller on average than the overall score and equal to 21.4. Conversely, the *Social (S)* Score is greater and averages 40.3[4].

[*Table I here*]

We combine ESG data with executive ownership data collected by ExecuComp, which gives executives total share ownership in their respective company, as a percentage of the shares outstanding. We merge financial data from Compustat North America with our ESG and executive ownership data. We use the natural logarithm of assets to control for *Firm Size*. We compute the variable *Tangibility* by dividing total property, plant and equipment by total assets. We obtain the variable *Leverage* as the ratio of total debt to total assets. We obtain the variable *Tobin's Q* as the market capitalization of equity plus total debt, divided by the total assets. The variable *Profitability* is equal to net income plus interest expenses divided by total assets. We also control for investments in intellectual property with the natural logarithm of total *R&D* expenses. Finally, we merge the data on insider trading from the Refinitiv database with other data. *Insider Trading* is measured as the natural logarithm of the absolute total number of shares traded by executives in a given year divided by the total number of shares outstanding at year-end. Appendix A provides a detail description of all the variables.

The combination of *ESG Score*, *Executive Ownership* and *R&D* leads to a reduction of the sample size, exclusively due to data availability. Our final sample therefore contains 742 US companies for a pool of 4,776 observations. However, if we exclude R&D expenses, the sample comprises 1,330 companies, with 9,213 observations. Therefore, we run all our main tests also excluding *R&D* from the control variables, to confirm that our results can be generalized even when the information about R&D expenses is not available. Section D of the Internet Appendix reports these tests.

Research documents that firms' E&S performance depends on industries (Dyck et al. 2019). In Table II, we present the *ESG Score* summary statistics, both overall and separate for *E*, *S*, and *G* scores, segmented by industry.

[*Table II*]

The energy and telecommunications industries perform worse than other industries when we consider the ESG data as a whole. However, focusing on the environmental dimension, the worst industries are those related to the worlds of health care and financial services. Such industries do relatively better with regard to the social indicators, with the bottom performers being telecoms, basic materials and industrials.

3 Results

Our baseline model results (Table III) show that the *ESG Score* is negatively associated with *Executive Ownership*. The results are both statistically (p-value < .01) and economically significant in all the estimated models. A one percentage point change in the shares owned by executives out of the total shares outstanding is associated with a reduction of approximately 1.1% in the ESG total score (columns (3) and (4)). This implies that a one standard deviation increase in *Executive Ownership* is associated with a 0.13 standard deviation decrease in E&S performance. The results confirm our first hypothesis that firms' E&S performance diminishes with executive ownership.

These findings support the view that investments in E&S activities can be a signal of agency problems (Cheng, Hong, and Shue 2016; Masulis and Reza 2015; Shleifer and Vishny 1997). The relationship between executive ownership and E&S performance is opposite to the relationship between institutional investors and E&S performance (Dyck et al. 2019). Therefore, not all shareholders are equal when sustainability is concerned: while institutional investors spur E&S investments, manager-owners do not.

Our research shows that executives, while increasing their ownership in the firm, reduce the emphasis on E&S projects. This is of particular interest because the ownership level of executives is positively associated with firm performance (Mehran 1995; Anderson and Reeb 2003). That is, increases in executive ownership spur financial but not firm sustainability performance. The interpretation of these results sheds some light on the debate about whether E&S activities maximize shareholders' wealth or are supportive of an agency problem. If executive ownership is positively associated with firm performance but negatively associated with the E&S footprint (with evidence supporting causality discussed subsequently), there is an agency problem. Managers foster E&S polices more when their compensation depends less on stock performance, and thus

incentives of managers and shareholders are less aligned. This problem arises not only between shareholders and managers but also between institutional investors and manager-shareholders and thus is a serious issue for policy makers.

[*Table III here*]

3.1 Assessing causality: a quasi-natural experiment

We use the 2003 US capital gains and dividend tax reform as a quasi-natural experiment to determine the causal flow of the relationship between executive ownership and E&S performance, according to equation (2). The main coefficient of interest is that on the interaction variable *Post* × *Executive Ownership*, which tracks the change in the negative relationship between executive ownership and E&S, following the increase in the cost (dividend tax cut) of pursuing private benefits for manager-shareholders. Table IV presents the results of our experiment.

[*Table IV here*]

The interaction variable, which indicates whether the baseline relationship found between executive ownership and E&S performance is strengthened post-event, is negatively and statistically significant. Therefore, we observe that the already negative relationship between executive ownership and E&S performance is strengthened, following an increase in the cost of setting E&S goals for private motives. The effect is economically meaningful: a firm with a 1 percentage point higher in executive ownership experiences a 1.5% larger reduction in its E&S performance than a firm with a lower share of executive ownership.

This evidence suggests that the increased cost of undertaking E&S activities for private reasons reduces management incentives to invest in E&S when managers are also shareholders. This experiment confirms that the causality flow from executive ownership to E&S performance, implying that the latter is a consequence of the executive ownership level. This constitutes a novel contribution to the literature that has so far focused on CEO ownership and CSR activities (Masulis and Reza 2015), as we provide evidence that all executive ownership matters, not only for social activities but also for environmental ones. To a certain extent, our results are discouraging, as they

suggest that if executives were the sole owners, the efforts of E&S sustainability would be lower than what is desirable for the whole nexus of firm stakeholders. Consequently, we confirm the argument that management compensation schemes should explicitly include environmental and societal goals (Eccles, Ioannou, and Serafeim 2014).

3.2 *Insider trading as a proxy for executives' financial orientation*

Under the assumption that managers trade shares of the company they work for when it is in their interests to do so, the level of insider trading becomes an indicator of the impact of a company's financial performance on managers' personal wealth: the more they trade, the greater is the impact. Therefore, insider trading becomes a proxy of the exposure of executives to company financial performance. We thus test whether insider trading activity has an association with E&S performance and, if so, to what extent. To run our experiments, we augment the baseline specification to include the absolute amount of shares traded in a given year as a percentage of the total shares outstanding (*Insider Trading*), as specified in equation (3). Table V reports the results of our tests.

[*Table V here*]

We find a consistent and statistically significant relationship between the level of insider trading and firms' E&S performance, after controlling for company characteristics, industry and time fixed effects (columns (1) and (2)). There is a negative elasticity of –0.04 between *Insider Trading* and the overall *ESG Score.* The results are all statistically significant at the 1% level. Economically, the association between manager trading and E&S performance is non-trivial: a one standard deviation of insider trading is coupled with a 0.10 standard deviation reduction of ESG.

Of note, these results are almost independent of how many shares executives actually owned. When we augment the specification to include *Executive Ownership*, we find that the results are confirmed in both magnitude and significance, as shown in columns (3) and (4). In a sense, trading captures the dynamic behaviour of managers relative to company shares (short-term effect), while the ownership proxies the static dimension of executives' exposure to shareholder risk (long-term effect). These outcomes support the view that E&S activities may indicate an agency problem:

managers do not pursue these activities when they have stronger financial interests in company stocks, in either the short (trading) or long (ownership) run.

3.3 Environmental versus social performance

Environmental and social activities are heterogeneous; they span from low carbon emissions to supply chain sustainability to resource reduction to human rights. Drivers and motivations behind social activities (Elster 1989; Benjamin, Choi, and Strickland 2010; Benabou and Tirole 2010; Servaes and Tamayo 2013) could differ considerably from the reasons companies sustain environmental policies (Ambec and Lanoie 2008; Klassen and McLaughlin 1996). Therefore, a second batch of experiments extend our baseline test by separating the *Environmental* from the *Social* pillar score. In this way, we distinguish the relationship of executive ownership and insider trading with environmental (*E*) performance, on one side, and social (*S*) performance, on the other side[5]. We thus regress the lagged total executive ownership and insider trading on firm *E* and *S* performance, separately, as follows:

$$Log(E\ Score)_{i,t} = \alpha + \beta_1(EO)_{i,t-1} + \beta_2(IT)_{i,t-1}\,\gamma Controls_{i,t-1} + \kappa_i + \delta_t + \varepsilon_{i,t}. \quad (4)$$

$$Log(S\ Score)_{i,t} = \alpha + \beta_1\,(EO)_{i,t-1} + \beta_2(IT)_{i,t-1} + \gamma Controls_{i,t-1} + \kappa_i + \delta_t + \varepsilon_{i,t}. \quad (5)$$

The dependent variables are the natural logarithm of the firm's environmental performance (*E Score*) in equation (4) and social performance (*S Score*) in equation (5). The variable executive ownership (*EO*) and control variables are the same as in equation (1). Table VI documents the results of our analysis.

[*Table VI here*]

We find that the results for both the *E* and *S* performance indicators are negatively associated with *Executive Ownership*, as observed in the baseline regressions, with a statistically significant relationship at the 1% and 5% levels for *E* and *S* scores, respectively.

Environmental performance and executive ownership have a strong negative relationship: a one percentage point change in the portion of shares held by managers is linked to a lower

sustainability performance of approximately 2.5%; this corresponds to a reduction of 9% in the average *E Score* for every unit of standard deviation change in *Executive Ownership*. Regarding social performance, a one standard deviation shift in *Executive Ownership* is associated with an approximately 11% decrease in social performance. The analysis reports similar results when we add *Insider Trading* (*IT*) to the regression (columns (2) and (4)). With regard to *Insider Trading*, the elasticity of the *E Score* for insider trading (–0.08) is stronger than that of the *S Score* (–0.02). With the increase of their trading activity, managers are more sensitive to the decisions about environment rather than social issues. This supports the idea that agency conflicts are more pronounced for environmental than for social choices.

The relationship between executive ownership and environmental performance has been relatively under-examined. We show that environmental policies are negatively associated with executive ownership and suggest the presence of agency problems with respect to sustainability investments. Furthermore, the negative relationship between the *S Score* and the percentage of equity capital owned by managers supports the view that social investments may reveal agency issues (Masulis and Reza 2015) and that executives may set social goals for reasons other than firm value (Cronqvist and Yu 2017).

The *E* and *S* scores from the Refinitiv database comprise various KPIs used to measure E&S performance. Consequently, the further decomposition of the *E* and *S* scores gives additional insight into the relationship between executive ownership and the KPIs of E&S performance. In the Internet Appendix, we provide evidence for KPIs[6].

4 Conclusion

Following the financial crisis of 2008 and the COVID-19 pandemic, the view that shareholder value maximization should be the sole – or main – goal of business leaders and investors has been robustly questioned by many academics and policy makers. The alternative view that firms that comprehensively maximize value for all their stakeholders are more resilient against exogenous shocks is receiving growing support (Albuquerque et al. 2020; Lins, Servaes, and Tamayo 2017). Which actors and corporate governance arrangements can foster or hinder the corporate sustainability footprint is an open question. We empirically investigate whether executive ownership is conducive to a greater sustainability footprint. Our results indicate that

executive shareholding is negatively associated with corporate E&S performance, indicating that the pursuit of non-financial returns is penalized when executives are more financially vested in the company. In particular, the negative impact of executive ownership on environmental and social metrics is consistent, with the exception of workforce and community, which are elements more at arm's length for executives. We analogously observe that inside trading intensity is inversely associated with the sustainability footprint, thus confirming that when executives' primary focus is on financial gains, E&S activities diminish. To establish the causality between executive ownership and sustainability, we use an exogenous shock in capital gains taxation that specifically affected executive ownership in US public companies. The quasi-natural experiment confirms that it is the degree of executive ownership that affects the E&S footprint.

Overall, our findings support the view that while executive ownership helps mitigate agency by aligning management's and shareholders' financial objectives, firm sustainability performance is actually penalized by executive ownership. As an implication, alternative or complementary corporate governance mechanisms should be introduced to incentivize behaviours promoting a sustainability footprint encompassing a wider range of E&S stakeholders.

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Table I - Variable summary statistics

Variable	*Mean*	*Median*	*Standard Deviation*	*1st Quartile*	*3rd Quartile*	*Observations*
ESG Score	37.510	33.720	18.518	23.350	48.930	16,336
Environment Score	21.400	7.805	26.538	0.00	38.326	16,336
Social Score	40.320	36.770	20.022	25.16	53.10	16,336
Governance Score	46.460	46.290	22.530	28.19	64.59	16,336
Executive Ownership	2.464	0.580	6.152	0.218	1.563	10,880
Insider Trading	0.020	0.000	0.369	0.000	0.002	16,012
Firm Size	8.492	8.488	1.760	7.395	9.580	16,336
Tangibility	0.231	0.133	0.245	0.037	0.357	15,323
Leverage	0.615	0.611	0.261	0.454	0.787	16,305
Profitability	0.068	0.069	0.148	0.028	0.122	14,319
Tobin's Q	2.119	1.532	1.746	1.121	2.390	16,305
R&D	3.320	3.789	2.551	0.00	5.098	8,865

This table reports the cross-sectional summary statistics of the variables used in the baseline econometric specifications, pooled for the period 2002–2019. *ESG Score* is the total ESG score computed by Refinitiv (formerly, Thomson Reuters Eikon) as a weighted average of the *Environment* (*E*), *Social* (*S*) and *Governance* (*G*) scores. *Executive Ownership* is the percentage of shares owned by company executives out of the total number of shares outstanding. *Insider Trading* is the natural logarithm of the absolute total number of shares traded by executives in a given year divided by the total number of shares outstanding at year-end. *Firm Size* is the natural logarithm of total assets. *Tangibility* is the ratio of property, plant and equipment to total assets. *Leverage* is the ratio of total debt to total assets. *Profitability* is the net income plus interest expenses over total assets. *Tobin's* Q is the market value over the book value of assets. *R&D* is the natural logarithm of research and development expenses. Appendix A provides a detailed description of all the variables.

Table II – ESG score and executive ownership summary statistics by industry

Industry	*ESG Score*	*E Score*	*S Score*	*G Score*	*Executive Ownership (%)*
Basic Materials	39.74	33.53	38.71	52.02	1.433
Consumer Cyclicals	37.58	22.67	40.49	44.00	4.462
Consumer Non-Cyclicals	42.86	32.75	44.11	50.91	3.425
Energy	35.05	25.43	34.11	50.36	1.485
Financials	35.83	12.20	40.24	45.22	2.340
Healthcare	35.36	15.34	41.54	41.33	1.728
Industrials	36.61	24.18	38.29	48.18	1.630
Technology	39.90	23.84	43.96	44.38	2.856
Telecommunication Services	30.36	18.29	29.53	41.28	1.541
Utilities	46.15	39.94	41.71	62.43	0.275
Mean	37.51	21.40	40.32	46.46	2.464

This table reports the cross-sectional summary statistics of the ESG measurements we retrieved from the Refinitiv ESG database (2002–2019), segmented by industry. *ESG Score* is the total ESG score computed as a weighted average of the *Environment* (*E*), *Social* (*S*) and *Governance* (*G*) scores. *Executive Ownership* is the percentage of shares owned by company executives out of the total number of shares outstanding. *Industry* is the three-digit NAICS code reported by Compustat. Appendix A provides a detailed description of all the variables. The methodology used by Refinitiv is described in Section A of the Internet Appendix.

Table III – ESG score and executive ownership

Independent Variable	*Dependent Variable: Log ESG Score*			
	(1)	*(2)*	*(3)*	*(4)*
Executive Ownership $_{t-1}$	-1.296***	-1.065***	-1.150***	-1.123***
	(0.344)	(0.319)	(0.318)	(0.330)
Firm Size $_{t-1}$	0.158**	0.164***	0.167***	0.166***
	(0.011)	(0.010)	(0.012)	(0.014)
Tangibility $_{t-1}$	0.266*	0.269*	0.289**	0.285**
	(0.143)	(0.156)	(0.143)	(0.143)
Leverage $_{t-1}$	0.009	0.001	-0.017	-0.011
	(0.066)	(0.065)	(0.064)	(0.069)
Profitability $_{t-1}$	0.522***	0.623***	0.582***	0.625***
	(0.196)	(0.194)	(0.201)	(0.218)
Tobin's Q $_{t-1}$	0.008	0.008	0.006	0.003
	(0.006)	(0.006)	(0.005)	(0.005)
R&D $_{t-1}$	0.030***	0.029***	0.031***	0.032***
	(0.009)	(0.008)	(0.010)	(0.011)
Constant	2.126***	1.541***	1.549***	2.201***
	(0.049)	(0.151)	(0.139)	(0.059)
Industry FE	Yes	No	Yes	No
Time FE	No	Yes	Yes	No
Industry × Time FE	No	No	No	Yes
Observations	4,776	4,776	4,776	4,776
Unique Firms	742	742	742	742
Adjusted R^2	0.352	0.382	0.397	0.401

This table reports the OLS estimation of the impact of executive ownership on ESG performance, according to equation (1). *ESG Score* is the natural logarithm of the total ESG score computed by Refinitiv. *Executive Ownership* is the percentage of shares owned by company executives out of the total number of shares outstanding. *Firm Size* is the natural logarithm of total assets. *Tangibility* is the ratio of property, plant and equipment to total assets. *Leverage* is the ratio of total debt to total assets. *Tobin's* Q is the market value over the book value of assets. *Profitability* is the net income plus interest expenses over total assets. *R&D* is the natural logarithm of research and development expenses. All the independent variables are lagged by one period. Appendix A provides a detailed description of all the variables. Robust, firm-clustered standard errors are reported in parentheses. ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

Table IV - Executive ownership and E&S performance following the 2003 tax reform

Variable	*Log E&S Score* (1)
Post-Event × Exec. Ownership $_{t-1}$	-1.462**
	(0.025)
Post-Event	-0.0321**
	(0.013)
Exec. Ownership $_{t-1}$	-0.519
	(0.149)
Constant	2.099***
	(0.001)
Time-varying controls	Yes
Industry FE	Yes
Observations	1,408
Number of firms	857
Adjusted R^2	0.118

This table reports the OLS regression estimates of the E&S scores on executive ownership after the 2003 tax reform, according to equation (2). The dependent variables are the natural logarithm of the E&S performance score. The post-event dummy (*Post-Event*) variable is equal to one for years 2003 and 2004 and zero for years 2001 and 2002. The two-year post-event observations are collapsed into one observation per firm. The interaction variable is generated by taking the product of the post-event dummy variable and executive ownership. *Executive Ownership* is the percentage of shares owned by company executives out of the total number of shares outstanding. Time-varying controls include the following: *Firm Size* is the natural logarithm of total assets. *Tangibility* is the ratio of property, plant and equipment to total assets. *Leverage* is the ratio of total debt to total assets. *Profitability* is the net income plus interest expenses over total assets. *Tobin's* Q is the market value over the book value of assets. *R&D* is the natural logarithm of research and development expenses. All the independent variables are lagged by one period. Appendix A provides a detailed description of all the variables. Standard errors are robust. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table V – ESG score and insider trading

Independent Variable	*Dependent Variable: Log of ESG Score*			
	(1)	*(2)*	*(3)*	*(4)*
Insider Trading $_{t-1}$	-0.040***	-0.039***	-0.033***	-0.034***
	(0.008)	(0.008)	(0.005)	(0.005)
Executive Ownership $_{t-1}$			-1.289***	-1.248***
			(0.180)	(0.191)
Firm Size $_{t-1}$	0.149***	0.151***	0.152***	0.151***
	(0.008)	(0.009)	(0.012)	(0.013)
Tangibility $_{t-1}$	0.260**	0.262**	0.274**	0.269**
	(0.127)	(0.126)	(0.128)	(0.127)
Leverage $_{t-1}$	0.038	0.040	-0.005	0.002
	(0.059)	(0.061)	(0.058)	(0.060)
Profitability $_{t-1}$	0.197	0.217	0.566***	0.610***
	(0.148)	(0.161)	(0.184)	(0.203)
Tobin's Q $_{t-1}$	0.011*	0.010**	0.002	-0.001
	(0.005)	(0.005)	(0.005)	(0.004)
R&D $_{t-1}$	0.033***	0.032**	0.027***	0.028**
	(0.012)	(0.013)	(0.011)	(0.011)
Constant	1.412***	1.877***	1.474***	2.098***
	(0.085)	(0.049)	(0.163)	(0.057)
Industry FE	Yes	No	Yes	No
Time FE	Yes	No	Yes	No
Industry × Time FE	No	Yes	No	Yes
Observations	6,880	6,880	4,703	4,703
Unique Firms	1,277	1,277	733	733
Adjusted R^2	0.387	0.391	0.410	0.414

This table reports the OLS estimation of the impact of insider trading activity and executive ownership on ESG performance, according to equation (3). *ESG Score* is the natural logarithm of the total ESG score computed by Refinitiv. *Insider Trading* is the absolute total number of shares traded by executives in a given year divided by the total number of shares outstanding at year-end. *Executive Ownership* is the percentage of shares owned by company executives out of the total number of shares outstanding. *Firm Size* is the natural logarithm of total assets. *Tangibility* is the ratio of property, plant and equipment to total assets. *Leverage* is the ratio of total debt to total assets. *Profitability* is the net income plus interest expenses over total assets. *Tobin's* Q is the market value over the book value of assets. *R&D* is the natural logarithm of research and development expenses. All the independent variables are lagged by one period. Appendix A provides a detailed description of all the variables. Robust, firm-clustered standard errors are reported in parentheses. ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

Table VI – Executive ownership, insider trading, and separate E and S scores

Independent Variable	*Log E Score*		*Log S Score*	
	(1)	*(2)*	*(3)*	*(4)*
Insider Trading $_{t-1}$		-0.083***		-0.025***
		(0.018)		(0.005)
Executive Ownership $_{t-1}$	-2.464***	-2.676***	-0.948**	-1.003**
	(0.600)	(0.399)	(0.457)	(0.411)
Firm Size $_{t-1}$	0.535***	0.499***	0.155***	0.146***
	(0.080)	(0.074)	(0.008)	(0.008)
Tangibility $_{t-1}$	0.944**	0.871**	0.376***	0.351**
	(0.387)	(0.376)	(0.145)	(0.139)
Leverage $_{t-1}$	-0.189	-0.166	0.026	0.034
	(0.234)	(0.221)	(0.064)	(0.056)
Profitability $_{t-1}$	1.292**	1.264**	0.403	0.396
	(0.559)	(0.559)	(0.271)	(0.258)
Tobin's Q $_{t-1}$	-0.003	-0.013	0.022***	0.019***
	(0.027)	(0.027)	(0.005)	(0.005)
R&D $_{t-1}$	0.107***	0.098***	0.032***	0.029***
	(0.037)	(0.038)	(0.006)	(0.007)
Constant	-3.601***	-3.810***	1.409***	1.328***
	(0.427)	(0.533)	(0.102)	(0.113)
Industry FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Industry × Time FE	No	No	No	No
Observations	4,776	4,703	4,776	4,703
Unique Firms	742	733	742	733
Adjusted R^2	0.433	0.437	0.340	0.347

This table reports the OLS estimation of the impact of executive ownership on the three components of ESG performance. In columns (1) and (2), we report results on the natural logarithm of the *Environment* (*E*) *Score*, according to equation (4). In columns (3) and (4), we present results on the natural logarithm of the *Social* (*S*) *Score*, according to equation (5). *Insider Trading* is the absolute total number of shares traded by executives in a year divided by the total number of shares outstanding at year-end. *Executive Ownership* is the percentage of shares owned by company executives out of the total number of shares outstanding. *Firm Size* is the natural logarithm of total assets. *Tangibility* is the ratio of property, plant and equipment to total assets. *Leverage* is the ratio of total debt to total assets. *Profitability* is the net income plus interest expenses over total assets. *Tobin's Q* is the market value over the book value of assets. *R&D* is the natural logarithm of research and development expenses. All the independent variables are lagged by one period. Appendix A provides a detailed description of all the variables. Robust, firm-clustered standard errors are reported in parentheses. ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

[1] Our results are unaffected by the use of raw scores.

[2] We could not use the KLD E&S score for all parts of our research, because such data are available only until 2013. Nevertheless, we run a series of tests with the Refinitiv ESG score cutting the sample at 2013 and confirm all our results. Though not ideal, the use of different datasets also confirms that our results are not driven by a specific E&S rating provider. Similar to Refinitiv, KLD relies on publicly available sources and evaluates sustainability performance in E&S issue areas. Ratings are formed by noting strengths and concerns within each issue area. The scoring system uses the net of all strengths and concerns, equally weighted, to provide an overall score per firm with respect to its E&S performance.

[3] The categories are: for *E* performance, *Resource Use*, *Emission Reduction*, and *Product Innovation*; for *S* performance, *Workforce*, *Human Rights*, *Community*, and *Product Responsibility*; for *G* performance, *Management*, *Shareholders*, and *CSR strategy*. Section A of the Internet Appendix provides the exact definition of each category and the description of the methodology followed by the data providers.

[4] Table A I in the Internet Appendix provides statistics for each component of the *E*, *S*, and *G* score, separately.

[5] In the Internet Appendix (Table A V and Table A VI) we report results also when the dependent variable is the *Governance* (*G*) pillar score, for completeness, though the main focus of our study is on E&S. Moreover, we believe there might be endogeneity concerns when linking executive ownership to corporate governance characteristics.

[6] We run equations (4) and (5) also using the single components (KPI) of the *E* and the *S* scores as output variables. For instance, we regress *Emission Reduction*, one of the indicators composing the *E* score on the independent variables of equation (4). We execute these experiments for each of the KPIs of the *E* and *S* scores. The findings on the KPIs are reported in the Section C of the Internet Appendix.

Appendix A – Description of variables

Variable	*Description*	*Formula and Code*	*Source*
ESG Score	The total ESG score computed as a weighted average of the KPI scores.	= *ESG Score*	Refinitiv
E Score	The total E score computed as a weighted average of Emission, Resource Use and Innovation scores.	= *Environmental Pillar Score*	Refinitiv
S Score	The total S score computed as a weighted average of Workforce, Human Rights, Community and Product Responsibility scores.	= *Social Pillar Score*	Refinitiv
G Score	The total G score computed as a weighted average of Management, Shareholders and CSR Strategy scores.	= *Governance Pillar Score*	Refinitiv
Executive Ownership	The percentage of shares owned by company executives out of the total number of shares outstanding.	= *Shrown_Excl_Opts_Pct*	Execucomp
Insider Trading	The log of the absolute total number of shares traded by executives in a given year divided by the total number of shares outstanding at year-end.	$= ln\left(\frac{\lvert Insider\ Shares\ Traded \rvert}{CSHO}\right)$	Refinitiv, Compustat
Firm Size	The log of Total Assets	$= ln\,(AT)$	Compustat
Tangibility	Ratio of Property, Plant and Equipment to Total Assets	$= \frac{PPENT}{AT}$	Compustat
Leverage	Ratio of Total Debt to Total Assets	$= \frac{LT}{AT}$	Compustat
Tobin's Q	Ratio of Market Capitalization plus Total Debt to Total Assets	$= \frac{(CSHO \times PRCC\_C) + LT}{AT}$	Compustat
Profitability	Net Income plus Interest Expense divided by Total Assets	$= \frac{NI + XINT}{AT}$	Compustat
R&D	The log of R&D Expenditures	$= ln\,(XRD)$	Compustat

Internet Appendix

A. Refinitiv measurement methodology of ESG

Refinitiv (formerly, Thomson Reuters Eikon) ESG scores reflect the underlying ESG data framework and are a transparent, data-driven assessment of companies' relative ESG performance and capacity, integrating and accounting for industry materiality and company size biases. The data are an improvement over and a replacement of the Asset4 ratings.

Refinitiv captures and calculates more than 450 company-level ESG measures, encapsulated in 178 indicators that reflect the overall company sustainability assessment. The underlying measures are based on considerations of comparability, impact, data availability and industry relevance that vary across each industry group.

These 178 indicators are grouped into 10 categories that reformulate the three pillar scores and the final ESG Score. The ESG Score reflects the company's ESG performance, commitment and effectiveness based on publicly reported information.

The 10 category scores and their definitions are as follows:

1. *Resource Use Score*: reflects a company's performance and capacity to reduce the use of materials, energy or water and to find more eco-efficient solutions by improving supply chain management.
2. *Emissions Score*: measures a company's commitment towards and effectiveness in reducing environmental emissions in the production and operational processes.
3. *Innovation Score*: expresses a company's capacity to reduce environmental costs and burdens for its customers and thereby create new market opportunities through new environmental technologies and processes or eco-designed products.
4. *Workforce Score*: measures a company's effectiveness in spurring job satisfaction, achieving a healthy and safe workplace, maintaining diversity and equal opportunities, and developing opportunities for its workforce.
5. *Human Rights Score*: assesses a firm's effectiveness in respecting fundamental human rights conventions.
6. *Community Score*: captures a company's commitment towards being a good citizen, protecting public health and respecting business ethics.
7. *Product Responsibility Score*: reflects a firm's capacity to produce quality goods and services, integrating customer health and safety, integrity and data privacy.
8. *Management Score*: measures a company's commitment towards and effectiveness in following best practice corporate governance principles.

9. *Shareholders Score*: addresses firm's effectiveness in ensuring equal treatment of shareholders and the use of anti-takeover devices.
10. *CSR Strategy Score*: assesses a company's practices to communicate that it integrates economic (financial), social and environmental dimensions into its day-to-day decision-making processes.

The category scores are rolled up into three pillar scores: environmental, social and corporate governance. The ESG pillar score is a relative sum of the category weights that vary per industry for the E and S categories. For Governance, the weights remain stable across all industries. The pillar weights are normalized to percentages ranging between 0 and 100.

The percentile rank scoring methodology is adopted to calculate the 10 category scores[1]. It is based on three factors:

1. How many companies are worse than the current one?
2. How many companies have the same value?
3. How many companies have a value at all?

Percentile rank score is based on the rank, and therefore it is not very sensitive to outliers.

Each category score is the equally weighted sum of all the indicators used to create it. To calculate the E and S category scores, the Thomson Reuters Business Classification (TRBC) industry group is used as a benchmark, as these topics are more relevant and material to companies in the same industries. To calculate the governance categories, country of incorporation is used as the benchmark, as best governance practices are more consistent within countries.

To calculate the overall Refinitiv ESG Score, an automatic, factual logic that determines the weight of each category is applied. The driver is the number of measures that make up a category in comparison with all indicators used in the TR ESG Score framework. As a result, categories that contain multiple issues such as Management (e.g., composition, diversity, independence, committees, compensation) will have a higher weight than lighter categories such as Human Rights. Each category consists of a different number of measures. The count of measures per category determines the weight of the respective category.

[1] The exact formula used by the data provider is

$$Rank\ Score = \frac{\left(no.\,of\ companies\ with\ a\ worse\ value\ +\ \frac{no.\,of\ companies\ with\ the\ same\ value\ included\ in\ the\ current\ one}{2}\right)}{\text{no. of companies with a value}}.$$

B. Data descriptive tables

In this section we present additional data descriptive tables.

Table A I presents summary statistics separately for environmental (*E)*, social (*S*) and governance (*G*) scores, and their principal key performance indicators (KPIs).

Table A I - ESG scores summary statistics

Variable	*Number of indicators*	*Mean*	*Median*	*Standard Deviation*	*Observations*
ESG Score	178	37.510	33.720	18.518	16,336
Environment Pillar (E)					
Resource Use	19	37.180	33.590	19.168	16,326
Emissions Reduction	22	23.220	4.750	30.593	16,336
Product Innovation	20	15.590	0.000	26.544	15,274
Environment Score	61	21.400	7.805	26.538	16,336
Social Pillar (S)					
Workforce	29	41.380	37.408	25.709	16,336
Human Rights	8	15.830	0.000	27.541	16,336
Community	14	61.120	62.370	23.630	16,336
Product Responsibility	12	36.920	33.330	27.197	16,336
Social Score	63	40.320	36.770	20.022	16,336
Governance Pillar (G)					
Management	34	50.550	50.505	28.662	16,336
Shareholders	12	51.400	51.964	28.338	16,336
CSR Strategy	8	18.620	0.000	29.979	16,336
Governance Score	54	46.460	46.290	22.530	16,336

This table reports the cross-sectional summary statistics of the ESG measurements we retrieved from Refinitiv ESG database (2002–2019). *ESG Score* is the total ESG score computed as a weighted average of the *Environment* (*E*), *Social* (*S*) and *Governance* (*G*) pillars scores. Each pillar, in turn, comprises the indicators reported in the table. The methodology used by Refinitiv is described in Section A of this appendix.

Internet Appendix

Table A II reports the correlation matrix of the main variables used in the empirical analysis, according to equations (1) and (3) in the paper.

Table A II – Correlation of variables

	ESG Score	Executive Ownership	Insider Trading	Firm Size	Tangibility	Leverage	Profitability	Tobin's Q	R&D
ESG Score	1.000								
Executive Ownership	-0.227	1.000							
Insider Trading	-0.041	-0.001	1.000						
Firm Size	0.612	-0.169	-0.021	1.000					
Tangibility	0.112	0.118	-0.005	0.121	1.000				
Leverage	0.175	-0.100	0.027	0.278	0.085	1.000			
Profitability	0.130	0.000	0.008	0.027	0.086	0.034	1.000		
Tobin's Q	-0.065	0.086	0.000	-0.266	-0.100	-0.027	0.351	1.000	
R&D	0.335	-0.167	-0.015	0.376	-0.316	-0.049	-0.037	0.113	1.000

This table presents the correlation matrix of all the main variables used in the econometric tests. *ESG Score* is the total ESG score computed by Refinitiv. *Insider Trading* is the absolute total number of shares traded by executives in a given year divided by the total number of shares outstanding at year-end. *Executive Ownership* is the percentage of shares owned by company executives out of the total number of shares outstanding. *Firm Size* is the natural logarithm of total assets. *Tangibility* is the ratio of property, plant and equipment to total assets. *Leverage* is the ratio of total debt to total assets. *Profitability* is the net income plus interest expenses over total assets. *Tobin's* Q is the market value over the book value of assets. Appendix A in the paper provides a detailed description of all the variables.

C. Distinction of environmental from social performance

In this section, we present the full set of tests we run by separating environmental (E) from social (S) performance. The corresponding section 3.3 of the paper presents a subset of these results.

The concepts underscored by the common measure on ESG performance have considerable heterogeneity. In addition, governance standards and executive ownership can be driven by similar forces. Therefore, focusing on E and S activities separately and decomposing them are worthwhile. For these analyses, we use the specific indicators of E and S performance, to identify whether the results are driven particularly by one or the other. Table A III presents the results of our empirical tests according to equations (4) and (5) in the paper.

[*Table A III here*]

We find that the results for both performance indicators are also negatively associated with *Executive Ownership*, as observed in the baseline regressions, with a statistically significant relationship at the 1% and 5% levels for *E* and *S* scores, respectively.

Environmental performance and executive ownership have a strong negative relationship: a one percentage point change in the portion of shares held by managers is linked to lower sustainability performance of approximately 2.5%; this corresponds to a reduction of 9% in the average *E Score* for every unit of standard deviation change in *Executive Ownership*. Regarding social performance, a one standard deviation shift in *Executive Ownership* is associated with an approximately 11% decrease in social performance.

The separation of *E* from *S* performance is also useful when investigating the link between insider trading activity and ESG. We thus focus on E&S by using separately the specific indicators of E and S activities as output variables, according to equations (4) and (5) in the paper. Table A IV documents the results of our analysis.

[*Table A IV here*]

All our findings show that a higher level of insider trading is related to lower E (column (1)) and S (column (2)) performance. The main coefficient of interest is always statistically significant at the 1% level. The elasticity of the *E Score* to insider trading (–0.08) is stronger than that of the *S Score* (–0.02). This supports the idea that agency conflicts are more pronounced with regard to environmental rather than social choices. With the increase of their trading activity, managers are more sensitive to decisions about environment rather than social issues.

Finally, though acknowledging that governance indicators may be endogenous to executive ownership and insider trading, for completeness we report a set of analysis in which we regress the governance (*G*) score on executive ownership (Table A V) and insider trading (Table A VI).

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[*Table A V and Table A VI here*]

The *E* and *S* scores from the Refinitiv database comprise various categories that contribute to each final score. Every category assesses the quality of an important KPI used to measure E&S performance. Consequently, the decomposition of such scores into KPIs gives additional insight into the relationship between executive ownership and E&S performance itself. We evaluate which KPIs of the environmental and social standards matter the most.

To investigate the relationship between the *E Score* and management ownership more thoroughly, we run separate regressions for each KPI of the environmental performance score. The *E Score* consists of indicators revealing the performance of the firm in (1) *Emission Reduction*, (2) *Product Innovation*, and (3) *Resource Use*. Regressions follow the specification of equation (4), in which we use separately each of the three KPIs as dependent variable. Table A VII reports the results.

[*Table A VII here*]

We find that the negative relationship is highly statistically significant for all the KPIs. Economically, the largest impact comes from *Resource Use*: a one standard deviation increase in *Executive Ownership* is associated with a 0.13 standard deviation reduction of the score tracking the use of resources. Such an impact is 85% and 30% higher than the corresponding standard deviation change for *Emission Reduction* (0.07) and *Product Innovation* (0.10), respectively.

The strong negative and statistically significant relationship found with resource reduction, at first glance, may appear counterintuitive. Indeed, the low economic impact of executive ownership for *Emission Reduction* and *Product Innovation* can be reconciled by the literature. With regard to emission reductions, a possible explanation could be that regulation in place adds costs to companies if they do not comply, and these costs are ultimately borne by (executive)-owners (Ambec and Lanoie 2008). For product innovation, the argument could be that firm investments would potentially give the respective firms a competitive edge, which ultimately would lead to higher financial performance that accrues also to stocks owned by managers.

We find equivalent results when we include insider trading in the econometric specification, as documented in Table A VIII.

[*Table A VIII here*]

The *S Score* comprises four KPIs of social performance: *Workforce*, *Human Rights*, *Community*, and *Product Responsibility*. Table A IX reports the results of our analysis, in which we use each of these KPIs as the dependent variable of equation (5).

[*Table A IX*]

When we examine the impact of executive ownership on the composite KPIs for social performance, we observe that all components confirm the general finding that investments in social activities are negatively correlated with management ownership. Yet this relationship is statistically significant only for

Human Rights (column 2) and *Product Responsibility* (column 4). Of these two social KPIs, the latter is less negatively linked to executive ownership. This could be because product responsibility is an important channel to address customer awareness. Customers are an important source of financial performance for a firm, given that their purchasing behaviour clearly affects the company's financial performance and, ultimately, firm value. Therefore, managers owning shares in the company care more about social policies, such as product responsibility, that can be more easily perceived by customer, because customer awareness may ultimately affect the financial performance of the firm itself (Servaes and Tamayo 2013) and, thus, managers' personal wealth. By contrast, managers put less emphasis on social activities, such as human rights, whose perception is subtler for customers, and thus have a lower risk of influencing their purchasing decisions and the company's financial results.

When we add insider trading to the model, we find similar results that are statistically significant for all the KPIs. Table A X presents these results.

[*Table A X*]

Table A III – Executive ownership and separate E and S scores

Independent Variable	*Log E Score*		*Log S Score*	
	(1)	*(2)*	*(3)*	*(4)*
Executive Ownership $_{t-1}$	-2.464***	-2.309***	-0.948**	-0.949**
	(0.600)	(0.600)	(0.457)	(0.479)
Firm Size $_{t-1}$	0.535***	0.536***	0.155***	0.155***
	(0.080)	(0.085)	(0.008)	(0.009)
Tangibility $_{t-1}$	0.944**	0.961**	0.376***	0.369***
	(0.387)	(0.382)	(0.145)	(0.143)
Leverage $_{t-1}$	-0.189	-0.193	0.026	0.031
	(0.234)	(0.242)	(0.064)	(0.066)
Profitability $_{t-1}$	1.292**	1.384**	0.403	0.458
	(0.559)	(0.599)	(0.271)	(0.287)
Tobin's Q $_{t-1}$	-0.003	-0.007	0.022***	0.019***
	(0.027)	(0.028)	(0.005)	(0.005)
R&D $_{t-1}$	0.107***	0.110***	0.032***	0.034***
	(0.037)	(0.038)	(0.006)	(0.007)
Constant	-3.601***	-2.326***	1.409***	2.280***
	(0.427)	(0.457)	(0.102)	(0.049)
Industry FE	Yes	No	Yes	No
Time FE	Yes	No	Yes	No
Industry × Time FE	No	Yes	No	Yes
Observations	4,776	4,776	4,776	4,776
Unique Firms	742	742	742	742
Adjusted R^2	0.433	0.432	0.340	0.344

This table reports the OLS estimation of the impact of executive ownership on the E and S components of ESG performance. In columns (1) and (2), we report the results on the natural logarithm of the *Environment* (*E*) *Score*, according to equation (4). In columns (3) and (4), we present results on the natural logarithm of the *Social* (*S*) *Score*, according to equation (5). *Executive Ownership* is the percentage of shares owned by company executives out of the total number of shares outstanding. *Firm Size* is the natural logarithm of total assets. *Tangibility* is the ratio of property, plant and equipment to total assets. *Leverage* is the ratio of total debt to total assets. *Profitability* is the net income plus interest expenses over total assets. *Tobin's Q* is the market value over the book value of assets. *R&D* is the natural logarithm of research and development expenses. All the independent variables are lagged by one period. Appendix A in the paper provides a detailed description of all the variables. Robust, firm-clustered standard errors are reported in parentheses. ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

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Table A IV – Insider trading and separate E and S scores

Independent Variable	*Log E Score*		*Log S Score*	
	(1)	*(2)*	*(3)*	*(4)*
Insider Trading $_{t-1}$	-0.075***	-0.083***	-0.027***	-0.025***
	(0.017)	(0.018)	(0.006)	(0.005)
Executive Ownership $_{t-1}$		-2.676***		-1.003**
		(0.399)		(0.411)
Firm Size $_{t-1}$	0.483***	0.499***	0.152***	0.146***
	(0.058)	(0.074)	(0.007)	(0.008)
Tangibility $_{t-1}$	1.051***	0.871**	0.319**	0.351**
	(0.398)	(0.376)	(0.127)	(0.139)
Leverage $_{t-1}$	-0.104	-0.166	0.059	0.034
	(0.208)	(0.221)	(0.046)	(0.056)
Profitability $_{t-1}$	0.636	1.264**	-0.110	0.396
	(0.442)	(0.559)	(0.154)	(0.258)
Tobin's Q $_{t-1}$	-0.013	-0.013	0.026***	0.019***
	(0.022)	(0.027)	(0.009)	(0.005)
R&D $_{t-1}$	0.121***	0.098***	0.036***	0.029***
	(0.033)	(0.038)	(0.013)	(0.007)
Constant	-3.760***	-3.810***	1.140***	1.328***
	(0.364)	(0.533)	(0.119)	(0.113)
Industry FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Observations	6,880	4,703	6,880	4,703
Unique Firms	1,277	733	1,277	733
Adjusted R^2	0.468	0.437	0.317	0.347

This table reports the OLS estimation of the impact of insider trading and executive ownership on the E and S components of ESG performance, according to equations (4) and (5). In columns (1) and (2), we report results on the natural logarithm of the *Environment* (*E*) *Score*. In columns (3) and (4), we present results on the natural logarithm of the *Social* (*S*) *Score*. *Insider Trading* is the absolute total number of shares traded by executives in a given year divided by the total number of shares outstanding at year-end. *Executive Ownership* is the percentage of shares owned by company executives out of the total number of shares outstanding. *Firm Size* is the natural logarithm of total assets. *Tangibility* is the ratio of property, plant and equipment to total assets. *Leverage* is the ratio of total debt to total assets. *Profitability* is the net income plus interest expenses over total assets. *Tobin's Q* is the market value over the book value of assets. *R&D* is the natural logarithm of research and development expenses. All the independent variables are lagged by one period. Appendix A in the paper provides a detailed description of all the variables. Robust, firm-clustered standard errors are reported in parentheses. ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

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Table A V – Executive ownership and governance (G) score

Independent Variable	*Log G Score*		
	(1)	*(2)*	*(3)*
Executive Ownership $_{t-1}$	-1.531***	-1.505***	-1.245***
	(0.272)	(0.288)	(0.192)
Firm Size $_{t-1}$	0.109***	0.108***	0.104***
	(0.013)	(0.014)	(0.009)
Tangibility $_{t-1}$	0.087	0.074	0.143*
	(0.150)	(0.150)	(0.081)
Leverage $_{t-1}$	-0.073*	-0.067**	-0.070**
	(0.039)	(0.045)	(0.028)
Profitability $_{t-1}$	0.707***	0.710***	0.346**
	(0.205)	(0.218)	(0.167)
Tobin's Q $_{t-1}$	-0.017***	-0.019***	-0.013*
	(0.004)	(0.004)	(0.008)
R&D $_{t-1}$	0.009	0.009	
	(0.009)	(0.009)	
Constant	2.837***	-2.993***	2.838***
	(0.120)	(0.047)	(0.073)
Industry FE	Yes	No	Yes
Time FE	Yes	No	Yes
Industry × Time FE	No	Yes	No
Observations	4,776	4,776	9,213
Unique Firms	742	742	1,330
Adjusted R^2	0.154	0.156	0.132

This table reports the OLS estimation of the impact of executive ownership on the *Governance* (*G*) *Score* component of ESG performance. The output variable is the natural logarithm of the *Governance* (*G*) *Score*. *Executive Ownership* is the percentage of shares owned by company executives out of the total number of shares outstanding. *Firm Size* is the natural logarithm of total assets. *Tangibility* is the ratio of property, plant and equipment to total assets. *Leverage* is the ratio of total debt to total assets. *Profitability* is the net income plus interest expenses over total assets. *Tobin's Q* is the market value over the book value of assets. *R&D* is the natural logarithm of research and development expenses. All the independent variables are lagged by one period. Appendix A in the paper provides a detailed description of all the variables. Robust, firm-clustered standard errors are reported in parentheses. ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

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Table A VI – Insider trading and governance (G) score

Independent Variable	*Log G Score*		
	(1)	*(2)*	*(3)*
Insider Trading $_{t-1}$	-0.066***	-0.047***	-0.051***
	(0.011)	(0.011)	(0.009)
Executive Ownership $_{t-1}$		-1.761***	-1.184***
		(0.427)	(0.178)
Firm Size $_{t-1}$	0.081***	0.083***	0.077***
	(0.016)	(0.013)	(0.011)
Tangibility $_{t-1}$	0.045	0.100	0.113
	(0.089)	(0.140)	(0.080)
Leverage $_{t-1}$	-0.005	-0.045	-0.037*
	(0.052)	(0.032)	(0.023)
Profitability $_{t-1}$	0.460**	0.679***	0.332**
	(0.212)	(0.177)	(0.154)
Tobin's Q $_{t-1}$	-0.014	-0.025***	-0.023***
	(0.010)	(0.004)	(0.009)
R&D $_{t-1}$	0.010	0.006	
	(0.011)	(0.010)	
Constant	-0.141***	2.754***	2.740***
	(0.017)	(0.162)	(0.061)
Industry FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
Observations	6,880	4,703	9,073
Unique Firms	1,277	733	1,314
Adjusted R^2	0.176	0.177	0.150

This table reports the OLS estimation of the impact of insider trading and executive ownership on the *Governance* (*G*) *Score* component of ESG performance. The output variable is the natural logarithm of the *Governance* (*G*) *Score*. *Insider Trading* is the absolute total number of shares traded by executives in a given year divided by the total number of shares outstanding at year-end. *Executive Ownership* is the percentage of shares owned by company executives out of the total number of shares outstanding. *Firm Size* is the natural logarithm of total assets. *Tangibility* is the ratio of property, plant and equipment to total assets. *Leverage* is the ratio of total debt to total assets. *Profitability* is the net income plus interest expenses over total assets. *Tobin's Q* is the market value over the book value of assets. *R&D* is the natural logarithm of research and development expenses. All the independent variables are lagged by one period. Appendix A in the paper provides a detailed description of all the variables. Robust, firm-clustered standard errors are reported in parentheses. ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

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Table A VII – Executive ownership and composite environmental KPI

Independent Variable	*Emission Reduction* (1)	*Product Innovation* (2)	*Resource Use* (3)
Executive Ownership $_{t-1}$	-2.686***	-1.665***	-1.194***
	(0.782)	(0.291)	(0.293)
Firm Size $_{t-1}$	0.646***	0.308***	0.171***
	(0.056)	(0.036)	(0.013)
Tangibility $_{t-1}$	0.683**	1.191**	0.314**
	(0.340)	(0.488)	(0.139)
Leverage $_{t-1}$	0.135	-0.558*	-0.011
	(0.232)	(0.305)	(0.059)
Profitability $_{t-1}$	0.846*	1.302*	0.556***
	(0.454)	(0.761)	(0.190)
Tobin's Q $_{t-1}$	0.025	-0.028	0.009*
	(0.034)	(0.034)	(0.005)
R&D $_{t-1}$	0.099***	0.227***	0.032***
	(0.027)	(0.059)	(0.009)
Constant	-4.326***	-2.193***	1.381***
	(0.321)	(0.360)	(0.218)
Industry FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
Observations	4,776	4,509	4,776
Unique Firms	742	698	742
Adjusted R^2	0.429	0.313	0.365

This table reports the OLS estimation of the impact of executive ownership on the three KPIs of the *Environment* (*E*) *Score*, according to equation (4). In columns (1), (2), and (3), we report results on the natural logarithm of the *Emission Reduction*, *Product Innovation*, and *Resource Use*, respectively. *Executive Ownership* is the percentage of shares owned by company executives out of the total number of shares outstanding. *Firm Size* is the natural logarithm of total assets. *Tangibility* is the ratio of property, plant and equipment to total assets. *Leverage* is the ratio of total debt to total assets. *Profitability* is the net income plus interest expenses over total assets. *Tobin's Q* is the market value over the book value of assets. *R&D* is the natural logarithm of research and development expenses. All the independent variables are lagged by one period. Appendix A in the paper provides a detailed description of all the variables. Robust, firm-clustered standard errors are reported in parentheses. ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

Table A VIII – Insider trading, executive ownership and composite environmental KPI

Independent Variable	*Emission Reduction* *(1)*	*Product Innovation* *(2)*	*Resource Use* *(3)*
Insider Trading $_{t-1}$	-0.101***	-0.058***	-0.033***
	(0.027)	(0.015)	(0.006)
Executive Ownership $_{t-1}$	-2.773***	-1.839***	-1.334***
	(0.648)	(0.262)	(0.169)
Firm Size $_{t-1}$	0.600***	0.280***	0.156***
	(0.062)	(0.037)	(0.013)
Tangibility $_{t-1}$	0.603*	1.133**	0.300**
	(0.328)	(0.466)	(0.124)
Leverage $_{t-1}$	0.187	-0.557*	0.001
	(0.231)	(0.285)	(0.054)
Profitability $_{t-1}$	0.830*	1.265	0.540***
	(0.439)	(0.793)	(0.171)
Tobin's Q $_{t-1}$	0.013	-0.037	0.005
	(0.034)	(0.035)	(0.005)
R&D $_{t-1}$	0.090***	0.219***	0.028***
	(0.026)	(0.059)	(0.010)
Constant	-4.615***	-2.255***	1.304***
	(0.377)	(0.371)	(0.228)
Industry FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
Observations	4,703	4,437	4,703
Unique Firms	733	689	733
Adjusted R^2	0.431	0.313	0.377

This table reports the OLS estimation of the impact of insider trading activity and executive ownership on the three KPIs of the *Environment* (*E*) *Score*, according to equation (4). In columns (1), (2), and (3), we report results on the natural logarithm of the *Emission Reduction*, *Product Innovation*, and *Resource Use*, respectively. *Insider Trading* is the absolute total number of shares traded by executives in a given year divided by the total number of shares outstanding at year-end. *Executive Ownership* is the percentage of shares owned by company executives out of the total number of shares outstanding. *Firm Size* is the natural logarithm of total assets. *Tangibility* is the ratio of property, plant and equipment to total assets. *Leverage* is the ratio of total debt to total assets. *Profitability* is the net income plus interest expenses over total assets. *Tobin's Q* is the market value over the book value of assets. *R&D* is the natural logarithm of research and development expenses. All the independent variables are lagged by one period. Appendix A in the paper provides a detailed description of all the variables. Robust, firm-clustered standard errors are reported in parentheses. ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

Table A IX– Executive ownership and composite social KPI

Independent Variable	*Workforce*	*Human Rights*	*Community*	*Product Responsibility*
	(1)	*(2)*	*(3)*	*(4)*
Executive Ownership $_{t-1}$	-0.890	-3.402***	-0.500	-2.076**
	(0.555)	(0.406)	(0.373)	(0.857)
Firm Size $_{t-1}$	0.235***	0.401***	0.104***	0.130***
	(0.013)	(0.044)	(0.014)	(0.022)
Tangibility $_{t-1}$	0.488**	0.885***	0.266***	0.476*
	(0.218)	(0.310)	(0.064)	(0.272)
Leverage $_{t-1}$	0.132	-0.303	0.081*	0.043
	(0.110)	(0.228)	(0.048)	(0.211)
Profitability $_{t-1}$	0.249	2.182**	0.290*	1.219***
	(0.236)	(1.002)	(0.156)	(0.174)
Tobin's Q $_{t-1}$	0.052***	-0.053	0.001	0.008
	(0.013)	(0.046)	(0.007)	(0.010)
R&D $_{t-1}$	0.036***	0.168***	0.019***	0.058***
	(0.007)	(0.046)	(0.006)	(0.019)
Constant	1.009***	-3.482***	2.678***	-0.419
	(0.175)	(0.202)	(0.057)	(0.394)
Industry FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Observations	4,776	4,776	4,776	4,776
Unique Firms	742	742	742	742
Adjusted R^2	0.267	0.343	0.207	0.250

This table reports the OLS estimation of the impact of executive ownership on the four KPIs of the *Social* (*S*) *Score*, according to equation (5). In columns (1), (2), (3) and (4), we report results on the natural logarithm of the *Workforce*, *Human Rights*, *Community*, and *Product Responsibility*, respectively. *Executive Ownership* is the percentage of shares owned by company executives out of the total number of shares outstanding. *Firm Size* is the natural logarithm of total assets. *Tangibility* is the ratio of property, plant and equipment to total assets. *Leverage* is the ratio of total debt to total assets. *Profitability* is the net income plus interest expenses over total assets. *Tobin's* Q is the market value over the book value of assets. *R&D* is the natural logarithm of research and development expenses. All the independent variables are lagged by one period. Appendix A in the paper provides a detailed description of all the variables. Robust, firm-clustered standard errors are reported in parentheses. ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

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Table A X – Insider trading, executive ownership and composite social KPI

Independent Variable	*Workforce* (1)	*Human Rights* (2)	*Community* (3)	*Product Responsibility* (4)
Insider Trading $_{t-1}$	-0.027**	-0.077***	-0.019**	-0.033***
	(0.012)	(0.028)	(0.007)	(0.013)
Executive Ownership $_{t-1}$	-0.936*	-3.183***	-0.519	-2.487***
	(0.540)	(0.502)	(0.390)	(0.568)
Firm Size $_{t-1}$	0.224***	0.375***	0.095***	0.116***
	(0.018)	(0.043)	(0.015)	(0.026)
Tangibility $_{t-1}$	0.467**	0.813**	0.262***	0.452*
	(0.211)	(0.366)	(0.065)	(0.274)
Leverage $_{t-1}$	0.144	-0.305	0.093*	0.059
	(0.112)	(0.195)	(0.049)	(0.220)
Profitability $_{t-1}$	0.239	2.150**	0.301**	1.223***
	(0.220)	(0.984)	(0.151)	(0.160)
Tobin's Q $_{t-1}$	0.049***	-0.060	-0.002	0.003
	(0.013)	(0.044)	(0.007)	(0.011)
R&D $_{t-1}$	0.033***	0.160***	0.018***	0.055***
	(0.008)	(0.049)	(0.006)	(0.019)
Constant	0.938***	-3.746***	2.613***	-0.534
	(0.166)	(0.256)	(0.077)	(0.399)
Industry FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Observations	4,703	4,703	4,703	4,703
Unique Firms	733	733	733	733
Adjusted R^2	0.265	0.348	0.211	0.257

This table reports the OLS estimation of the impact of insider trading activity and executive ownership on the four KPIs of the *Social* (*S*) *Score*, according to equation (5). In columns (1), (2), (3) and (4), we report results on the natural logarithm of the *Workforce*, *Human Rights*, *Community*, and *Product Responsibility*, respectively. *Insider Trading* is the absolute total number of shares traded by executives in a given year divided by the total number of shares outstanding at year-end. *Executive Ownership* is the percentage of shares owned by company executives out of the total number of shares outstanding. *Firm Size* is the natural logarithm of total assets. *Tangibility* is the ratio of property, plant and equipment to total assets. *Leverage* is the ratio of total debt to total assets. *Profitability* is the net income plus interest expenses over total assets. *Tobin's* Q is the market value over the book value of assets. *R&D* is the natural logarithm of research and development expenses. All the independent variables are lagged by one period. Appendix A in the paper provides a detailed description of all the variables. Robust, firm-clustered standard errors are reported in parentheses. ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

D. Robustness Tests excluding R&D expenses

Table A XI presents the results of our baseline specification, according to equation (1) in the paper, reduced by excluding R&D expenses from the control variables, to increase our sample.

[*Table A XI here*]

Table A XII reports the results of equation (3) in the paper, reduced by excluding R&D expenses from the control variables, to increase our sample.

[*Table A XII here*]

Table A XIII presents the results of the estimation of the effects of executive ownership separated for E and S performance, according to equations (4) and (5) in the paper, reduced by excluding R&D expenses from the control variables, to enlarge our sample.

[*Table A XIII here*]

Table A XIV presents the results of the estimation of the effects of insider trading separated for E and S performance, according to equations (4) and (5) in the paper, reduced by excluding R&D expenses from the control variables, to enlarge our sample.

[*Table A XIV*]

Table A XI – ESG score and executive ownership – Robustness test excluding R&D

Independent Variable	*Dependent Variable: Log ESG Score*			
	(1)	*(2)*	*(3)*	*(4)*
Executive Ownership $_{t-1}$	-1.210***	-1.065***	-1.050***	-1.056***
	(0.279)	(0.251)	(0.251)	(0.260)
Firm Size $_{t-1}$	0.174***	0.171***	0.186***	0.186***
	(0.017)	(0.016)	(0.016)	(0.016)
Tangibility $_{t-1}$	0.176	0.093	0.183	0.188
	(0.126)	(0.157)	(0.118)	(0.117)
Leverage $_{t-1}$	-0.030	-0.117*	-0.062	-0.063
	(0.050)	(0.060)	(0.051)	(0.054)
Profitability $_{t-1}$	0.256**	0.461***	0.353***	0.377***
	(0.110)	(0.133)	(0.121)	(0.120)
Tobin's Q $_{t-1}$	0.020**	0.031***	0.019**	0.017**
	(0.009)	(0.010)	(0.008)	(0.009)
Constant	2.049***	1.514***	1.419***	1.725***
	(0.142)	(0.161)	(0.144)	(0.150)
Industry FE	Yes	No	Yes	No
Time FE	No	Yes	Yes	No
Industry × Time FE	No	No	No	Yes
Observations	9,213	9,213	9,213	9,213
Unique Firms	1,330	1,330	1,330	1,330
Adjusted R^2	0.296	0.299	0.345	0.346

This table reports the OLS estimation of the impact of executive ownership on ESG performance, according to equation (1), reduced by excluding *R&D* from the control variables. *ESG Score* is the natural logarithm of the total ESG score computed by Refinitiv. *Executive Ownership* is the percentage of shares owned by company executives out of the total number of shares outstanding. *Firm Size* is the natural logarithm of total assets. *Tangibility* is the ratio of property, plant and equipment to total assets. *Leverage* is the ratio of total debt to total assets. *Profitability* is the net income plus interest expenses over total assets. *Tobin's* Q is the market value over the book value of assets. All the independent variables are lagged by one period. Appendix A in the paper provides a detailed description of all the variables. Robust, firm-clustered standard errors are reported in parentheses. ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

Table A XII – ESG score and insider trading – Robustness test excluding R&D

Independent Variable	*Dependent Variable: log of ESG Score*			
	(1)	*(2)*	*(3)*	*(4)*
Insider Trading $_{t-1}$	-0.040***	-0.040***	-0.036***	-0.036***
	(0.007)	(0.007)	(0.007)	(0.007)
Executive Ownership $_{t-1}$			-1.020***	-1.030***
			(0.191)	(0.205)
Firm Size $_{t-1}$	0.169***	0.171***	0.167***	0.168***
	(0.015)	(0.016)	(0.014)	(0.015)
Tangibility $_{t-1}$	0.127	0.138	0.151	0.156
	(0.108)	(0.108)	(0.115)	(0.115)
Leverage $_{t-1}$	-0.011	-0.013	-0.045	-0.046
	(0.050)	(0.054)	(0.052)	(0.054)
Profitability $_{t-1}$	0.208	0.224	0.350***	0.375***
	(0.145)	(0.144)	(0.118)	(0.116)
Tobin's Q $_{t-1}$	0.024***	0.024***	0.012	0.011
	(0.008)	(0.008)	(0.009)	(0.009)
Constant	1.356***	1.542***	1.343***	1.622***
	(0.150)	(0.153)	(0.149)	(0.168)
Industry FE	Yes	No	Yes	No
Time FE	Yes	No	Yes	No
Industry × Time FE	No	Yes	No	Yes
Observations	13,120	13,120	9,073	9,073
Unique Firms	2,322	2,322	1,314	1,314
Adjusted R^2	0.321	0.323	0.357	0.358

This table reports the OLS estimation of the impact of insider trading activity and executive ownership on ESG performance, according to equation (3), reduced by excluding *R&D* from the control variables. *ESG Score* is the natural logarithm of the total ESG score computed by Refinitiv. *Insider Trading* is the absolute total number of shares traded by executives in a given year divided by the total number of shares outstanding at year-end. *Executive Ownership* is the percentage of shares owned by company executives out of the total number of shares outstanding. *Firm Size* is the natural logarithm of total assets. *Tangibility* is the ratio of property, plant and equipment to total assets. *Leverage* is the ratio of total debt to total assets. *Profitability* is the net income plus interest expenses over total assets. *Tobin's* Q is the market value over the book value of assets. All the independent variables are lagged by one period. Appendix A in the paper provides a detailed description of all the variables. Robust, firm-clustered standard errors are reported in parentheses. ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

Table A XIII – Executive ownership and separate E and S scores – Robustness test excluding R&D

Independent Variable	***Log E Score*** *(1)*	***Log S Score*** *(2)*
Executive Ownership $_{t-1}$	-2.171***	-0.925***
	(0.642)	(0.306)
Firm Size $_{t-1}$	0.610***	0.182***
	(0.033)	(0.020)
Tangibility $_{t-1}$	0.617*	0.244
	(0.335)	(0.157)
Leverage $_{t-1}$	-0.411	-0.062
	(0.266)	(0.073)
Profitability $_{t-1}$	0.733**	0.325*
	(0.369)	(0.172)
Tobin's Q $_{t-1}$	0.041	0.037***
	(0.026)	(0.009)
Constant	-4.055***	1.203***
	(0.366)	(0.173)
Industry FE	Yes	Yes
Time FE	Yes	Yes
Observations	9,213	9,213
Unique Firms	1,330	1,330
Adjusted R^2	0.425	0.311

This table reports the OLS estimation of the impact of executive ownership on the environmental (*E*) and social (*S*) components of ESG performance, according to equations (**4**) and (5), reduced by excluding *R&D* from the control variables. In column (1), we report results on the natural logarithm of the *Environment* (*E*) *Score*, according to equation (4). In column (2), we present results on the natural logarithm of the *Social* (*S*) *Score*, according to equation (5). *Executive Ownership* is the percentage of shares owned by company executives out of the total number of shares outstanding. *Firm Size* is the natural logarithm of total assets. *Tangibility* is the ratio of property, plant and equipment to total assets. *Leverage* is the ratio of total debt to total assets. *Profitability* is the net income plus interest expenses over total assets. *Tobin's Q* is the market value over the book value of assets. *R&D* is the natural logarithm of research and development expenses. All the independent variables are lagged by one period. Appendix A in the paper provides a detailed description of all the variables. Robust, firm-clustered standard errors are reported in parentheses. ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

Table A XIV – Insider trading and separated E and S scores – Robustness test excluding R&D

Independent Variable	*E Score* *(1)*	*S Score* *(2)*
Insider Trading $_{t-1}$	-0.085***	-0.020**
	(0.017)	(0.008)
Executive Ownership $_{t-1}$	-2.177***	-0.909***
	(0.665)	(0.298)
Firm Size $_{t-1}$	0.566***	0.173***
	(0.030)	(0.018)
Tangibility $_{t-1}$	0.557*	0.216
	(0.337)	(0.158)
Leverage $_{t-1}$	-0.368	-0.055
	(0.273)	(0.076)
Profitability $_{t-1}$	0.732*	0.329*
	(0.380)	(0.175)
Tobin's Q $_{t-1}$	0.025	0.034***
	(0.029)	(0.009)
Constant	-4.247***	1.150***
	(0.388)	(0.187)
Industry FE	Yes	Yes
Time FE	Yes	Yes
Observations	9,073	9,073
Unique Firms	1,314	1,314
Adjusted R^2	0.430	0.315

This table reports the OLS estimation of the impact of insider trading and executive ownership on the environmental (*E*) and social (*S*) components of ESG performance, according to equations (4) and (5), reduced by excluding *R&D* from the control variables. In column (1), we report results on the natural logarithm of the *Environment* (*E*) *Score*, according to equation (4). In column (2), we present results on the natural logarithm of the *Social* (*S*) *Score*, according to equation (5). *Insider Trading* is the absolute total number of shares traded by executives in a given year divided by the total number of shares outstanding at year-end. *Executive Ownership* is the percentage of shares owned by company executives out of the total number of shares outstanding. *Firm Size* is the natural logarithm of total assets. *Tangibility* is the ratio of property, plant and equipment to total assets. *Leverage* is the ratio of total debt to total assets. *Profitability* is the net income plus interest expenses over total assets. *Tobin's Q* is the market value over the book value of assets. All the independent variables are lagged by one period. Appendix A in the paper provides a detailed description of all the variables. Robust, firm-clustered standard errors are reported in parentheses. ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.