Linking Executive Pay to ESG Goals: The Role of Board Gender Diversity

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Abstract

This study examines the relationship between board gender diversity and the tendency of firms to incorporate ESG metrics in performance-based compensation. We find that firms with female directors are more likely to shape their executive remuneration plans to be more ESG-oriented. The positive relationship is the most significant with environmental and social sub-categories. Our findings highlight the benefits of female participation in corporate leadership.

Key words: ESG, CSR, Executive Compensation, Diversity, Gender, Board of Directors

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1   Introduction

Public corporations in the US have increasingly used performance-based grants as part of their executive compensation. In contrast to the traditional time-based vesting provisions in which grants are vested after a certain amount of time, performance-based awards accelerate or trigger vesting based on one or more performance goals. Edmans et al. (2021) suggest that this variable pay rewards CEOs for their exceptional achievements and boosts their reputation. Therefore, boards of directors can select the performance criteria to incentivize CEOs to achieve specific outcomes beyond their typical duty.

In recent years, women have increasingly served on the board of directors of US firms (DeHaas et al., 2019). Even though the finance literature has extensively studied the benefits that female directors bring to corporate leadership, we are interested in examining how board gender diversity affects the choices of performance criteria in executive compensation plans. Specifically, we analyze whether more gender-diverse boards are more likely to incorporate ESG metrics, which are critical issues on the corporate agenda nowadays, in determining performance-based compensation.

Prior studies generally agree on the positive relationship between board gender diversity and ESG outcomes. Firms with gender-diverse boards engage in less financial manipulation (Wahid, 2019), are more responsive to product quality failures (Wowak et al., 2021), and donate more to disaster relief (Jia & Zhang, 2013). Notably, female directors are more attentive to environmental issues, as firms led by them face fewer environmental lawsuits (Liu, 2018) and achieve lower greenhouse gas emissions (Kreuzer & Priberny, 2022). Greater female representation on boards is also positively associated with environmental innovation (Nadeem et al., 2020) and biodiversity restoration and protection (Carvajal et al., 2022). These findings support the socialization theory that

women exhibit helping and community-care behaviors (Eagly & Steffen, 1986). Therefore, we expect a positive relationship between board gender diversity and the incorporation of ESG criteria in performance-based compensation plans.

Our research contributes to the literature in several ways. Our first contribution is to provide detailed descriptive statistics on various components of ESG-related grants awarded to named executives by US public firms over the period 2018-2020. While the topic of ESG pay has attracted great attention from media and general public, academic research in this topic has been limitted. Utilizing the recent updates in the ISS Incentive Lab dataset, we provide a comprehensive descriptive analysis of compensation contracts with ESG goals using by US firms. To the best of our knowledge, we are the first to study the topic of linking executive remuneration to ESG performance goals in the US context empirically.

Second, we provide some insights into determinants of embedding ESG performance into executive compensation decision. Firm size, book-to-market ratio, and the board size appear to be important determinants. Additionally, the specific nature of the industry in which a firms operate explain a larger part of firm's decision to adopt ESG pay.

Third, we examine the role of board gender diversity in incorporating ESG-related goals into the executive compensation plans. The empirical results in our study suggest that firms with more female directors are more likely to use ESG-related performance-based compensation. In detail, we find that an increase of one standard deviation in the proportion of female directors is associated with a 2.3-percentage-point increase in the probability of firms considering ESG performance metrics in executive compensation plans. The effect is also economically significant, equivalent to a 14.4% increase relative to the mean of 16% of executive compensation packages with ESG goals in our sample.

Next, we document a positive relationship between board gender diversity and the Social and Environment components. This result is consistent with the socialization theory that women show great responsibility for the environment and community. Our findings remain robust when we use logistics regressions instead of OLS regressions. Finally, we employ the proportion of female directors of local firms in the same state as an instrumental variable to address the endogeneity concern and provide evidence on the causal relationship between board gender diversity and ESG criteria in executive compensation.

Our study relates to prior studies that report evidence of the positive impacts of female directors on ESG performance (Rao & Tilt, 2016; Amorelli & García-Sánchez, 2021). We provide additional insights into the channel through which firms with gender-diverse boards can achieve better environmental and social outcomes. Specifically, these firms tend to tie performance-based compensation to ESG criteria, incentivizing CEOs to perform well in these aspects.

We also contribute to the mixed empirical evidence on the influence of female directors on executive pay. Nguyen et al. (2020) summarizes the literature and suggest diverging findings on the relationship between board gender diversity and executive compensation. Bugeja et al. (2016), however, find that compensation committee gender diversity, not board gender diversity, negatively affects CEO remuneration. Interestingly, Sarhan et al. (2019) provide evidence that female directors help improve pay-for-performance sensitivity. Our study analyzes the impacts of board gender diversity on executive compensation from a different perspective. We demonstrate that women on corporate boards can shape performance-based grants to be more ESG-oriented.

The remainder of the paper is organized as follows: Section 2 provides the data sources and description of our sample. Section 3 presents and discusses the empirical results, and

Section 4 concludes the study.

2 Data

2.1 Executive compensation & ESG goals

We obtain data on executive compensation awards from ISS Incentive Lab, a dataset of details on grants (stock, option, cash) to named executives officers collected from proxy statements (DEF 14A). Incentive Lab covers the 750 largest firms measured by market capitalization each year and the set of 750 changes over time[1]. An executive officer can be awarded several grants during a fiscal year. Incentive Lab dataset includes detailed information on the grant date, type of award (Cash, Options, or Equity), type of performance (absolute or relative to peers), performance targets, metric types, vesting schedule, and other grant features. From 2018 onward, Incentive Lab provides a more granular designation of metric type, allowing us to identify firms awarding grants with ESG-related goals[2].

A grant typically includes multiple performance objectives. We classify a grant as ESG-related if the grant includes at least one performance metric type categorized as "CSR", "Environment", or "Social". In 2018, 158 firms, representing 13.12% of the firms in the Incentive Lab sample, awarded at least one ESG-related grant to their executives. The majority of ESG grants are linked to Social metrics, such as Customer and Product Responsibility, Diversity, Society and Human Rights, etc. As Figure 1 Panel A illustrates,

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[1]In total, Incentive Lab covers around 2,000 US public companies due to the back-fill and forward-fill of data (Li & Peng, 2021).

[2]Before 2018, metric types are classified as "Accounting", "Stock Price", and "Other". Since 2018, values on metric types are: "Activity-related", "Balance Sheet-related", "Cash Flow", "CSR", "Earnings/Profit-related", "Economic Value", "Environment", "Financial/Investment return ratios", "Liquidity/Solvency-related", "Market-related", "Non-Financial , "Other", "Revenue-related", and "Social".

the number of firms awarding ESG-related grants increases monotonically from 2018 to 2020. There is also an increasing trend of firms tying executive compensation plans to all CSR, Environment, and Social metrics.

[Insert Table 1 here]

In total, US companies awarded 3,082 ESG-related grants during our sample period. Table 1 Panels B-D provide a detailed description of the contractual features and Figure 1 presents the time-series trend of ESG grants. In terms of award type, 85.75% of ESG grants are cash-based, with the average target payout of $773,076 (18.17% of total compensation during the same fiscal year). Restricted stocks account for 13.73% of the sample with the average of around 1.6 million dollars fair value at the grant date. Very few companies offer option awards with ESG goals. The number of ESG-related option grants decreased from 11 in 2018 to 2 in 2020. Companies tend to use short-term goals (the performance evaluation period of 12 months or less), with most grants tied to absolute performance goals (78.97%) or a mix of absolute and relative performance goals (20.44%).

[Insert Figure 1 here]

2.2 Board gender diversity and other control variables

Our board composition variables are constructed from BoardEx. As consistent with general gender-related literature (Adams & Ferreira, 2009; Bennouri et al., 2018; Chen et al., 2019), our main measurement of board gender diversity is the percentage of board members who are females (*Board Gender Diversity*).

To capture the role of board of directors, we add several corporate governance characteristics following the literature. *Board Size* is the number of directors on board. *Board Independence* is the proportion of independent directors to the total number of board

members. Furthermore, *CEO-Chair Separation* is an indicator variable that takes a value of one if the CEO is not the chair of the board of directors and zero otherwise.

We then merge the data with Compustat and CRSP using the BoardEx-CRSP Compustat Link table from WRDS. Our firm characteristics control variables are total assets, return-on-assets (ROA), book-to-market ratio, leverage, and stock return volatility. We also obtain Fama-French 48-industry classifications from Kenneth French's website and assign each firm to 1 of the 48 Fama-French industries based on its SIC code. The final sample includes 2,092 firm-year observations.

2.3 Descriptive statistics

Table 2 presents the descriptive statistics of the variables we use in this study. In Panel A, we summarizes the ESG pay at the firm-year level. Around 16% of firm-year observations have at least one ESG-related goal in their compensation awards. Among the three sub-categories, Social metrics appear to be the most frequently used, with 14% of firm-year compensation schemes tied to this component. Only 3% and 4% of executive remuneration plans in our sample incorporate CSR and Environmental goals, respectively.

[Insert Table 2 here]

Table 2, Panel B demonstrates that an average firm in our sample has approximately 10 directors on boards, 22.03% of board members are female, and 72.77% of directors are independent. 63% of firm-year observations have the CEO not simultaneously serving as the chair of the board of directors. Finally, regarding the firm accounting information, an average firm has total assets of $45,962 million, a book-to-market ratio of 0.51, a return on assets (ROA) of 5.80%, a leverage ratio of 1.92, and institutional ownership of 79.53%.

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3   Empirical results

3.1   Baseline results

We examine the impact of board gender diversity on a firm's decision to link executive compensation to ESG goals by estimating the following regression:

$$ESG_{it} = c + \beta \times BoardGenderDiversity_{i,t-1} + Controls + e_{it} \qquad (1)$$

where the dependent variable, ESG_{it}, is a dummy variable taking value of one if firm i has at least one compensation award with ESG-related goal during year t and zero otherwise. Our main dependent variable is *Board Gender Diversity* which measures the proportion of female directors of all directors. A positive value of β would indicate that more female directors on the board is associated with a higher probability of the firm incorporating ESG-related goals into executive compensation.

We follow prior research and include a set of control variables related to various firm and board characteristics: total assets (*Assets*), return on assets (*ROA*), book-to-market ratio (*BM*), leverage (*Leverage*), number of directors (*Board size*), the fraction of shares held by institutional investors (*Institutional Ownership*), stock return volatility over the previous 12 months (*Stock Volatility*), the proportion of independent directors to the total number of board members (*Board Independence*), and whether the CEO is also the chairman of the board (*CEO-Chair Separation*). To alleviate the reverse causality concern, all independent variables are lagged one year.

[Insert Table 3 here]

Table 3 reports the pooled OLS estimation of equation (1). The results strongly indicate

that board gender diversity has a positive impact on firms' decisions to include ESG goals in executive compensation packages. In column 1, we include only the main dependent variable, *Board Gender Diversity*, and a constant in the regression. In columns 2 and 3, we include a set of control variables and different combinations of fixed effects. We include year fixed effects to account for the trend of incorporating ESG-related issues in decision-making over time. ESG consideration is likely to cluster in several industries due to the nature of their operation, normative pressures involving regulatory standards or governance mechanisms (Epstein & Schnietz, 2002; Jackson & Apostolakou, 2010; Borghesi et al., 2014; Aslan et al., 2021), hence, we also include industry-fixed effects in the regression and report the result in column 3. The substantial increase in adjusted R-squared when industry fixed effects are added indicates that industry-specific effects explain a larger part of firms' decision to link executive pays to ESG performance metrics.

Across specifications, the coefficient on the main dependent variable is positive and statistically significant at the 1% level, indicating that firms with more board gender diversity are more likely to use ESG-related performance metrics. Specifically, one standard deviation increase in the proportion of female directors on board (10.43%) is associated with a 2.3 percentage point increase in the probability of firms using ESG-related performance-based compensation. The coefficient is also economically significant. Compared to the mean of 16%, an increase of 2.3 percentage points represents a 14.4% higher.

With respect to firm characteristics, larger firms, firms with a higher book-to-market ratio, and firms with a larger board size are more likely to adopt ESG-related performance pay. Interestingly, the presence of institutional investors does not have an impact on the probability of offering ESG-related compensation contracts, which contradicts the findings by Focke (2022) using a sample of European firms.

3.2   Results on sub-categories

As shown in section 2.1, the majority of ESG grants are linked to Social metrics. In this section, we further examine whether board gender diversity has a different impact on different types of ESG-related grants. We run regression (1) replacing the *ESG* with dummy variables *CSR*, *Social*, and *Environment* indicating whether a firm uses compensation awards with CSR-, social-, and environment-related goals, respectively. Note that these 3 dummy variables are not mutually exclusive.

[Insert Table 4 here]

Table 4 reports the OLS results on sub-categories. The coefficient on *Board Gender Diversity* is positive and statistically significant at 5% level in columns (2) and (3) while indistinguishable from zero in column (1). The proportion of female directors on board appears to have a positive impact on firms awarding performance-based grants with Social and Environment metrics. In terms of economic magnitude, one standard increase in board gender diversity measure increases the propensity of a firm to use Social (Environment) performance metrics by 2.6 (0.94) percentage points, representing 36% (23.5%) increase compared to the mean. In contrast, more women on board do not increase nor decrease the propensity of a firm using CSR performance metrics.

3.3   Robustness checks

To ensure that our results are robust, we execute a number of robustness checks. First, we run the logit/probit regression. Second, we use the instrumental variable method to address the potential endogeneity concern.

3.3.1 Logit regression

Since the dependent variables are binary, a more appropriate approach would be using a nonlinear model instead of OLS. Hence, we employ logit regression as a robutsness check for our results. That is, we estimate the following model:

$$Pr(ESG_{it} = 1) = \Lambda(c + \beta \times BoardGenderDiversity_{i,t-1} + Controls) \qquad (2)$$

where Λ denotes the logistic function. The results are reported in Table 5. Column 1 reports the result of logit regression when the dependent variable is the probability of a firm using ESG-related performance goals. In columns 2-4, we replace the dependent variable by the sub-categories of ESG metrics, namely CSR, Social, and Environment. The results are consistent with OLS regressions in Tables 3 and 4. Our results are also robust when using probit regression (not tabulated). Taken together, our results are consistent and support the hypothesis that the presence of women on board of directors increases the probability of a firm using ESG performance goals in designing executive compensation contract.

[Insert Table 5 here]

3.3.2 Instrumental Variable

One potential issue in our analysis is the endogeneity problem. Reverse causality, where firms increase female presence on board following incentives set by the compensation contract, can be a source of endogeneity. Using the lagged dependent variables can help mitigate the reverse causality problem. Simultaneity can also cause endogeneity. For instance, more socially responsible firms are more likely to have more female directors.

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Another source of endogeneity is omitted variables. For example, investor preferences can both drive firms to increase the presence of female directors and demand executive compensation to be tied to ESG performance. In all cases, the presence of endogeneity can cause the OLS coefficients to be biased and inconsistent.

To address the potential issue, we employ the instrumental variable (IV) method and use 2SLS estimation. A valid instrument needs to be correlated with the presence of female directors (Relevance condition) but has no direct impact on the firm's propensity to use ESG performance goals except through control variables included in the regression (Exclusion condition). While the relevance condition can be tested directly by running a regression of *Board Gender Diversity* on the instrument (first-stage regression), there is no formal way to test the exclusion condition. We use *Local Firm BGD*, measured as the average proportion of female directors on boards of other firms in the same state, as the instrument for our main dependent variable. Since the average board gender diversity of other local firms represents the proportion of potential female directors from a pool of local directors, it is likely that the instrument is positively correlated with our measure of *Board Gender Diversity*. We argue that our instrument is valid as it is unclear how the proportion of female directors on board of *other* local firms can have a direct impact on the a firm's decisions related to executive compensation contract design.

[Insert Table 6 here]

Table 6 reports the 2SLS estimation of the IV analysis. Column 1 reports the results of the first stage regression examining the Relevance condition. As expected, our instrumental variable is highly correlated with the main variable of interest. The coefficient on *Local Firm BGD* is positive and statistically significant at the 1% level, indicating that a higher proportion of female directors on boards of other local firms is associated with

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a more female presence on board. Moreover, the magnitude of coefficient is large. An once percent increase in the average proportion of female directors of other local firms increases the board gender diversity by almost 0.5 percent. This result confirms that our instrument satisfies the relevance condition.

The results of the second-stage regressions are shown in columns 2-5 of Table 6. In the second stage, the dependent variables are regressed on predicted board gender diversity from the first-stage regression and a set of control variables. The conclusion is that board gender diversity, ceteris paribus, increases the likelihood of firms using ESG-related goals for performance-based compensation packages. More importantly, the results are strongly significant when the ESG-related goals use environmental metrics.

4   Conclusion

This study documents the positive impact of board gender diversity on the likelihood of firms incorporating ESG metrics in performance-based executive compensation. Among the sub-components, the positive relationship is the most significant with social and environmental goals. The effect of board gender diversity on ESG-oriented compensation plans is likely causal, as confirmed by the instrumental variable analysis.

While the previous literature suggests firms with gender-diverse boards achieve better social and environmental outcomes, we present a channel for this positive benefit. By considering ESG criteria in executive remunerations, female directors can incentivize CEOs to perform well in these aspects. Overall, our findings highlight the beneficial impacts of female participation in corporate leadership.

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Figure 1: ESG-related grants during 2018-2020

A. Number of firms awarding ESG grants

B. Number of firms awarding ESG grants by type
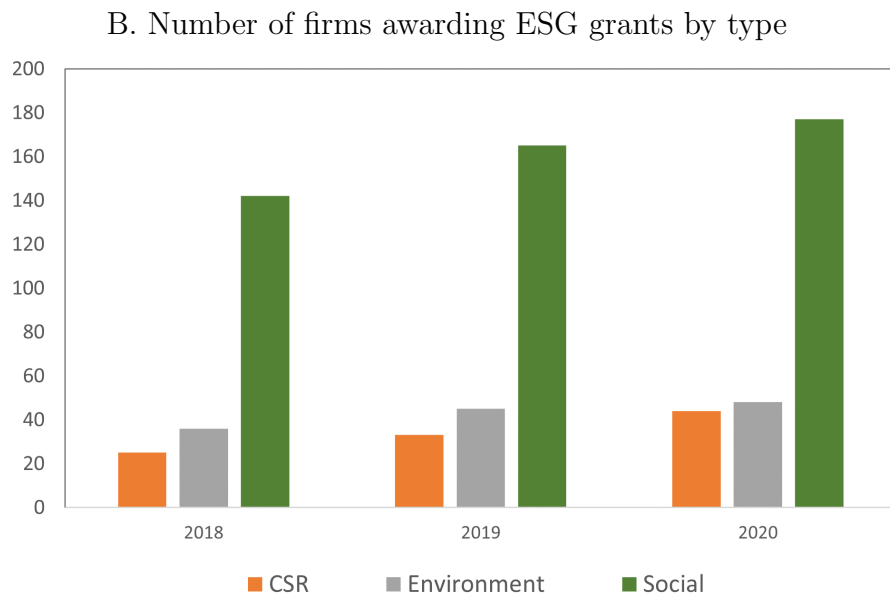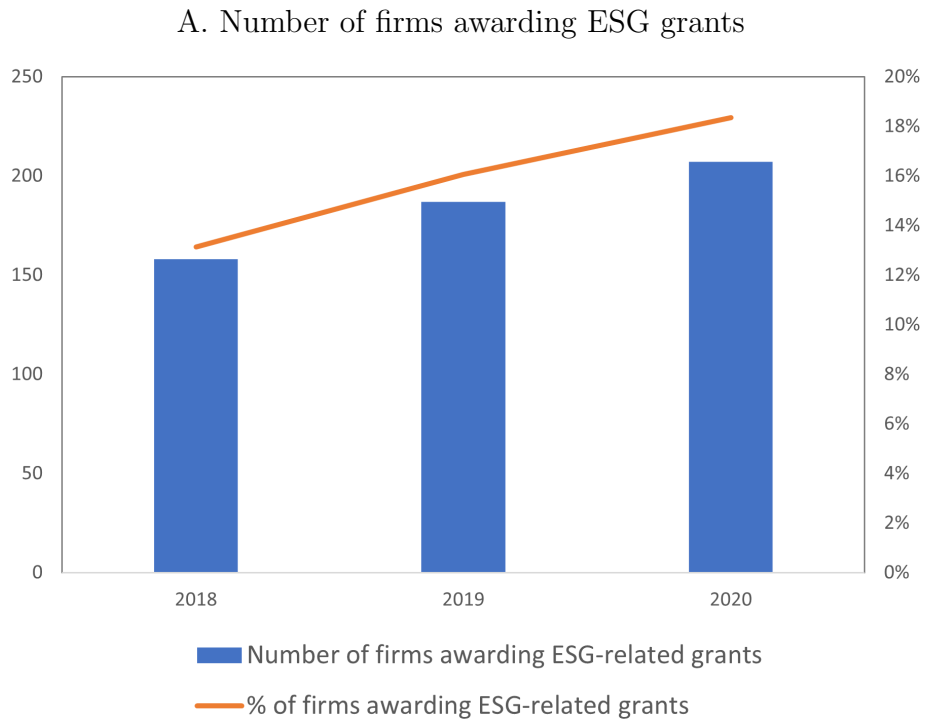
C. ESG grants by award type
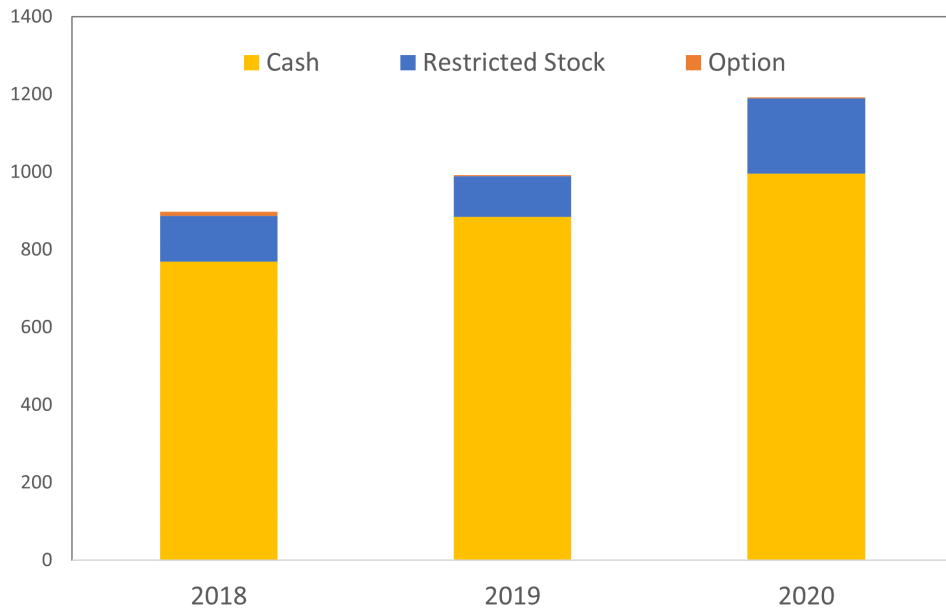
D. ESG pay as % of total compensation
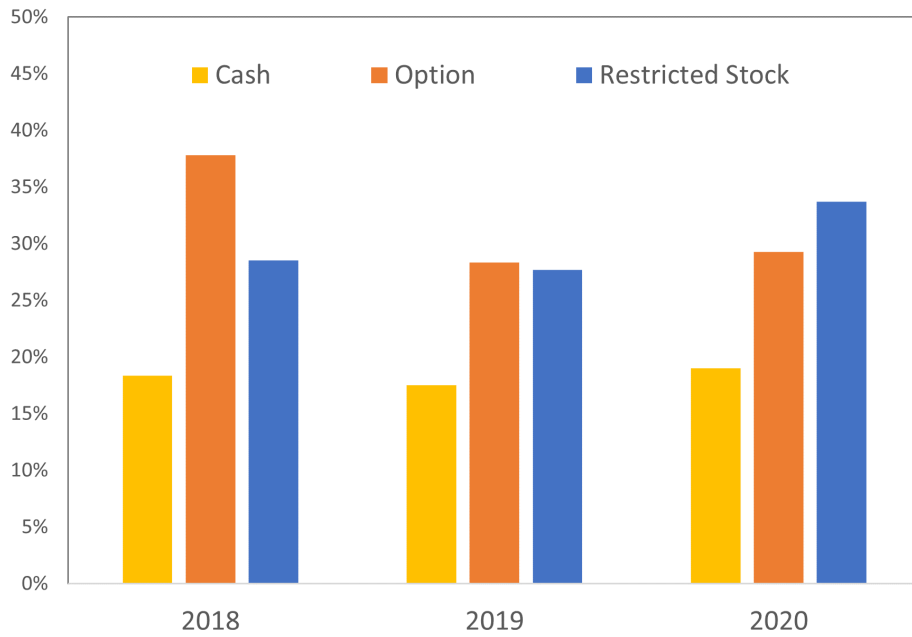
E. Long-term vs. Short-term goals
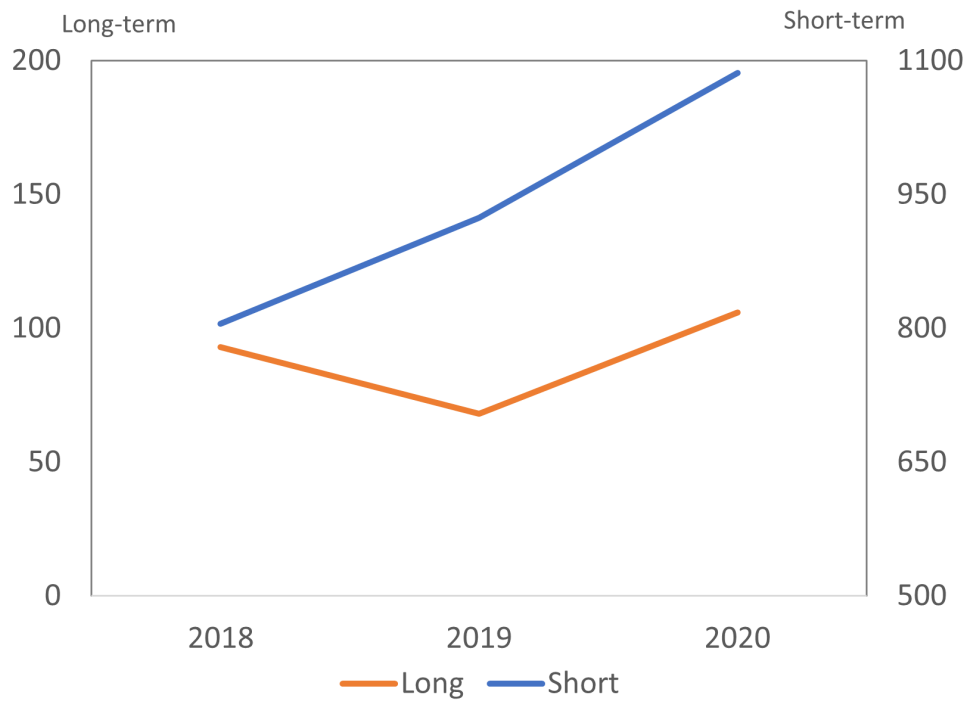
F. ESG grants by performance type
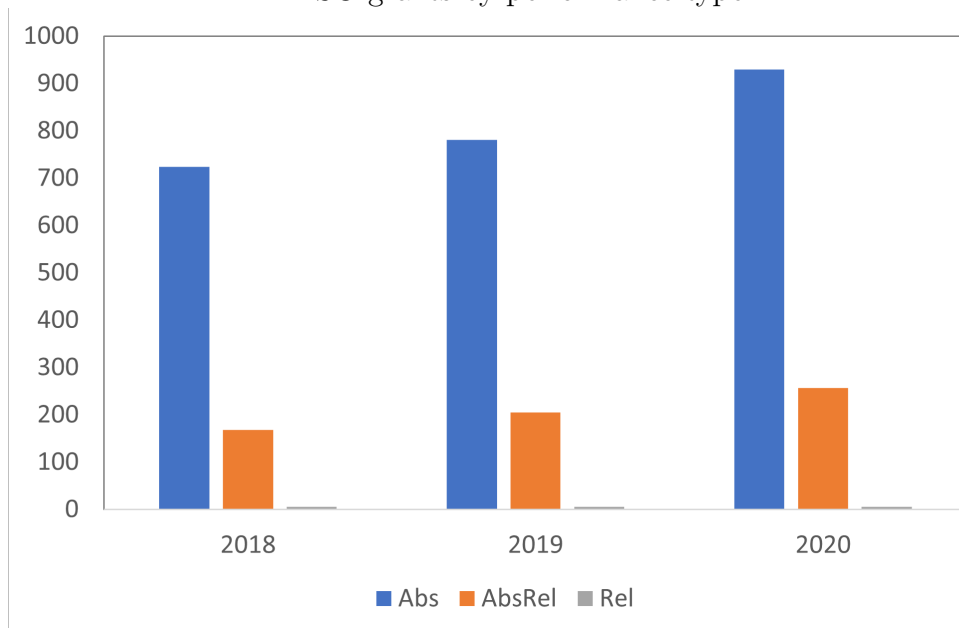
Table 1: ESG grant features

This table presents descriptive statistics for ESG-related grants awarded by US companies from 2018-2020. A grant is classified as ESG-related if the grant includes at least one performance metric categorized as "CSR", "Environment", or "Social".

Panel A: Number of firms with ESG grants

Year	# ESG grants	# firms with ESG Grant	% total firms	CSR	Environment	Social
2018	898	158	13.12%	25	36	142
2019	992	187	16.05%	33	45	165
2020	1192	207	18.35%	44	48	177

Panel B: ESG grants by awards type

Year	Cash	Option	Restricted Stock
2018	769	11	118
2019	884	3	105
2020	996	2	194
2018 - 2020	*85.95%*	*0.52%*	*13.53%*

Panel C: ESG pay

Year	Cash Target payout ($)	Cash % of total pay	Option Fair value ($)	Option % of total pay	Restricted Stock Fair value ($)	Restricted Stock % of total pay
2018	707,829	18.35%	1,800,054	34.39%	1,586,108	25.47%
2019	738,067	17.53%	612,972	28.33%	1,856,651	24.50%
2020	854,543	19.03%	765,272	29.25%	1,522,444	27.86%
2018 - 2020	*773,076.80*	*18.17%*	*1,448,129*	*32.61%*	*1,627,474*	*26.32%*

Panel D: ESG grants by type

Year	Long-term vs. Short-term Short	Long	Performance type Absolute	Absolute & Relative	Relative
2018	805	93	724	168	6
2019	924	68	781	205	6
2020	1086	106	929	257	6

Table 2: Summary statistics

This table presents summary statistics for key variables used in the analysis below. The sample period is 2018-2020. ESG is a dummy variable taking the value of one if a firm has at least one compensation award with an ESG-related goal and zero otherwise. CSR, Social, Environment are dummy variables indicating firms with compensation awards with CSR-, social-, and environment-related goals, respectively. Firm characteristics include the proportion of female directors on board (*Board gender diversity*), total assets (*Assets*), return on assets (*ROA*), book-to-market ratio (*BM*), leverage (*Leverage*), number of directors (*Board size*), the fraction of shares held by institutional investors (*Institutional Ownership*), stock return volatility over the previous 12 months (*Stock Volatility*) proportion of independent directors to the total number of board members (*Board Independence*), and whether the CEO is also the chairman of the board (*CEO-Chair Separation*).

Variables	N	Mean	SD	P25	Median	P75
Executive compensation with ESG goals						
ESG	2092	0.16	0.37	0	0	0
CSR	2092	0.03	0.18	0	0	0
Social	2092	0.14	0.35	0	0	0
Environment	2092	0.04	0.20	0	0	0
Firm characteristics						
Board Gender Diversity (%)	2092	22.03	10.43	14.29	22.22	28.57
Assets ($ Mil.)	2092	45962.34	187161.00	3113.26	7765.28	24895.60
ROA	2092	5.80	6.12	1.13	4.27	8.61
BM	2092	0.51	0.55	0.19	0.37	0.69
Leverage	2092	1.92	12.94	0.36	0.76	1.38
Board Size	2092	10.07	2.18	9	10	11
Institutional Ownership (%)	2092	79.53	20.09	71.85	83.19	92.00
Stock Volatility	2092	0.08	0.04	0.05	0.07	0.10
Board Independence	2092	72.77	10.64	66.67	75.00	80.00
CEO Chair Separation	2092	0.63	0.48	0	1	1
Local Firm BGD (%)	2092	16.08	2.86	14.18	15.77	18.13

Table 3: Board gender diversity and ESG goals

This table reports the OLS regression examining the impact of board gender diversity on the probability of firm incorporating ESG goals into executive plans. The dependent variable (*ESG*) is a dummy variable taking the value of one if a firm has at least one compensation award with ESG-related goal and zero otherwise. *Board gender diversity* is the proportion of female directors on board. Control variables include total assets (*Assets*), return on assets (*ROA*), book-to-market ratio (*BM*), leverage (*Leverage*), number of directors (*Board size*), the fraction of shares held by institutional investors (*Institutional Ownership*), stock return volatility over the previous 12 months (*Stock Volatility*) proportion of independent directors to the total number of board members (*Board Independence*), and whether the CEO is also the chairman of the board (*CEO-Chair Separation*). All dependent variables are lagged one year. Industry fixed effects are constructed based on the Fama-French 48-industry classification. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)
	ESG	ESG	ESG
Board gender diversity	0.0023***	0.0017**	0.0022***
	(0.0008)	(0.0008)	(0.0007)
Log (Assets)		0.0247***	0.0182***
		(0.0067)	(0.0063)
ROA		-0.0022	-0.0008
		(0.0014)	(0.0013)
BM		0.0615***	-0.0110
		(0.0161)	(0.0155)
Leverage		0.0001	0.0001
		(0.0006)	(0.0005)
Log (Board Size)		0.0411	0.0718*
		(0.0449)	(0.0405)
Institutional Ownership		-0.0003	0.0002
		(0.0004)	(0.0004)
Stock Volatility		0.2804	0.5917***
		(0.2170)	(0.2045)
Board Independent		-0.0015*	-0.0017**
		(0.0008)	(0.0007)
CEO-Chair Separation		-0.0125	-0.0003
		(0.0170)	(0.0152)
Constant	0.1119***	-0.0967	-0.1475
	(0.0188)	(0.1061)	(0.0964)
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Number of observations	2092	2092	2077
Adj. R-squared	0.004	0.033	0.290

Table 4: Results on sub-categories

This table reports subcomponent analysis examining the impact of board gender diversity on the probability of firms incorporating ESG goals into executive plans. *CSR*, *Social*, *Environment* are dummy variables indicating firm with compensation awards with CSR-, social-, and environment-related goals, respectively. *Board Gender Diversity* is the proportion of female directors on board. Control variables include total assets (*Assets*), return on assets (*ROA*), book-to-market ratio (*BM*), leverage (*Leverage*), number of directors (*Board size*), the fraction of shares held by institutional investors (*Institutional Ownership*), stock return volatility over the previous 12 months (*Stock Volatility*) proportion of independent directors to total number of board members (*Board Independence)*, and whether the CEO is also the chairman of the board (*CEO-Chair Separation*). All dependent variables are lagged one year. Industry fixed effects are constructed based on the Fama-French 48-industry classification. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)
	CSR	Social	Environment
Board gender diversity	-0.0001	0.0025***	0.0009**
	(0.0004)	(0.0007)	(0.0004)
Log (Assets)	0.0055*	0.0176***	0.0076**
	(0.0033)	(0.0061)	(0.0033)
ROA	0.0001	-0.0005	-0.0002
	(0.0007)	(0.0012)	(0.0007)
BM	-0.0139*	-0.0014	-0.0166**
	(0.0082)	(0.0151)	(0.0082)
Leverage	-0.0001	0.0002	-0.0000
	(0.0003)	(0.0005)	(0.0003)
Log (Board Size)	0.0037	0.0593	-0.0172
	(0.0215)	(0.0394)	(0.0215)
Institutional Ownership	-0.0000	0.0002	0.0001
	(0.0002)	(0.0004)	(0.0002)
Stock Volatility	0.1944*	0.4652**	-0.0946
	(0.1088)	(0.1988)	(0.1086)
Board Independent	0.0002	-0.0014*	0.0006
	(0.0004)	(0.0007)	(0.0004)
CEO-Chair Separation	0.0151*	0.0005	-0.0043
	(0.0081)	(0.0148)	(0.0081)
Constant	-0.0537	-0.1599*	-0.0397
	(0.0513)	(0.0937)	(0.0512)
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Number of observations	2077	2077	2077
Adj. R-squared	0.121	0.243	0.318

Table 5: Logit regression

This table reports the logit regression examining the impact of board gender diversity on the probability of firms incorporating ESG goals into executive plans. *ESG* is a dummy variable taking the value of one if a firm has at least one compensation award with ESG-related goal and zero otherwise. *CSR*, *Social*, *Environment* are dummy variables indicating firms with compensation awards with CSR-, social-, and environment-related goals, respectively. *Board gender diversity* is the proportion of female directors on board. Control variables include total assets (*Assets*), return on assets (*ROA*), book-to-market ratio (*BM*), leverage (*Leverage*), number of directors (*Board size*), the fraction of shares held by institutional investors (*Institutional Ownership*), stock return volatility over the previous 12 months (*Stock Volatility*) proportion of independent directors to the total number of board members (*Board Independence*), and whether the CEO is also the chairman of the board (*CEO-Chair Separation*). All dependent variables are lagged one year. Industry fixed effects are constructed based on the Fama-French 48-industry classification. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
	ESG	CSR	Social	Environment
Board gender diversity	0.0268***	-0.0031	0.0313***	0.0448***
	(0.0081)	(0.0169)	(0.0083)	(0.0170)
Log (Assets)	0.2094***	0.2452*	0.2218***	0.4635***
	(0.0667)	(0.1304)	(0.0693)	(0.1539)
ROA	-0.0078	0.0058	-0.0060	0.0160
	(0.0151)	(0.0246)	(0.0161)	(0.0379)
BM	-0.1316	-0.3724	-0.0509	-0.2130
	(0.1459)	(0.2954)	(0.1412)	(0.3316)
Leverage	0.0016	-0.1165	0.0023	0.0271
	(0.0049)	(0.1228)	(0.0048)	(0.0397)
Log (Board Size)	0.8625**	0.2317	0.8272*	0.1133
	(0.4367)	(0.7836)	(0.4528)	(0.8272)
Institutional Ownership	0.0033	0.0009	0.0036	0.0099
	(0.0040)	(0.0069)	(0.0040)	(0.0077)
Stock Volatility	6.4591***	7.3649**	5.7523***	-0.6652
	(2.0277)	(3.6775)	(2.1803)	(5.2525)
Board Independent	-0.0187**	0.0006	-0.0170**	0.0077
	(0.0078)	(0.0141)	(0.0080)	(0.0120)
CEO-Chair Separation	-0.0002	0.5287*	0.0131	-0.1905
	(0.1603)	(0.3054)	(0.1648)	(0.3126)
Constant	-5.8587***	-6.1889***	-6.1245***	-10.3857***
	(1.1429)	(2.1794)	(1.1913)	(2.4766)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Number of observations	1991	1205	1934	429
Pseudo R-squared	0.270	0.209	0.237	0.285

Table 6: Instrumental variable analysis

This table reports the results of instrumental variable two-stage least square (2SLS) regression. Column 1 reports the first-stage regression results where the dependent variable is *Board gender diversity*. The instrumental variable is *Local Firm BGD*, the average proportion of female directors on the board of other firms in the same state. Columns 2,3,4 report the second-stage regression results where the dependent variable is the dummy variable indicating the firm with compensation awards with ESG goals. Control variables include total assets (*Assets*), return on assets (*ROA*), book-to-market ratio (*BM*), leverage (*Leverage*), number of directors (*Board size*), fraction of shares held by institutional investors (*Institutional Ownership*), stock return volatility over the previous 12 months (*Stock Volatility*) proportion of independent directors to total number of board members (*Board Independence*), and whether the CEO is also the chairman of the board (*CEO-Chair Separation*). All dependent variables are lagged one year. Industry fixed effects are constructed based on the Fama-French 48-industry classification. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	First Stage	Second Stage			
	(1)	(2)	(3)	(4)	(5)
	Board gender diversity	ESG	CSR	Social	Environment
Board gender diversity		0.0003	-0.0039	0.0052	0.0103**
		(0.0072)	(0.0039)	(0.0070)	(0.0043)
Log (Assets)	1.1534***	0.0204**	0.0099*	0.0144	-0.0033
	(0.1850)	(0.0103)	(0.0056)	(0.0100)	(0.0062)
ROA	0.0598	-0.0007	0.0003	-0.0007	-0.0007
	(0.0372)	(0.0013)	(0.0007)	(0.0013)	(0.0008)
BM	-0.4245	-0.0121	-0.0160*	0.0001	-0.0114
	(0.4603)	(0.0158)	(0.0086)	(0.0154)	(0.0095)
Leverage	0.0013	0.0001	-0.0001	0.0002	-0.0000
	(0.0160)	(0.0005)	(0.0003)	(0.0005)	(0.0003)
Log (Board Size)	0.3676	0.0730*	0.0059	0.0577	-0.0227
	(1.2024)	(0.0402)	(0.0218)	(0.0392)	(0.0241)
Institutional Ownership	0.0380***	0.0002	0.0001	0.0001	-0.0003
	(0.0108)	(0.0004)	(0.0002)	(0.0004)	(0.0003)
Stock Volatility	-2.4733	0.5847***	0.1808	0.4751**	-0.0606
	(6.0745)	(0.2036)	(0.1106)	(0.1983)	(0.1223)
Board Independent	0.2205***	-0.0012	0.0010	-0.0020	-0.0015
	(0.0216)	(0.0018)	(0.0010)	(0.0017)	(0.0011)
CEO-Chair Separation	-0.8775*	-0.0021	0.0117	0.0030	0.0042
	(0.4519)	(0.0164)	(0.0089)	(0.0160)	(0.0098)
Local Firm BGD	0.4790***				
	(0.1035)				
Constant	-15.3918***	-0.2042*	-0.1231*	-0.1500	-0.0079
	(3.4217)	(0.1216)	(0.0660)	(0.1184)	(0.0730)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Number of observations	2077	2077	2077	2077	2077
Adj. R-squared	0.213	0.287	0.081	0.238	0.126