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Voice Without Influence? Global Investor Voting Rationale Disclosures in Korea

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Sun Min Kim
Korea Institute of Corporate Governance and Sustainability
Woochan Kim
Korea University, AICG and ECGI

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Abstract

This study investigates how global institutional investors respond to gender diversity and climate risk concerns in Korean firms through disclosed voting rationales and how these disclosures subsequently influence corporate policies. We find mixed results. First, voting rationale disclosures are more sensitive to gender diversity concerns than to climate risk. Specifically, investor opposition citing gender diversity decreases as the ratio of female directors rises. However, opposition citing climate risk does not increase in response to higher total CO2 emissions. Second, we find that voting rationale disclosures have a limited influence on gender or climate-related corporate policies. While opposition citing gender diversity appears to prompt increases in the number and ratio of female directors in subsequent years, this pattern is confined to large firms subject to gender quota laws and is observed only during the years preceding the law's implementation. Furthermore, we find that opposition based on climate risk concerns is associated with subsequent reductions in total CO2 emissions, but only for small firms. Lastly, the publication of a sustainability report is associated with higher firm value when global institutional investors do not issue opposing rationales against management proposals, but this association holds only for small firms.

Keywords: institutional investors, shareholder voting, voting rationales, board diversity, carbon emissions

JEL Classifications: G23, G32, G34, J16, Q54

Sun Min Kim
Senior Lead Analyst
Korea Institute of Corporate Governance and Sustainability
76 Yeouinaru-ro Yeongdeungpo-gu
Seoul, South Korea
e-mail: smkim@cgs.or.kr

Woochan Kim*
Professor of Finance
Korea University
Anam, Seongbuk
Seoul 136-701, Korea
phone: +822-3290-2816
e-mail: wckim@korea.ac.kr

*Corresponding Author

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Global Investor Voting Rationale Disclosures in Korea*

Sun Min Kim† and Woochan Kim‡

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First, voting rationale disclosures are more sensitive to gender diversity concerns than to climate risk. Specifically, investor opposition citing gender diversity decreases as the ratio of female directors rises. However, opposition citing climate risk does not increase in response to higher total CO2 emissions.

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† Senior Lead Analyst, Korea Institute of Corporate Governance and Sustainability (KCGS); e-mail: smkim@cgs.or.kr
‡ Corresponding Author. Professor of Finance, Korea University Business School; Research Associate, European Corporate Governance Institute (ECGI); e-mail: wckim@korea.ac.kr; tel.: 02-3290-2816.

I. Introduction

Global institutional investors increasingly view climate risk and board diversity not merely as ethical preferences, but as material financial risks. To mitigate these risks, investors have traditionally relied on two main stewardship channels: 'voice' (e.g., private engagement, shareholder proposals; see Dimson et al., 2015; Gormley et al., 2023) and 'exit' (divestment; see Krueger, Sautner, and Starks, 2020).

However, traditional forms of 'voice' face significant constraints. While effective, mechanisms such as private engagement or shareholder proposals are resource-intensive and typically limited to a small subset of target firms. Addressing this scalability challenge, recent studies by Aggarwal, Dahiya, and Yilmaz (2023) and Macciocchi, Michaely, Rubio, and Yi (2025) highlight the rise of a more efficient form of voice: the disclosure of voting rationales. Unlike the high costs of direct negotiations or activist campaigns, this mechanism leverages the routine proxy voting process to explicitly articulate concerns. By transforming a binary 'against' vote into a public statement of dissent, investors can deliver targeted feedback across a broad universe of firms without incurring the high costs of traditional engagement.

This study investigates whether global institutional investors utilize voting rationales to discipline firms on E&S issues and whether these disclosures successfully catalyze changes in corporate policies. We focus specifically on the Korean market, which offers an ideal setting to examine these dynamics given the severity of its E&S challenges. Korea stands out as a critical outlier among developed economies: it consistently ranks lowest globally in board gender diversity, and its industrial sector remains heavily reliant on fossil fuels (International Energy Agency, 2024; OECD, 2023; and The Economist, 2024).

Utilizing a hand-collected dataset of votes cast by 12 major global institutional investors—including pension giants like Norges Bank Investment Management (NBIM) and

asset managers like BlackRock—at Korean annual general meetings (AGMs) between 2020 and 2024, we examine two primary dimensions of E&S: gender diversity and climate risk.

Our empirical analysis yields three distinct sets of findings regarding the expression of concerns, policy impact, and information value.

First, we find a sharp divergence in how global investors treat gender diversity versus climate risk. Investors actively use voting rationales to discipline firms on gender issues: the likelihood of an opposition vote citing gender diversity increases significantly as a firm's female director ratio decreases. In contrast, we find no statistical association between a firm's total CO_2 emissions and the likelihood of receiving an opposition vote citing climate risk. This suggests that while global investors are strictly enforcing gender mandates, their voting behavior has not yet aligned with their climate commitments in the Korean market.

Second, regarding the real-world impact of these disclosures, the results are nuanced. On the surface, opposition votes citing gender diversity appear to predict future increases in female board representation. However, we document that this effect is largely driven by regulatory compliance. The Korean National Assembly amended the Financial Investment Services and Capital Markets Act (FSCMA) in 2020 to prohibit single-gender boards for firms with assets exceeding 2 trillion KRW. Our tests reveal that improvements in gender diversity are concentrated in these large firms during the pre-deadline period (2020–2022), indicating that regulatory pressure dominates investor influence.

Conversely, for climate risk—where no such mandatory regulation exists—we find evidence of genuine investor influence, but only among smaller firms. While opposition votes have no effect on large firms' emissions, they are associated with significant subsequent reductions in CO_2 emissions for firms with assets under 2 trillion KRW. This supports our "marginal information value" hypothesis: unlike large firms that are saturated with market

feedback, smaller firms treat the specific, public rationale of a global investor as a high-salience signal and a "roadmap" for policy improvement.

Third, we find that voting rationales condition the market value of voluntary disclosures. Generally, publishing a sustainability report is associated with higher firm value (Tobin's *Q*). However, this premium disappears if global investors issue negative voting rationales against the firm. This suggests that voting rationales serve as a credibility check, signaling to the market when a firm's voluntary disclosure may be "greenwashing" or disconnected from its actual risk management.

To the best of our knowledge, this is the first study to empirically test whether the disclosure of voting rationales serves as an effective channel for giving feedback specifically on gender diversity and climate risk, and whether these disclosures successfully drive subsequent changes in corporate policies. While recent scholarship has begun to examine voting rationales, prior studies have focused primarily on the determinants of voting behavior rather than its real-world consequences. For instance, Macciocchi, Michaely, Rubio, and Yi (2025) examine the supply side and document that the decision to disclose is driven by institution-level stewardship incentives. Similarly, while Aggarwal, Dahiya, and Yilmaz (2023) document that board diversity is the most frequently cited reason for opposition in director elections, they do not study the impact of these disclosures on corporate policies. In contrast, our study connects the content of these disclosures directly to real effects, asking not just why investors disclose, but whether this feedback leads to tangible reductions in carbon emissions or increases in board diversity.

Our findings carry significant implications for the debate on shareholder stewardship, suggesting that the simple disclosure of voting rationales is insufficient to deliver concrete policy changes in isolation. While the scalability of this mechanism allows investors to

broadcast concerns efficiently, our results indicate that this "soft" form of voice often falls on deaf ears when not reinforced by binding constraints. We document that the substantial improvements in board gender diversity were driven primarily by the hard legal mandate of the 2020 FSCMA amendment rather than by investor feedback. Furthermore, large firms—which account for the majority of emissions—showed no significant reduction in carbon output following opposition votes. This suggests that while voting rationales successfully function as a credibility check—evidenced by their ability to dampen the valuation premium of sustainability reports —they largely lack the coercive power to force costly operational changes in entrenched corporations without complementary regulatory pressure.

The remainder of this paper is organized as follows. Section II reviews the related literature on institutional voting, E&S engagement, and voluntary disclosure. Section III develops our four testable hypotheses regarding the determinants of voting rationales and their subsequent impact on firm value and policy. Section IV describes our sample construction, variable definitions, and empirical model specifications. Section V presents empirical results on the determinants of opposing votes, their interactions with sustainability reports, and their influence on corporate gender and climate policies. Section VI concludes.

II. Literature Review

This study connects to the literature on shareholder voting by institutional investors concerning gender diversity and climate risk. Specifically, it relates to four research strands.

The first strand of research investigates whether institutional investors value board diversity or greenhouse gas emission reduction efforts by examining their voting patterns. For example, Gow, Larcker, and Watts (2023) find evidence that shareholders provide greater voting support for board-level gender diversity and female director candidates. Similarly,

Aggarwal, Dahiya, and Yilmaz (2023) find that firms with higher MSCI climate scores or a higher fraction of female directors receive fewer opposing votes on management-sponsored director election proposals. Focusing on climate disclosure, Garel, Michaely, and Romec (2025) show that firms failing to disclose carbon emissions receive significantly more votes against their directors. Within this strand, other studies focus on how investor characteristics—such as risk perception or personal experience—drive voting behavior. Using survey data, Krueger, Sautner, and Starks (2020) find that investors who are more concerned about the financial effects of climate risks—and those who expect them to materialize earlier—are more likely to vote against management. Recent work also highlights the role of climate salience: Fich and Xu (2025) find that institutional investors affected by hurricanes subsequently support environmental proposals in non-affected firms, while Di Giuli, Garel, Michaely, and Romec (2025) find that fund managers exposed to abnormally hot temperatures are significantly more likely to support climate proposals.

The second strand of research investigates whether institutional investors can exert influence over management to improve board diversity or reduce greenhouse gas emissions. Regarding gender diversity, Marquardt and Wiedman (2016) find that female board representation is negatively associated with the likelihood of being targeted by a shareholder proposal related to gender diversity. They further document that targeted firms significantly increase their female board representation in the two-year period following the initiation of such proposals. Similarly, Gormley, Gupta, Matsa, Mortal, and Yang (2023) find that the 2017 gender diversity campaign launched by "The Big Three" led U.S. corporations to add at least 2.5 times as many female directors in 2019 as in 2016. Regarding greenhouse gas emissions, several studies provide evidence of investor influence. Azar, Duro, Kadach, and Ormazabal (2021) find a negative association between Big Three ownership and subsequent carbon

emissions among MSCI constituents, a pattern that strengthens in the later years of their sample as these institutions publicly committed to tackling ESG issues. Similarly, Kahn, Matsusaka, and Shu (2024), using exogenous variation caused by state-level politics that shifted fund control, find that companies reduced their greenhouse gas emissions when stock ownership by "green" funds increased. However, the evidence on shareholder proposals specifically is mixed; Diaz-Rainey, Griffin, Lont, Mateo-Márquez, and Zamora-Ramírez (2024) find that while the environmental performance ratings of shareholder proposal targets improve by nearly 20% post-proposal relative to a matched sample, their actual emissions do not change significantly.

The third strand of research investigates the value of voluntary nonfinancial disclosure. Dhaliwal, Li, Tsang, and Yang (2011) find evidence that firms with a high cost of equity capital in the previous year are more likely to initiate disclosure of CSR activities in the current year, and that initiating firms with superior social responsibility performance enjoy a subsequent reduction in their cost of equity capital. Similarly, Matsumura, Prakash, and Vera-Muñoz (2014) find that the median value of firms disclosing their carbon emissions is approximately $2.3 billion higher than that of comparable non-disclosing firms. Furthermore, Ilhan, Krueger, Sautner, and Starks (2023), using survey data, show that investors have a strong demand for climate risk disclosures, with many actively engaging their portfolio firms to demand improvements.

The fourth strand of research investigates institutional investors' disclosure of voting rationales. Using data on voting rationales, Aggarwal, Dahiya, and Yilmaz (2023) find that the most frequent reasons for voting against management-sponsored directors include traditional governance issues such as board independence, director tenure, and busyness. Notably, however, board diversity is the most frequently cited reason in their sample. They further find that the explicit provision of rationales related to diversity, busyness, tenure, and independence

is associated with significantly higher dissent votes. Focusing on the determinants of this transparency, Macciocchi, Michaely, Rubio, and Yi (2025) show that the decision to disclose rationales is primarily an institution-level policy that is highly persistent and driven by stewardship incentives, client demands, and institutional norms. They also document that disclosure is more likely when investors vote against management or deviate from consensus expectations.

III. Hypotheses Development

In this study, we investigate how global institutional investors respond to gender diversity and climate risk concerns in Korean firms through disclosed voting rationales, and how these disclosures subsequently influence corporate policies. Specifically, we test the following four hypotheses.

> **Hypothesis 1**: Global institutional investors express E&S-related concerns through voting rationale disclosures.

Existing literature documents that shareholders express E&S-related concerns by voting at shareholders' meetings (Krueger, Sautner, and Starks, 2020; Aggarwal, Dahiya, and Yilmaz, 2023; Gow, Larcker, and Watts, 2023; Di Giuli, Garel, Michaely, and Romec, 2025; Garel, Michaely, and Romec, 2025; Fich and Xu, 2025). In this study, we investigate whether investors express these concerns not merely through the act of voting, but through disclosed voting rationales.

Examining rationales offers a distinct methodological advantage: shareholders may oppose management proposals for various reasons. Without access to specific rationales, researchers risk erroneously attributing opposition to E&S concerns when it actually stems from unrelated factors. Moreover, even absent such bias, investigating rationales is valuable;

the active decision to provide a written explanation signals a significantly stronger conviction than the simple act of voting. Given the costs associated with such disclosures, we expect global institutional investors to use voting rationales to express E&S concerns only when they are material. Consequently, we predict a negative association between corporate E&S performance and the incidence of opposition votes citing E&S rationales.

Hypothesis 2: Voting rationale disclosures enhance the informativeness of sustainability reports.

Existing literature shows that voluntary nonfinancial disclosure is value-enhancing (Dhaliwal, et al., 2011; Matsumura, Prakash, and Vera-Muñoz, 2014; Ilhan, Krueger, Sautner, and Starks, 2023). The primary mechanism driving this result is the market's treatment of information asymmetry. When firms remain silent, investors do not assume average performance; rather, markets penalize non-disclosing firms as if they have even worse emissions than they actually do (Matsumura et al., 2014). Consequently, when disclosure is poor, investors price in this uncertainty by assuming higher climate risk, which leads to a higher cost of capital for those firms (Ilhan et al., 2023).

However, the value-enhancing effect of voluntary disclosure is not automatic; it is contingent on credibility. Because voluntary disclosures are unaudited and selected by management, they are inherently susceptible to 'cheap talk' or greenwashing. Indeed, Dhaliwal et al. (2011) find that while initiating CSR reporting generally reduces the cost of equity capital, this benefit is primarily observed in firms with superior CSR performance, suggesting that investors look beyond the mere act of reporting to the substance of the claims.

This credibility gap makes it crucial to investigate how global institutional investors disclose their voting rationales. As sophisticated external monitors, these investors use voting

rationales to flag discrepancies between a firm's disclosure and its actual risk exposure. Consequently, we expect negative voting rationales to serve as a credible signal of 'hidden' or unaddressed risk, thereby offsetting the value-enhancing effects of voluntary disclosure.

Hypothesis 3: Voting rationale disclosures induce changes in corporate E&S policies.

Existing literature demonstrates that active engagement mechanisms—such as public campaigns and shareholder proposals by E&S-focused investors—can effectively alter corporate E&S policies (Marquardt and Wiedman, 2016; Azar et al., 2021; Diaz-Rainey et al., 2024; Gormley et al., 2023; Kahn et al., 2024).

Extending this line of inquiry, we posit that the disclosure of voting rationales by global institutional investors can also catalyze E&S policy changes. Although less adversarial than public campaigns, such disclosures are likely to influence management because they articulate concerns more explicitly than silent proxy voting. Furthermore, given that these disclosures originate from reputable global investors, they carry significant reputational weight for the firm.

Hypothesis 4: The influence of voting rationale disclosures is more pronounced in smaller firms.

Prior literature consistently documents that institutional investors prioritize large market-cap firms for E&S engagement to maximize impact and leverage reputational concerns (Dimson, Karakaş, and Li, 2015; Azar, Duro, Kadach, and Ormazabal, 2021; Barko, Cremers, and Renneboog, 2022).

However, given the set of firms that they engage in, we expect the influence of voting rationale disclosure to be more pronounced in smaller firms. We propose three channels for this asymmetry. First, information saliency: unlike large firms that receive constant market feedback, small firms operate in a clearer information environment where a global investor's

specific rationale serves as a high-signal 'shock.' Second, substitution for private access: since global investors rarely allocate resources to private meetings with small-caps (Dimson et al., 2015), the voting rationale becomes the primary—and often sole—channel for communicating specific E&S expectations. Third, resource constraints: small firms, often lacking dedicated ESG teams, are more likely to utilize the detailed rationale as a cost-effective 'roadmap' for policy improvement.

IV. Data and Methodology

1. Sample Construction

Our sample comprises votes cast by 12 global institutional investors—nine global pension funds and three global asset managers—at the annual general shareholders' meetings (AGMs) of firms listed on the Korea Exchange (KRX) between 2020 and 2024. In effect, our sample excludes firms that these investors do not own, firms that they own but do not vote on, and firms where they vote but do not disclose their voting records.

Table 1 lists the names of these investors. We select global institutional investors based on assets under management (AUM), Korean market presence, and the disclosure of voting rationales. Drawing from the Thinking Ahead Institute's (2023) ranking of the world's 300 largest pension funds, we identify nine entities that meet these criteria: Norges Bank Investment Management (NBIM); PGGM; the Florida State Board of Administration (SBA); the Ontario Teachers' Pension Plan (OTPP); the University of California Regents; the Pennsylvania Public School Employees' Retirement System (PSERS); the Public Employees' Retirement Association of Colorado (Colorado PERA); British Columbia Investment Management (BCI); and the Ontario Pension Board (OPB). Within this sample, NBIM, PGGM, and BCI function as dedicated pension asset managers. Specifically, NBIM manages Norway's

Government Pension Fund Global, PGGM oversees investments for the Dutch healthcare fund PFZW, and BCI invests on behalf of British Columbia's public sector plans.

Our selection of global asset managers includes BlackRock and Fidelity. Although Vanguard and State Street Global Advisors are part of the 'Big Three,' we excluded them because they do not disclose voting rationales. In their place, we included Calvert Research and Management. As a subsidiary of Morgan Stanley and a leader in responsible investing, Calvert votes on a comparable number of Korean firms to Fidelity. Table 2 reports the number of Korean firms for which global institutional investors have disclosed their voting records per year. Please note that voting disclosure data is unavailable for BlackRock prior to 2021 and for OPB prior to 2023. The final row reports the total number of firm-investor pairs (ranging from 1,732 to 2,434 each year) and the number of unique firms (ranging from 609 to 699 each year).

Starting with an initial sample of 76,424 votes hand-collected from the websites of these 12 global institutional investors, we apply several exclusion criteria. We first apply proposal-level screens, excluding proposals submitted by shareholders, proposals on director election subject to cumulative voting, and proposals that were withdrawn, reclassified as non-resolution items, or bundled with other proposals. We then apply firm-level screens, removing REITs, firms with capital impairment, and those with missing financial data. Finally, after dropping records with disclosure errors, we obtained a final sample of 70,726. For each observation, we collect the firm name, proposal type, name of the institutional investor that voted, their voting decisions (for/against), and the stated voting rationale.

Director elections account for nearly half of the sample (34,649 votes, or 48.99%). Additionally, voting rationales are available for approximately one-third of the observations (22,734, or 32.1%), predominantly among 'against' votes.

2. Variable Definitions and Data Sources

Table 3 presents the variable definitions. $VoteAgainst^{GD}$ and $VoteAgainst^{CC}$ are indicator variables that equal 1 if a global institutional investor votes against a management proposal at the annual shareholders' meeting citing gender diversity or climate change concerns, respectively, and 0 otherwise. The variables equal 0 if the investor votes for the proposal, or votes against it citing a different reason. $Total\ CO_2\ Emissions$ is the natural logarithm of one plus the ratio of a firm's total CO_2 emissions (Scope 1 + Scope 2) to its sales (in 100 million KRW); we winsorize this variable at the 1st and 99th percentiles. $Female\ Director\ Ratio$ is defined as the number of female directors divided by the total board size. $SR\ Disclosure$ is a dummy variable equal to 1 if a firm publishes a sustainability report. $E\ Rating$ and $S\ Rating$ represent environmental and social scores, respectively, on a scale of 1 to 6 (where 6 is the highest). Finally, $Tobin's\ Q$ is the sum of the market value of common stock, the book value of preferred stock, and the book value of debt, scaled by total assets.

We include several firm-level control variables. $Firm\ Size$ is the natural logarithm of total assets, $Debt\ Ratio$ is total debt divided by total assets, and ROA is net income scaled by total assets (winsorized at the 1st and 99th percentiles). We also control for $Firm\ Age$ (the natural logarithm of years since listing), $Board\ Size$ (the total number of directors), and $Board\ Independence$ (the ratio of outside directors to total directors). Finally, $Chaebol$ is an indicator variable equal to 1 if the firm belongs to a large business group, and 0 otherwise.

We draw data from several sources. We hand-collect voting information from the websites of 12 global institutional investors and manually gather CO_2 emission data from sustainability reports, annual reports, and corporate websites. Information regarding the publication of sustainability reports is gathered from corporate websites, the Korea Investor's Network for Disclosure System (KIND), and the KRX ESG Portal. Finally, we obtain Environmental and

Social (E&S) ratings from the Korea Institute of Corporate Governance and Sustainability (KCGS) and financial data from DataGuide.

3. Empirical Model Specification

To investigate whether gender diversity practices (greenhouse gas emissions) influence the likelihood that global institutional investors vote against management-sponsored proposals with a disclosed rationale regarding gender diversity (climate change), we estimate the following probit models.

$$P\left(VoteAgainst_{i,j,k,t}^{GD} = 1|X\right) = \Phi\left(\alpha_1 + \beta_1 \cdot Female\ Director\ Ratio_{i,t} + \gamma_1 \cdot Controls_{i,t-1} + \eta_m + \delta_t + \lambda_k\right) \quad (1)$$

$$P\left(VoteAgainst_{i,j,k,t}^{CC} = 1|X\right) = \Phi\left(\alpha_2 + \beta_2 \cdot Total\ CO_2\ Emissions_{i,t-1} + \gamma_2 \cdot Controls_{i,t-1} + \eta_m + \delta_t + \lambda_k\right) \quad (2)$$

Variable definitions for Models (1) and (2) are detailed in Section IV-2 and Table 3. The subscripts i, j, k and t denote firm i, proposal j, investor k, and year t, respectively. The terms η_m, δ_t and λ_k denote industry, year and investor fixed effects, respectively. In alternative specifications, we replace $Female\ Director\ Ratio$ with $S\ Rating$ and $SR\ Disclosure$; similarly, we substitute $Total\ CO_2\ Emissions$ with $E\ Rating$ and $SR\ Disclosure$. We expect a negative coefficient for β_1 and a positive coefficient for β_2. The vector of firm-level control variables include $Firm\ Size$, $Debt\ Ratio$, ROA, $Firm\ Age$, $Board\ Size$, $Board\ Independence$, and $Chaebol$. Voting data are recorded at the annual shareholders' meetings, which typically occur in March. Accordingly, all explanatory variables are lagged by one year $(t-1)$ relative to the voting year, except for $Female\ Director\ Ratio$, $Firm\ Age$,

and $S\ Rating$. We use a concurrent measure for $Female\ Director\ Ratio$ because investors vote on the proposed slate of directors, meaning they are aware of the board's composition for the current year. Conversely, $S\ Rating$ and $E\ Rating$ are lagged by 2 years because the ratings for the prior year are typically disclosed after the annual shareholders' meeting.

To investigate whether opposition votes citing gender diversity (climate change) concerns as the rationale influence subsequent changes in the number of female directors (total CO_2 emissions), we estimate the following OLS models.

$$\Delta\#\ of\ Female\ Directors_{i,t} = \alpha_1 + \beta_1 \cdot VoteAgainst^{GD}_{i,j,k,t-1} + \gamma_1 \cdot Controls_{i,t-1} + \eta_m + \delta_t + \varepsilon_{i,t} \quad (3)$$

$$\Delta\ Total\ CO_2\ Emissions_{i,t} = \alpha_2 + \beta_2 \cdot VoteAgainst^{CC}_{i,j,k,t-1} + \gamma_2 \cdot Controls_{i,t-1} + \eta_m + \delta_t + \varepsilon_{i,t} \quad (4)$$

The outcome variables capture changes in the number of female directors and total CO_2 emissions from year $t-1$ to year t. Voting outcomes are recorded at the annual shareholders' meetings in March of year $t-1$. For both models, we exclude 2020 observations because voting records for the previous year (2019) are unavailable. For Model (4), we also exclude observations for 2024 because total CO2 emissions data were unavailable at the time of data collection. We expect a positive coefficient for β_1 and a negative coefficient for β_2.

V. Empirical Results

1. Summary Statistics

Table 4 reports statistics on opposing votes cast by global institutional investors. Panel A reports the number of firms opposed by at least one global institutional investor due to gender

diversity concerns, along with the fraction of proposals opposed for this reason. The data indicate that the number of firms facing such opposition peaked in 2022 at 172 and reached a low in 2024 at 88. The volume of opposed proposals follows a similar trend, peaking at 305 in 2022 and declining to 89 in 2024. Furthermore, the results show that nearly all proposals opposed on gender diversity grounds are for director elections. In 2024, for instance, 88 firms faced opposition due to gender diversity concerns; of these, 86 involved director election proposals. In terms of opposition rate, proposals opposed due to gender diversity account for 2.0% to 7.1% of the total proposals voted on by global institutional investors.

Panel B reports the number of firms and the fraction of proposals opposed by at least one global institutional investor due to climate risk concerns. The data indicate that the number of firms facing such opposition is limited, ranging from only 4 to 15 annually. This stands in sharp contrast to opposition based on gender diversity, which is approximately ten times more frequent. Similarly, the volume of proposals opposed on climate grounds remains low, peaking at 22 in 2022.

Panel C reports the total number of proposals opposed by global institutional investors, regardless of the rationale, along with the overall opposition rate. The data show that the number of opposed proposals peaked in 2023 at 926, then declined to a low of 590 in 2024. The overall opposition rate follows a similar trajectory, reaching a high of 19.8% in 2023 and falling to 13.0% in 2024. The final row presents the proportion of total opposition attributed to gender diversity concerns. This fraction peaked at 47.2% in 2020 and subsequently declined to 15.1% in 2024.

Figure 1 displays the overall opposition rate (defined as the total number of proposals opposed divided by the total number of proposals voted), alongside the proportion of proposals opposed specifically due to gender diversity and climate change concerns.

Table 5 presents descriptive statistics for the variables used in this study. During the 2020–2024 period, the $Female\ Director\ Ratio$ ranged from 0 to 57.1 percent, with a mean of 9.4 percent. The number of female directors varied between 0 and 5, with an average of 0.69. Furthermore, 50.7 percent of the sample firms published sustainability reports. The average E and $S\ Ratings$ were 3.6 and 4.3, respectively, with a maximum score of 6.

2. Do Investors Express E&S Concerns by Voting Rationale Disclosures?

Table 6 reports probit estimates for Model (1) in Section IV-3, examining how $Female\ Director\ Ratio$, $S\ Rating$, and $SR\ Disclosure$ influence the probability of diversity-related dissenting votes by global institutional investors at annual shareholders' meetings. Confirming our hypothesis, the coefficient on $Female\ Director\ Ratio$ in Column (1) is negative and statistically significant at the 1 percent level. The average marginal effect of *Female Director Ratio* is -0.153, indicating that a one-standard-deviation decrease in Female Director Ratio (0.1) increases the likelihood of a diversity-related dissenting votes by about 1.53 percentage points. Given that the average opposition rate is 2 percent, this represents a relative increase of 76.5 percent in the opposition rate.

In Column (3) of Table 6, we also find that global institutional investors' opposition rate increases in the absence of sustainability reports. The coefficient on $SR\ Disclosure$ is negative and statistically significant at the 1 percent level. The average marginal effect of *SR Disclosure* is -0.010, implying that a one-standard-deviation increase in SR Disclosure (0.5) is associated with a 0.5 percentage points decrease in the likelihood of shareholder opposition. Given the average opposition rate of 2 percent, this implies a relative increase of 25 percent in shareholder opposition. In Column (2), however, we do not find a statistically significant relationship for S Ratings.

Table 7 reports probit estimates for Model (1) in Section IV-3, examining the influence of $Total\ CO_2\ \ Emissions$, $E\ Rating$, and $SR\ Disclosure$ on the likelihood that global institutional investors vote against management-sponsored proposals at the annual shareholders' meeting due to climate change concerns. None of these coefficients is statistically significant, implying that global institutional investors do not express their climate change-related concerns through voting. This result is consistent with our earlier finding that opposition based on climate change concerns is scant, with only 4 to 15 firms subject to such opposition per year.

In sum, we find that global institutional investors actively utilize their voting rights to discipline firms regarding gender diversity, whereas they do not employ similar measures for climate change-related concerns.

3. Does Voting Rationale Disclosure Make Sustainability Reports More Valuable?

Table 8 presents OLS regression results examining how voting by global institutional investors mediates the relationship between the availability of sustainability reports ($SR\ Disclosure$) and firm value ($Tobin's\ Q$).

The sample is stratified into four subgroups based on two criteria: (1) whether global institutional investors voted against management proposals due to gender diversity or climate change concerns ($VoteAgainst^{GD+CC}$), and (2) asset size (above vs. below the sample median). The variable $VoteAgainst^{GD+CC}$ equals 1 if at least one global institutional investor votes against a management-nominated proposal at the annual shareholders' meeting due to gender diversity or climate change concerns, and 0 otherwise.

Among the four subsamples, we find a positive relationship between $SR\ Disclosure$ and firm value only for small firms (assets < median) where global institutional investors have not

voted against management. The coefficient on $SR\ Disclosure$ in Column (4) implies that firms, for these firms, publishing a sustainability report is associated with a Tobin's Q that is higher by 0.82. Given the average Tobin's Q of 1.79, this represents a 45.8 percent increase in Tobin's Q.

This result supports two hypotheses: first, that capital market participants discount sustainability reports when global institutional investors have expressed dissent regarding gender diversity or climate change issues, and second, that for large firms, publishing such reports may be viewed as a routine, low-cost activity rather than a signal of genuine commitment to ESG principles.

4. Does Voting Rationale Disclosure Prompt E&S-related Changes?

Table 9 presents OLS regression estimates for Model (3) in Section IV-3, examining whether opposition votes by global institutional investors over gender diversity concerns influence subsequent changes in the number of female directors. Voting outcomes are recorded at the March annual shareholders' meetings, and the change in female directors is measured from the voting year to the following year. The year 2020 is excluded because voting records for 2019 are unavailable.

Using the full sample from 2021 to 2024 (Columns (1) and (2)), we find that the coefficients on $VoteAgainst^{GD}$ are positive and statistically significant. The coefficient of 0.0517 in Column (2) implies that an opposing vote by global institutional investors is associated with an increase of approximately 0.05 female directors.

However, these results may be confounded by a legislative change that occurred during the sample period. In January 2020, the Korean National Assembly passed an amendment to the Financial Investment Services and Capital Markets Act (FSCMA), prohibiting listed

corporations with assets exceeding 2 trillion won from composing boards entirely of a single gender. Consequently, large corporations with male-only boards likely added female directors between 2020 and 2022 to meet this deadline. Thus, the observed increase in female representation during this period may be driven by regulatory compliance rather than by pressure from global institutional investors voting against management.

To exclude this alternative explanation, we partition the sample period into two sub-periods: the pre-deadline phase (2021–2022) and the post-deadline phase (2023–2024). Assuming that firms fully complied with the mandate by 2022, any increase in the number of female directors after that point is unlikely to be driven by legal changes. Instead, such increases are likely attributable to pressure from global institutional investors.

The results in Columns (3) through (6) confirm that the effect driven by regulatory changes dominates the influence of global institutional investors. The coefficient on $VoteAgainst^{GD}$ is positive and statistically significant during the pre-deadline period (2021–2022) but is not significant during the post-deadline period (2023–2024).

We verify the robustness of these findings by employing alternative measures of board gender diversity. We re-estimate Model (3) replacing the change in the number of female directors with two alternative dependent variables: the change in the fraction of female directors and an indicator variable that takes a value of 1 if the number of female directors increases. In untabulated results, we find that our primary conclusions remain intact. The estimated coefficients are statistically significant and positive in the full sample and the pre-deadline period, but lose their significance in the post-deadline period. This confirms that our results are not driven by the specific definition of the dependent variable.

Table 10 presents OLS regression estimates for Model (4) in Section IV-3, examining whether opposition votes by global institutional investors regarding climate change concerns

influence subsequent changes in $Total\ CO_2\ Emissions$. The analysis employs two outcome variables: the year-to-year change in $Total\ CO_2\ Emissions$ ($\Delta Total\ CO_2\ Emissions$) and an indicator variable that equal to 1 if $Total\ CO_2\ Emissions$ increased from voting year to the following year, and 0 otherwise. Global institutional investor votes are recorded at the March annual shareholders' meeting, while the changes in $Total\ CO_2\ Emissions$ are measured between the voting year and the subsequent year. We exclude the year 2020 because voting records for 2019 are unavailable. We also exclude 2024 because the $Total\ CO_2\ Emissions$ data for that year was not available at the time of data collection.

The results show that opposition by global institutional investors does not lead to any reduction in greenhouse gas emissions. In Columns (1) and (2), the coefficients on $VoteAgainst^{CC}$ are statistically insignificant, and in Columns (3) and (4), the coefficients on $VoteAgainst^{CC}$ have the opposite signs, implying that opposition votes lead to greater emissions.

5. Does Voting Rationale Disclosure Have Greater Influence over Smaller Firms?

In Table 11 Panel A, we re-estimate Model (3) in Section IV-3 using two subsamples partitioned by total assets (above vs. below KRW 2 trillion). If global institutional investors exert greater influence over smaller firms, we expect to observe a larger coefficient on $VoteAgainst^{GD}$ for smaller firms than for larger firms.

However, we observe the opposite: the results are stronger for larger firms and statistically insignificant for smaller firms. These findings are likely explained by the fact that the regulatory ban on single-gender boards applied exclusively to firms with assets exceeding 2 trillion won, and not to those below this threshold.

In Panel B, we investigate this possibility further by presenting the results across four subsamples, split by both sample period (2021–2022 vs. 2023–2024) and asset size (above vs. below KRW 2 trillion). Consistent with the explanation that the increase in female directors is predominantly driven by the legal requirement for large corporations to diversify their boards by 2022, we observe a positive and statistically significant coefficient on $VoteAgainst^{GD}$ only for large firms during the pre-deadline period (2021–2022). We find no significant results in the other subgroups.

In Table 12, we re-estimate Model (4) in Section IV-3 using two subsamples partitioned by total assets (above vs. below the sample median). If global institutional investors exert greater influence over smaller firms, we expect to observe a larger coefficient on $VoteAgainst^{CC}$ for smaller firms than for larger firms.

This is indeed what we find. The coefficient on $VoteAgainst^{CC}$ is negative and statistically significant for smaller firms. The coefficient of -0.2584 in Column (4) implies that opposition to management-sponsored proposals by global institutional investors due to climate change concerns is associated with a reduction in $Total\ CO_2\ Emission$ by 0.258. Given the sample average of 1.3, this corresponds to a relative reduction of about 19.9 percent. For larger firms, however, the estimated coefficient exhibits the opposite sign, suggesting that investor opposition may not be effective, although the underlying reason remains unclear.

VI. Conclusion

This study investigates whether global institutional investors utilize voting rationales to discipline firms on E&S issues and whether these disclosures successfully catalyze changes in corporate policies. Focusing on the Korean market—a setting characterized by severe gender diversity gaps and a high reliance on fossil fuels—we analyze a hand-collected dataset of votes

cast by 12 major global institutional investors between 2020 and 2024. Our findings reveal a complex picture of investor influence, where the efficacy of "voice" is sharply conditioned by firm size and regulatory context.

First, we document a significant divergence in how investors express E&S concerns. Global investors actively use voting rationales to discipline firms on gender diversity, with the likelihood of opposition increasing significantly as the female director ratio decreases. In contrast, we find no statistical association between a firm's carbon emissions and the likelihood of receiving an opposition vote citing climate risk. This suggests that while gender diversity has become a strictly enforced mandate for global investors in Korea, climate risk has not yet translated into systematic voting discipline.

Second, regarding real-world impact, we find that the "expressive voice" of voting rationales has limited coercive power on its own. While opposition votes citing gender diversity were associated with subsequent increases in female board representation, this effect was concentrated entirely in large firms during the pre-deadline period of the 2020 FSCMA amendment. This indicates that the observed improvements were driven primarily by the "hard" constraint of legal mandates rather than the "soft" pressure of investor feedback.

However, we find evidence that voting rationales can drive organic change in the absence of regulation, but only among smaller firms. For companies with assets under 2 trillion KRW, opposition votes citing climate concerns were associated with significant subsequent reductions in CO2 emissions. This supports our "marginal information value" hypothesis: unlike large firms that are saturated with market signals, small firms treat the specific, public rationale of a global investor as a high-salience "roadmap" for policy improvement.

Finally, we show that voting rationales serve as a critical market signal that conditions the value of voluntary disclosure. We find that the positive valuation premium typically

associated with sustainability reports disappears when global investors issue negative voting rationales against the firm. This implies that voting rationales function as a credibility check, allowing the market to distinguish between genuine E&S commitments and potential "greenwashing".

Overall, our study contributes to the stewardship literature by demonstrating that disclosing voting rationales is a distinct and scalable form of voice. However, its effectiveness is not uniform. Our results suggest that while this mechanism can serve as a potent signal for smaller, resource-constrained firms, it is insufficient to force operational changes in large, entrenched corporations without the reinforcing pressure of binding regulations.

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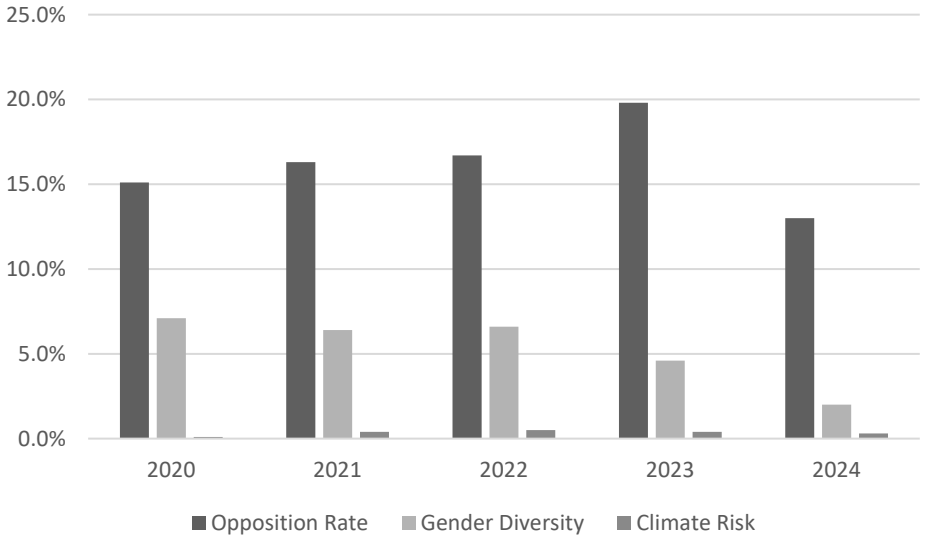
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<Figure 1> Opposition vote rationales by global institutional investors

This bar chart displays the overall opposition rate (defined as the total number of proposals opposed divided by the total number of proposals voted), alongside the proportion of proposals opposed specifically due to gender diversity and climate change concerns.



<Table 1> List of global institutional investors

Table 1 details the 12 global institutional investors in our study: nine global pension funds and three global asset managers. Within the pension fund group, we include three investment management organizations: British Columbia Investment Management (BCI), PGGM, and Norges Bank Investment Management (NBIM). These entities manage assets for specific public or national funds: BCI invests on behalf of British Columbia's public plans (including the Public Service, Municipal, and Teachers' Pension Plans); NBIM manages Norway's Government Pension Fund Global; and PGGM oversees investments for the Dutch healthcare fund, PFZW.

A. Global Pension Funds	
Canada	British Columbia Investment Management (BCI) Ontario Teachers' Pension Plan (OTPP) Ontario Pension Board (OPB)
Netherlands	PGGM
Norway	Norges Bank Investment Management (NBIM)
U.S.	California University Colorado Public Employees' Retirement Association (Colorado PERA) Florida State Board of Administration (Florida SBA) Pennsylvania School Employees' Retirement System (PSERS)
B. Global Asset Managers	
U.S.	BlackRock Fidelity Calvert Research and Management

<Table 2> Number of firms with voting disclosures by global institutional investors

Table 2 reports the number of firms for which global institutional investors have disclosed their voting records. Please note that voting disclosure data is unavailable for BlackRock prior to 2021 and for OPB prior to 2023.

	2020	2021	2022	2023	2024
BCI	105	104	110	102	100
BlackRock	-	444	464	445	424
California Univ.	370	357	389	347	372
Calvert	43	69	62	59	57
Colorado PERA	85	70	118	65	59
Fidelity	58	51	47	45	46
Florida SBA	258	204	306	487	495
NBIM	464	488	514	533	494
OPB	-	-	-	103	103
OTPP	55	1	1	1	1
PGGM	124	124	140	140	135
PSERS	170	166	134	107	102
No. of firm-investors	1,732	2,078	2,285	2,434	2,388
(No. of unique firms)	(609)	(643)	(694)	(698)	(699)

<Table 3> Definition of variables

Variables	Definition
$VoteAgainst^{GD}$	1 if a global institutional investor votes against a management proposal at the annual shareholders' meeting citing gender diversity concerns, 0 otherwise
$VoteAgainst^{CC}$	1 if a global institutional investor votes against a management proposal at the annual shareholders' meeting citing climate change concerns, 0 otherwise
$VoteAgainst^{GD+CC}$	1 if a global institutional investor votes against a management proposal at the annual shareholders' meeting citing gender diversity or climate change concerns, 0 otherwise
$Total\ CO_2\ Emissions$	$ln\left(\frac{Total\ CO_2\ Emissions}{Sales\ (100\ million\ KRW)}+1\right)$, winsorized at the top and bottom 1% [Total CO_2 Emissions = Scope 1(direct emissions) +Scope 2(indirect emissions)]
$Female\ Director\ Ratio$	Number of female directors/board size
$SR\ Disclosure$	1 if a firm publishes the sustainability report, 0 otherwise
$E\ Rating$	KCGS E Ratings (A+: 6, A: 5, B+: 4, B: 3, C: 2, D: 1)
$S\ Rating$	KCGS S Ratings (A+: 6, A: 5, B+: 4, B: 3, C: 2, D: 1)
$Tobin's\ Q$	(Market value of common stock + book value of preferred stocks + book value of debt)/(book value of assets), where the market value of common stock is measured at the end of March, and all book values are measured at the previous year-end.
$Firm\ Size$	Natural log of total assets
$Debt\ Ratio$	Total debt /total assets
ROA	Net income/total assets (winsorized at the top and bottom 1%)
$Firm\ Age$	Natural log of (current year - listing year)
$Board\ Size$	Number of directors on the board
$Board\ Independence$	Number of outside directors/board size
$Chaebol$	1 if a firm belongs to the large business groups (aggregate assets > 5 trillion won), 0 otherwise

<Table 4> Opposition vote rationales by global institutional investors

This table reports statistics on opposing votes cast by global institutional investors. Panel A reports the number of firms opposed by at least one global institutional investor due to gender diversity concerns, along with the fraction of proposals opposed for this reason. Panel B reports the number of firms and the fraction of proposals opposed by at least one global institutional investor due to climate risk concerns. Panel C reports the total number of proposals voted on by global institutional investors and the overall fraction of opposition.

Panel A: Opposition due to gender diversity concerns

		2020	2021	2022	2023	2024
No. of firms opposed (No. of firm-investors)	All proposals	167 (187)	161 (186)	172 (204)	140 (171)	88 (133)
	Director elections	165 (185)	160 (185)	172 (204)	138 (169)	86 (131)
No. of proposals opposed (A)		299	271	305	213	89
Total no. of proposals voted (B)		4,185	4,239	4,651	4,676	4,531
Opposition rate (A/B)		0.071	0.064	0.066	0.046	0.020

Panel B: Opposition due to climate risk concerns

		2020	2021	2022	2023	2024
No. of firms opposed (No. of firm-investors)	All proposals	4 (4)	10 (10)	14 (16)	15 (21)	13 (15)
	Director elections	4 (4)	10 (10)	14 (16)	14 (19)	13 (15)
No. of proposals opposed (A)		5	18	22	19	14
Total no. of proposals voted (B)		4,185	4,239	4,651	4,676	4,531
Opposition rate (A/B)		0.001	0.004	0.005	0.004	0.003

Panel C: Overall opposition rates

	2020	2021	2022	2023	2024
No. of proposals opposed (A)	633	693	776	926	590
Total no. of proposals voted (B)	4,185	4,239	4,651	4,676	4,531
Overall opposition rate (A/B)	0.151	0.163	0.167	0.198	0.130
No. of proposals opposed due to diversity concern (C)	299	271	305	213	89
Share of opposition due to diversity (C/A)	0.472	0.391	0.393	0.230	0.151

<Table 5> Descriptive statistics

This table reports descriptive statistics of the variables used in this study.

Variable	Time	Period	Obs.	Mean	S.D.	p25	Median	p75	Min	Max
$VoteAgainst^{GD}$	t	2020-2024	70,726	0.023	0.149	0	0	0	0	1
	$t-1$	2020-2023	54,828	0.025	0.155	0	0	0	0	1
$VoteAgainst^{CC}$	t	2020-2024	70,726	0.001	0.037	0	0	0	0	1
	$t-1$	2020-2023	54,828	0.001	0.037	0	0	0	0	1
$VoteAgainst^{GD+CC}$	t	2020-2024	70,726	0.024	0.153	0	0	0	0	1
$Female\ Director\ Ratio$	t	2020-2024	70,632	0.094	0.106	0	0.091	0.143	0	0.571
$\#\ of\ Female\ Directors$	$t-1$	2019-2023	70,726	0.539	0.706	0	0	1	0	5
	t	2020-2024	70,632	0.692	0.784	0	1	1	0	5
$\Delta\ in\ \#\ of\ Female\ Directors$	$t, t-1$	2020-2024	54,541	0.019	0.065	0	0	0	-0.333	0.400
$Total\ CO_2\ Emissions$	$t-1$	2019-2023	50,209	1.472	1.296	0.446	1.046	2.271	0.001	5.137
$\Delta\ Total\ CO_2\ Emissions$	$t, t-1$	2021-2023	27,979	-0.050	0.355	-0.129	-0.035	0.018	-3.843	4.690
$SR\ Disclosure$	$t-1$	2019-2023	70,726	0.507	0.500	0	1	1	0	1
$E\ Rating$	$t-2$	2018-2022	63,447	3.599	1.472	2	4	5	1	6
$S\ Rating$	$t-2$	2018-2022	63,447	4.339	1.532	3	5	6	1	6
$Tobin\ Q$	t	2020-2024	70,726	1.788	2.31	0.816	1.006	1.761	0.284	30.951
$Firm\ Size$	$t-1$	2019-2023	70,726	21.996	2.114	20.35	21.791	23.415	16.837	27.297
$Debt\ Ratio$	$t-1$	2019-2023	70,726	0.479	0.235	0.287	0.464	0.628	0.015	1.433
ROA	$t-1$	2019-2023	70,726	0.030	0.080	0.006	0.031	0.066	-0.389	0.354
$Firm\ Age$	t	2020-2024	70,726	2.729	0.933	2.197	2.944	3.434	0	4.205
$Board\ Size$	$t-1$	2019-2023	70,726	6.755	2.164	5	7	8	1	15
$Board\ Independence$	$t-1$	2019-2023	70,726	0.498	0.160	0.375	0.556	0.600	0	1
$Chaebol$	$t-1$	2019-2023	70,726	0.329	0.470	0	0	1	0	1

<Table 6> Reaction to gender diversity concerns by voting

This table presents probit estimates of the influence of *Female Director Ratio*, *S Rating*, and *SR Disclosure* on the likelihood that global institutional investors vote against management-nominated director candidates due to gender diversity concerns. The outcome variable, $VoteAgainst^{GD}$, equals 1 if more than one global institutional investor votes against these candidates, citing the company's gender diversity concerns, and 0 otherwise. Explanatory variables are defined in Table 3 and are lagged by 1 year, except for $Female\ Director\ Ratio$, $Firm\ Age$, and $S\ Rating$. We use a concurrent measure for $Female\ Director\ Ratio$ because investors vote on the proposed slate of directors, meaning they are aware of the board's composition for the current year. Conversely, $S\ Rating$ is lagged by 2 years because the rating for the prior year is typically disclosed after the annual shareholders' meeting. All models include year, industry and investor fixed effects. t-statistics, based on two-way clustered standard errors at the firm and year levels, are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Coefficients significant at the 10% level are highlighted in **bold**.

	(1)	(2)	(3)
	$VoteAgainst^{GD}$		
Female Director Ratio	**-3.4322*** **		
	(-10.909)		
S Rating		-0.0048	
		(-0.244)	
SR Disclosure			**-0.2152*** **
			(-3.497)
Firm Size	0.0031	-0.0464	-0.0305
	(0.123)	(-1.598)	(-1.097)
Debt Ratio	-0.0470	0.0871	0.1048
	(-0.378)	(0.614)	(0.787)
ROA	0.3777	**0.7063** *	**0.6792** *
	(1.243)	**(2.116)**	**(2.168)**
Firm Age	-0.0261	**-0.0640** *	-0.0438
	(-0.882)	**(-1.824)**	(-1.332)
Board Size	**-0.0299** *	**-0.0268** *	**-0.0245** *
	(-2.507)	**(-1.909)**	**(-1.870)**
Board Independence	0.0869	-0.2679	-0.1412
	(0.497)	(-1.317)	(-0.745)
Chaebol	0.0224	0.0392	0.0510
	(0.353)	(0.575)	(0.744)
Constant	Y	Y	Y
Year FE	Y	Y	Y
Industry FE	Y	Y	Y
Investor FE	Y	Y	Y
Observations	63,708	57,225	63,792
R-squared	0.284	0.246	0.260

<Table 7> Reaction to climate change concerns by voting

This table reports probit estimates of the influence of *Total CO_2 Emissions*, *E Rating*, and *SR Disclosure* on the likelihood that global institutional investors vote against management-sponsored proposals due to climate change concerns. The dependent variable $VoteAgainst^{CC}$ equals 1 if more than one global institutional investor votes against these candidates for climate risk reasons, and 0 otherwise. Explanatory variables are defined in Table 3 and are lagged by 1 year, except for *Firm Age*, which is concurrent, and *E Rating*, which is lagged by 2 years because the prior year's rating is disclosed after the annual shareholders' meeting. All models include year, industry and investor fixed effects. t-statistics, based on standard errors two-way clustered at the firm and year levels, are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)
	$VoteAgainst^{CC}$		
Total CO_2 Emissions	0.0409		
	(0.772)		
E Rating		-0.0088	
		(-0.185)	
SR Disclosure			0.0453
			(0.309)
Firm Size	**0.1884*** **	**0.1851*** **	**0.1821*** **
	(3.381)	**(3.765)**	**(3.639)**
Debt Ratio	-0.5026	**-0.5687** **	**-0.5507** *
	(-1.621)	**(-1.974)**	**(-1.957)**
ROA	-0.6688	-0.8943	-0.7664
	(-0.830)	(-1.256)	(-1.107)
Firm Age	0.0230	-0.0030	0.0210
	(0.291)	(-0.040)	(0.304)
Board Size	-0.0488	-0.0374	-0.0428
	(-1.619)	(-1.314)	(-1.442)
Board Independence	-0.2748	-0.3133	-0.2503
	(-0.509)	(-0.648)	(-0.524)
Chaebol	0.0618	0.0986	0.0816
	(0.416)	(0.699)	(0.599)
Constant	Y	Y	Y
Year FE	Y	Y	Y
Industry FE	Y	Y	Y
Investor FE	Y	Y	Y
Observations	28,746	38,054	42,272
R-squared	0.137	0.157	0.161

<Table 8> Sustainability report disclosure, global institutional investor voting, and firm value

This table presents OLS regression results examining how voting by global institutional investors mediates the relationship between the availability of sustainability reports (SR Disclosure) and firm value (Tobin's Q). The sample is stratified into four subgroups based on two criteria: (1) whether global institutional investors voted against management proposals due to gender diversity or climate change concerns ($VoteAgainst^{GD+CC}$), and (2) asset size (above vs. below the sample median). For the calculation of *Tobin's Q*, the market value of common stock is measured at the end of March, while all book values are measured at the previous year-end. All explanatory variables are defined in Table 3 and are lagged by 1 year, except for *Firm Age*, which is concurrent. All models include year and industry fixed effects. *t*-statistics, based on standard errors two-way clustered at the firm and year levels, are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Coefficients meeting the 10% significance threshold are **bolded**.

	(1)	(2)	(3)	(4)
	Tobin Q			
	$VoteAgainst^{GD+CC} = 1$		$VoteAgainst^{GD+CC} = 0$	
	Assets ≥ median	Assets < median	Assets ≥ median	Assets < median
SR Disclosure	0.1260	0.4442	0.1690	**0.8214****
	(0.772)	(1.107)	(1.365)	**(4.248)**
Firm Size	**-0.1594***	**-1.7289*****	**-0.1225***	**-1.3121*****
	(-2.197)	**(-7.797)**	**(-2.644)**	**(-6.945)**
Debt Ratio	0.2817	-0.9124	0.1995	-0.4898
	(1.105)	(-1.320)	(0.719)	(-1.218)
ROA	2.2868	**-7.9397****	2.0983	**-5.2825****
	(1.632)	**(-2.864)**	(2.110)	**(-3.798)**
Firm Age	-0.1151	-0.0871	**-0.1215****	**-0.3072****
	(-1.737)	(-0.727)	**(-2.866)**	(-3.035)
Board Size	**0.0662***	0.1048	**0.0586****	0.0142
	(2.247)	(1.161)	**(4.473)**	(0.169)
Board Independence	1.1275**	-0.0149	**1.0031****	0.8614
	(3.107)	(-0.021)	**(3.740)**	(0.806)
Chaebol	-0.1029	0.2628	0.0960	0.1291
	(-1.246)	(0.724)	(1.289)	(0.506)
Constant	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y
Observations	902	789	34,498	34,534
R-squared	0.476	0.511	0.549	0.347

<Table 9> Global institutional investor voting and the changes in the number of female directors

This table presents OLS regression results examining whether opposition votes by global institutional investors over gender diversity concerns influence subsequent changes in the number of female directors. Global institutional investor votes are recorded at the March annual shareholders' meeting, while the change in the number of female directors is measured from the voting year to the following year. The year 2020 is excluded because voting records for 2019 are unavailable. All models include year and industry fixed effects. *t*-statistics, based on clustered standard errors at the firm level, are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Coefficients significant at the 10% level are highlighted in **bold.**

	(1)	(2)	(3)	(4)	(5)	(6)
	Δ # of Female Directors					
	Full Sample (2021~2024)		Pre-Deadline (2021~2022)		Post-Deadline (2023~2024)	
$VoteAgainst^{GD}$	**0.0544*** **	**0.0517*** **	**0.0939*** **	**0.0914*** **	0.0139	0.0118
	(3.139)	**(3.015)**	**(3.823)**	**(3.750)**	(0.636)	(0.547)
Firm Size	**0.0454*** **	**0.0478*** **	**0.0349*** **	**0.0346** **	**0.0505*** **	**0.0541*** **
	(5.710)	**(5.105)**	**(2.938)**	**(2.239)**	**(4.165)**	**(3.844)**
Debt Ratio	-0.0720	-0.0798	**0.1886** **	**0.1845** **	**-0.2249*** **	**-0.2342*** **
	(-1.258)	(-1.392)	**(2.377)**	**(2.353)**	**(-2.615)**	**(-2.730)**
ROA	0.0538	0.0238	**0.5406** **	**0.5006** *	-0.1935	-0.2079
	(0.325)	(0.147)	**(2.008)**	**(1.913)**	(-1.121)	(-1.227)
Firm Age	**-0.0297** **	**-0.0246** *	-0.00913	-0.00630	**-0.0483** **	**-0.0410** *
	(-2.255)	**(-1.759)**	(-0.509)	(-0.345)	**(-2.319)**	**(-1.836)**
Board Size		**-0.0189*** **		-0.0129		**-0.0229** *
		(-2.625)		(-1.531)		**(-1.897)**
Board Independence		0.1413		0.1034		0.1849
		(1.480)		(0.803)		(1.252)
Chaebol		0.0296		0.0393		0.0212
		(1.174)		(1.061)		(0.549)
Constant	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y	Y	Y
Observations	54,532	54,532	24,385	24,385	30,147	30,147
R-squared	0.063	0.069	0.123	0.127	0.074	0.082

<Table 10> Global institutional investor voting and the changes in total CO_2 emissions

This table presents OLS regression results examining whether opposition votes by global institutional investors regarding climate risk concerns influence subsequent changes in *Total CO_2 Emissions.* The analysis employs two outcome variables: the year-to-year change in *Total CO2 Emissions* (Δ *Total CO_2 Emissions*) and an indicator variable equal to 1 if *Total CO2 Emissions* increased from voting year to the following year, and 0 otherwise. Global institutional investor votes are recorded at the March annual shareholders' meeting, while the changes in *Total CO_2 Emissions* are measured between the voting year and the subsequent year. The year 2020 is excluded because voting records for 2019 are unavailable. We also exclude 2024 because the $Total\ CO_2\ Emissions$ data for that year was not available at the time of data collection. All models include year and industry fixed effects. *t*-statistics, based on clustered standard errors at the firm level, are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Coefficients significant at the 10% level are highlighted in **bold.**

	(1)	(2)	(3)	(4)
	Δ *Total CO_2 Emissions*		1(Δ *Total CO_2 Emissions* > 0)	
$VoteAgainst^{CC}$	0.0810	0.0864	**0.1992***	**0.2095***
	(1.191)	(1.298)	**(1.671)**	**(1.786)**
Firm Size	**-0.0094****	-0.0078	**-0.0278****	**-0.0282***
	(-2.006)	(-1.376)	**(-2.030)**	**(-1.664)**
Debt Ratio	0.0699	0.0542	0.1669	0.1353
	(1.344)	(1.024)	(1.477)	(1.186)
ROA	0.0768	0.0431	0.4127	0.3390
	(0.644)	(0.377)	(1.116)	(0.918)
Firm Age	0.00127	0.0042	0.0063	0.0133
	(0.109)	(0.360)	(0.285)	(0.585)
Board Size		-0.0048		-0.0105
		(-1.190)		(-1.006)
Board Independence		0.0896		0.2572
		(1.438)		(1.417)
Chaebol		-0.0152		-0.0205
		(-0.819)		(-0.478)
Constant	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y
Observations	27,979	27,979	27,979	27,979
R-squared	0.044	0.046	0.065	0.068

<Table 11> Changes in the number of female directors by asset size

This table presents OLS regression results examining whether opposition votes by global institutional investors over gender diversity concerns influence subsequent changes in the number of female directors. Panel A reports results for two subsamples partitioned by total assets (above vs. below KRW 2 trillion). Panel B presents results across four subsamples, split by both sample period (2021–2022 vs. 2023–2024) and asset size (above vs. below KRW 2 trillion). Global institutional investor votes are recorded at the March annual shareholders' meeting, while the change in the number of female directors is measured from the voting year to the following year. The year 2020 is excluded because voting records for 2019 are unavailable. All models include year and industry fixed effects. *t*-statistics, based on clustered standard errors at the firm level, are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Coefficients significant at the 10% level are highlighted in **bold**

Panel A. Full sample period

	(1)	(2)	(3)	(4)
	Δ # of Female Directors			
	Assets ≥ 2 trillion won		Assets < 2 trillion won	
$VoteAgainst^{GD}$	**0.0725****	**0.0692****	0.0249	0.0223
	(2.547)	**(2.492)**	(1.636)	(1.457)
Firm Size	**0.0217***	**0.0322****	**0.0527*****	**0.0564*****
	(1.728)	**(2.179)**	**(2.731)**	**(3.176)**
Debt Ratio	-0.0351	-0.0675	-0.0835	-0.0895
	(-0.374)	(-0.719)	(-1.445)	(-1.493)
ROA	0.348	0.281	-0.0493	-0.0743
	(0.752)	(0.624)	(-0.353)	(-0.526)
Firm Age	-0.0212	-0.0130	**-0.0438****	**-0.0398***
	(-1.207)	(-0.686)	**(-2.092)**	**(-1.876)**
Board Size		**-0.0190***		**-0.0174***
		(-1.800)		**(-1.779)**
Board Independence		0.1658		0.0644
		(0.838)		(0.583)
Chaebol		-0.0007		0.0521
		(-0.025)		(1.026)
Constant	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y
Observations	30,228	30,228	24,304	24,304
R-squared	0.049	0.053	0.040	0.048

Panel B. Two subsample periods

	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
	Δ # of Female Directors							
	Pre-Deadline (2021~2022)				Post-Deadline (2023~2024)			
	Asset ≥ 2 trillion won		Asset < 2 trillion won		Asset ≥ 2 trillion won		Asset < 2 trillion won	
$VoteAgainst^{GD}$	**0.1344*** **	**0.1309*** **	0.0334	0.0340	0.0057	0.0016	0.0146	0.0115
	(3.422)	**(3.371)**	(1.385)	(1.416)	(0.159)	(0.048)	(0.795)	(0.648)
Firm Size	-0.0065	0.0066	0.0129	0.0147	**0.0391** **	**0.0506** **	**0.0848*** **	**0.0863*** **
	(-0.324)	(0.259)	(0.728)	(0.833)	**(2.019)**	**(2.229)**	**(3.024)**	**(3.416)**
Debt Ratio	**0.3438*** **	**0.3118*** **	0.0691	0.0561	**-0.2383***	**-0.2723***	**-0.1843** **	**-0.1919** **
	(2.839)	**(2.612)**	(0.835)	(0.672)	**(-1.690)**	**(-1.947)**	**(-2.097)**	**(-2.154)**
ROA	**1.2484** **	**1.1545** **	**0.2858***	**0.2939***	-0.2410	-0.3075	-0.2670	-0.2855
	(2.081)	**(2.009)**	**(1.844)**	**(1.889)**	(-0.501)	(-0.620)	(-1.405)	(-1.600)
Firm Age	-0.0042	0.0045	0.0074	0.0039	-0.0237	-0.0158	**-0.0891*** **	**-0.0769** **
	(-0.151)	(0.159)	(0.349)	(0.182)	(-0.904)	(-0.543)	**(-2.746)**	**(-2.333)**
Board Size		-0.0207		-0.0000		-0.0171		**-0.0282***
		(-1.449)		(-0.001)		(-0.937)		**(-1.854)**
Board Independence		0.1473		**-0.2245** **		0.1124		0.2692
		(0.526)		**(-2.320)**		(0.348)		(1.623)
Chaebol		0.0137		-0.0040		-0.0255		0.0985
		(0.297)		(-0.098)		(-0.565)		(1.272)
Constant	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y	Y	Y	Y	Y
Observations	13,526	13,526	10,859	10,859	16,702	16,702	13,445	13,445
R-squared	0.115	0.120	0.101	0.108	0.081	0.084	0.079	0.099

<Table 12> Changes in total CO_2 emissions by asset size

This table presents OLS regression results examining whether opposition votes by global institutional investors over climate risk concerns influence subsequent changes in total CO_2 emissions across two subsamples partitioned by sales (above vs. below KRW 2 trillion). Global institutional investor votes are recorded at the March annual shareholders' meeting, while the change in total CO_2 emission is measured from the voting year to the following year. The year 2020 is excluded because voting records for 2019 are unavailable. We also exclude 2024 because the $Total\ CO_2\ Emissions$ data for that year was not available at the time of data collection. All models include year and industry fixed effects. *t*-statistics, based on clustered standard errors at the firm level, are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Coefficients significant at the 10% level are highlighted in **bold**

	(1)	(2)	(3)	(4)
	Δ *Total CO_2 Emissions*			
	Asset ≥ 2 trillion won		Asset < 2 trillion won	
$VoteAgainst^{CC}$	**0.1115****	**0.1180****	**-0.1998***	**-0.2584***
	(2.114)	**(2.277)**	**(-1.872)**	**(-1.708)**
Firm Size	**-0.0144***	-0.0009	-0.0432	-0.0535
	(-1.694)	(-0.092)	(-0.992)	(-1.220)
Debt Ratio	-0.0096	-0.0691	0.0968	0.1154
	(-0.125)	(-0.871)	(0.733)	(0.835)
ROA	**0.5709*****	**0.4741****	0.2016	0.2771
	(2.631)	**(2.178)**	(0.739)	(1.053)
Firm Age	-0.0127	-0.0013	-0.0217	-0.0204
	(-0.850)	(-0.090)	(-0.680)	(-0.650)
Board Size		**-0.0193*****		0.0142
		(-3.078)		(1.224)
Board Independence		**0.2146***		0.0022
		(1.836)		(0.016)
Chaebol		-0.0348		0.0234
		(-1.515)		(0.516)
Constant	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y
Observations	20,240	20,240	7,739	7,739
R-squared	0.073	0.086	0.117	0.120

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