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Research article

Mapping the influence: Institutional blockholder coordination and climate change risk disclosure

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ABSTRACT

This study investigates the relationship between institutional blockholder coordination, proxied by geographic proximity, and climate change risk disclosure. Using a sample of 2,887 firm-year observations for S&P 500 companies from 2010 to 2022, we reveal that a firm's climate change risk disclosure decreases when its institutional blockholders are more coordinated. In addition, we find that the negative relationship between institutional blockholder coordination and climate change risk disclosure manifests more in firms with less diversified institutional blockholders, a smaller number of institutional blockholders, a prominent position to their blockholders, and more dedicated institutional blockholder ownership. Moreover, we find that the negative association between institutional blockholder coordination and climate change risk disclosure is more pronounced in firms with corporate general counsels, a non-concentrated customer base, higher asset tangibility, and those that are environmentally sensitive. Our main conclusion still holds after using an alternative measure for climate change risk disclosure as well as a battery of endogeneity tests. Finally, we propose that institutional blockholder coordination lessens climate change risk disclosure through the channel of increased performance-induced CEO dismissal. Collectively, this study provides insightful implications for academics, financial statement users, regulators, and policymakers.

1. Introduction

Managers are under growing pressure from various stakeholders to release information about their climate change risk exposure due to the mounting recognition of the heightened risks and costs associated with climate change (Alam et al., 2024; Sautner et al., 2023). For instance, investors require more information regarding climate change risks in order to make informed investment decisions (Ben-Amar et al., 2023). Notably, at their 2019 shareholder meetings, U.S. companies were faced with an unprecedented volume of climate-related shareholder proposals (Flammer et al., 2021). However, there is continuing grossly unmet investor demand for such information. Arguably, while disclosing climate change risks can enhance trustworthiness, managers often exhibit bias against providing unfavourable information (i.e., climate change risk disclosure) (Matsumura et al., 2022). Thus, initiatives to promote better reporting on these risks have emerged. The Task Force on Climate-related Financial Disclosures (TCFD) as well as the International Sustainability Standards Board (ISSB) are two examples of these initiatives (Ilhan et al., 2023). Relatedly, the Securities and Exchange Commission (SEC) in the United States was the first regulatory body globally to issue mandatory rules for disclosing climate change risk information in official accounting filings in 2010 (Alonso et al., 2023).

Since the introduction of these initiatives, there has been an increased scholarly focus on climate change risk disclosure. A body of research has examined the factors that impact climate change risk disclosure, highlighting the importance of firm characteristics (Eleftheriadis and Anagnostopoulou, 2015; Stanny and Ely, 2008), board gender diversity (Ben-Amar et al., 2017), board effectiveness (Ben-Amar and McIlkenny, 2015), CEO political ideology (Alonso et al., 2023), sustainability governance (Peters and Romi, 2014), and pressure from non-financial stakeholders (Guenther et al., 2016; Tauringana and Chithambo, 2015) as antecedents to climate change risk disclosure. On the other hand, owing to their substantial ownership stakes as well as their informational advantage, institutional investors play a pivotal role in influencing managerial decisions (DesJardine and Durand, 2020). Thus, previous research has investigated how corporate social responsibility reporting in general and corporate climate change risk reporting in particular might be shaped by overall institutional

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ownership or specific types of institutional owners (e.g., Chen et al., 2020; Flammer et al., 2021; Gu, 2024; Ilhan et al., 2023). However, a notable gap in the literature is that while the institutional ownership-climate change risk disclosure nexus has been studied, institutional investors (or certain types of investors) are treated by prior studies as independent entities, and the interactions between them are largely ignored. The potential benefits of coordination, which may exist even if total levels of institutional ownership are low, are missed when concentrating on overall institutional ownership (Mathers et al., 2020). It is suggested by recent research that some institutional investors coordinate together rather than acting independently to shape their owned firms' policies (Crane et al., 2019). Further, this practice is particularly prevalent among institutional blockholders because they have more power and incentives to challenge corporate managers (Cheng et al., 2023).[1] In fact, recent studies suggest that investors' ability to coordinate could be significantly affected by their geographic proximity (Kim et al., 2018). Thus, in this study, we shed light on the unexplored link between institutional blockholder coordination, proxied by geographic proximity, and climate change risk disclosure. Specifically, we address this research question: *does institutional blockholder coordination affect climate change risk disclosure?*

Exploring the link between institutional blockholder coordination and climate change risk disclosure is relevant due to the following reasons. First, the headlines are still being dominated by climate change, and firms, investors, and regulators worldwide are becoming increasingly concerned about climate change-related risks' impact on financial and capital markets (Kölbel et al., 2020). Thus, improved transparency regarding the risks associated with climate change can be paramount since it diminishes uncertainty with respect to a potentially significant source of risk (Kim et al., 2023). Second, shareholder activism literature proposes that the bargaining power of activist shareholders as well as their ability to influence corporate decisions are significantly determined by their collective and coordinated actions. However, little is known about what drives institutional shareholders to coordinate their actions and the consequences of such coordination (Cheng et al., 2023).

Using a sample of 2887 firm-year observations for S&P 500 companies from 2010 to 2022, we find that a firm's climate change risk disclosure decreases when its institutional blockholders are more coordinated. In addition, we find that the negative effect manifests more in firms with less diversified institutional blockholders, a smaller number of institutional blockholders, a prominent position to their blockholders, and more dedicated institutional blockholder ownership.[2] Moreover, we show that the negative coordination-disclosure relation is more pronounced in firms with corporate general counsels, a non-concentrated customer base, higher asset tangibility, and those that are environmentally sensitive. Our main finding still holds after using an alternative measure for climate change risk disclosure as well as a battery of endogeneity tests. Finally, we propose that institutional blockholder coordination lessens climate change risk disclosure through the channel of increased performance-induced CEO dismissal.

Our study makes the following contributions to the literature. First, our study adds to a growing body of research on the effect of institutional blockholder coordination on their portfolio companies. Institutional ownership is often diffuse in practice (Lin et al., 2024). Institutional owners' median stake in companies has decreased by 80% from 1980 to 2013, dropping from 0.128% to 0.029%, and the percentage of five large institutions' ownership has witnessed a decline from 83% to 60% (Crane et al., 2019). Thus, a rising number of institutional owners seek to engage in close partnerships with other institutional investors to leverage their collective power (Lin et al., 2024). Environmental and social engagements particularly witness the prevalence of coordination and partnership among institutions and stakeholders (Dimson et al., 2021). Past studies provided mixed evidence on whether institutional investor coordination is beneficial or detrimental to their portfolio firms (Huang and Kang, 2017; Kim et al., 2018; Mathers et al., 2020; Cheng et al., 2023). By showing that institutional blockholder coordination lessens climate change risk disclosure, our study expands on literature on the dark side of institutional investor coordination. Second, our study broadens the range of drivers behind climate change risk disclosure (Alonso et al., 2023; Ben-Amar and McIlkenny, 2015; Ben-Amar et al., 2017; Flammer et al., 2021; Guenther et al., 2016; Ilhan et al., 2023) by suggesting an additional factor, namely institutional blockholder coordination, to explain the heterogeneity in climate change risk disclosure practices. Thus, we respond to the call of Flammer et al. (2021), who point out that climate change risk disclosure has been surprisingly underexamined in academic literature, despite being a significant concern for investors. Third, this paper adds to the literature on the broader field of environmental management. One advantage of climate-specific disclosure is that it may put more pressure on companies to lower their reported carbon emissions, which has been demonstrated to lessen the adverse externalities that are created for other companies and the environment as a whole (Ilhan et al., 2023; Kim et al., 2023). Thus, our results concerning the negative association between institutional blockholder coordination and climate change risk disclosure suggest that a firm's environmental management is adversely affected by its coordinated institutional blockholders. Fourth, this paper sheds light on the debate concerning shareholder empowerment by providing evidence that allowing shareholders greater ease in coordination impedes climate change risk disclosure. Thus, a policy implication of this research would be that tightening regulatory constraints that restrict shareholders capacity for coordination, particularly institutional blockholders, could diminish their private benefits of control, thus mitigating management's self-interested behaviour. Finally, as climate change risk information is becoming highly demanded by various stakeholders, our findings should be of interest to academics, financial statement users, regulators, and policymakers.

The remainder of the paper is organized as follows. Section 2 presents the literature review. We present the theoretical framework and develop our hypothesis in Section 3. Research design is presented in Section 4, and empirical results are reported in Section 5. Finally, Section 6 concludes this study.

2. Literature review

2.1. Climate change risk disclosure

Information on a firm's climate change risk exposure might be useful to multiple stakeholders. For instance, financial stakeholders, such as shareholders and creditors, can use these disclosures to make better investment decisions. Empirical studies provide evidence that equity and debt markets price climate change risks and integrate ESG criteria in their investment process (Matsumura et al., 2014). Further, Ben-Amar et al. (2024) reveal that climate change risk disclosures matter to financial analysts and are conducive to greater forecast accuracy. Thus, there is well-established pressure from multiple stakeholders for more climate change risk information (Wei et al., 2024). However, the current level of climate change risk disclosure, both in terms of quantity and quality, is considered inadequate by many institutional investors (Ilhan et al., 2023). The presence of counterbalancing considerations may explain the tendency not to reveal climate change risk information. Disclosing climate change risk information strengthens the commitment of firms to mitigate as well as manage their climate change risks (Ben-Amar et al., 2023), allows investors, business partners, and other stakeholders to have more informed engagement with the disclosing

[1] Institutional blockholders are defined as institutional investors who own 3% or more of the portfolio firm's total shares (Chithambo et al., 2020).

[2] Diversified institutional blockholders refer to institutional blockholders who diversify their equity portfolios via simultaneous ownership in multiple firms (Akamah and Shu, 2021).

firms, and helps firms strengthen their long-term relationships with investors and other stakeholders Ilhan et al. (2023). Nevertheless, it uncovers the vulnerabilities of firms to investors, competitors, customers, and other stakeholders (Matsumura et al., 2022), entails significant direct costs such as human resources (Demers and Metzner, 2021), and exposes disclosing companies to potential adverse reactions from their stakeholders (Matsumura et al., 2014).

Since the timely and accurate disclosure of a firm's risk exposures, including the increasingly pertinent and significant climate change risk, is crucial to the efficiency of the financial market (Krueger et al., 2020), several initiatives have been put in place to guide companies in disclosing climate risk information. The Task Force on Climate-related Financial Disclosures (TCFD) as well as the International Sustainability Standards Board (ISSB) are two examples of such initiatives (Ilhan et al., 2023). Relatedly, in the United States, the Securities and Exchange Commission (SEC) took a pioneering step by becoming the first regulator globally to issue mandatory rules for climate change risk disclosure in 10-K filings in 2010 (Alonso et al., 2023).

Driven by the lack of transparency regarding a firm's exposure to climate change risks as well as the release of several climate change risk disclosure initiatives, one line of research has sought to understand what factors contribute to climate change risk disclosures. In terms of firm characteristics, some studies find that climate change risk disclosure depends on firm size (Eleftheriadis and Anagnostopoulou, 2015; Stanny and Ely, 2008), prior disclosure, and foreign sales (Stanny and Ely, 2008). Other studies have explored some governance factors influencing climate change risk disclosure, such as board gender diversity (Ben-Amar et al., 2017), board of directors' effectiveness (Ben-Amar and McIlkenny, 2015), the presence of an environmental committee, and the presence of a Chief Sustainability Officer (Peters and Romi, 2014). Using data compiled by the Federal Election Commission, Alonso et al. (2023) provide evidence that Democratic CEOs provide more specific climate-related information than their Republican-led counterparts. Examining the influence of stakeholder pressure, some studies find that climate change risk disclosure is affected by the issuance of government guidance (Tauringana and Chithambo, 2015) and the relevance of the following stakeholder groups: government, general public, media, employees, and customers (Guenther et al., 2016).

More related to our study, Flammer et al. (2021) reveal that shareholder activism is positively related to climate change risk disclosure, particularly when driven by institutional investors, and even more so if institutional investors are of long-term horizon. Likewise, Ilhan et al. (2023) offer systematic evidence that climate risk disclosures are valued and demanded by institutional investors, through a survey and analysis of observational data. Nonetheless, although valuable insights have been provided by these studies regarding the role of institutional investors in the context of climate change risk disclosure, they deal with institutional shareholders or certain types of them as independent entities, thus largely overlooking the interactions among them. Concentrating on overall institutional ownership ignores coordination's potential implications, which may be present even in cases where total levels of institutional ownership are low. Against this backdrop, we investigate how coordination among institutional blockholders, measured by geographic proximity, affects climate change risk disclosure.

The U.S. is a particularly interesting context for our study due to the following reasons. First, the U.S. is the largest economy and the second major consumer of oil and energy (Shahbaz et al., 2020). Thus, according to 2022 figures, the U.S. setting contributes the most to carbon emissions, making up about 25% of all historical CO2 (Houqe et al., 2024), which are one of the main reasons for climate change (Nasir et al., 2021). Second, a disclosure rule regarding climate change was issued by the SEC in February 2010, which reinforces reporting of climate change risks by U.S. public companies in Form 10-K and clarifies the disclosure of material climate change matters with respect to physical, regulatory, and other business risks (Kim et al., 2023). Third, nowadays, institutional investors constitute the largest group of shareholders and own the vast majority of U.S. companies (Kim et al., 2018).

2.2. Institutional blockholder coordination

Public firms' ownership structures have become increasingly concentrated over the past three decades among a small set of the largest institutional investors, like BlackRock, State Street, and Vanguard. Each of these largest investors holds a stake in nearly every company in the S&P 500, ranging from 5% to 7% (Cheng et al., 2023). Thus, a deeper analysis of institutional blockholders' impact on company operations and valuation is warranted (Ali et al., 2022). It is suggested by existing research that firm decisions can be influenced by institutional investors through two main channels: voice and exit (Ghaly et al., 2020). In the case of the voice channel, institutional investors directly intervene within a firm in the form of voting against management or suggesting a strategic change, either privately or publicly. In the case of the exit channel, managerial behaviour can be governed by institutional investors who implicitly threaten to sell their shares. A firm's stock price may experience a decline as a result of institutional investors' exit, thus harming managers' equity compensation (Kim et al., 2019).

Although a sizeable portion of the outstanding shares of the majority of companies is held as a whole by institutional investors, the concentration of institutional ownership has declined over the past three decades. Institutional owners' median stake in companies has decreased by 80% from 1980 to 2013, dropping from 0.128% to 0.029%, and the percentage of five large institutions' ownership has witnessed a decline from 83% to 60% (Crane et al., 2019). Ownership diffusion leads the classical free rider problem to arise; as small owners lack sufficient incentives to monitor independently, governance will be hampered if investors engage in independent monitoring (Kim et al., 2018). It is suggested by recent research that some investors coordinate together rather than acting independently to shape their owned firms' policies (Crane et al., 2019). For example, by coordinating their proxy votes, institutions can practice joint pressure on management to make corporate governance changes and replace incompetent CEOs. *The inclination of institutional investors to work together to increase their influence over management is referred to as coordination* (Cheng et al., 2023). The collective bargaining power of a similar set of business stakeholders, such as institutional investors, can be increased by coordination. Consequently, decision makers tend to give corporate constituents who can coordinate their actions top priority and pay attention to their demands (Kim et al., 2018).

A related strand of literature uses geographic proximity among institutional investors as a proxy for implicit coordination. This proxy is based on social network literature, which suggests that the likelihood of developing social networks is increased between individuals who are capable of associating and bonding with others because of familiarity, often stemming from geographic proximity (Huang and Kang, 2017). Working in the same region increases not only the probability of sharing similar cultural values among institutional investors, but it also increases the frequency of their social interactions, thus promoting familiarity and mutual trust to cooperate and share information (Mathers et al., 2020). Consistent with this notion, Hong et al. (2005) reveal that mutual fund managers in the same city share the same trading decisions, suggesting word-of-mouth communication between them.

Through efficient information-sharing induced by coordination between geographically proximate institutions, institutions' economics of scope can be increased, thus enhancing their monitoring abilities. Also, due to lower communication and transportation costs and hence lower costs associated with executing coordinated governance activities, the geographic concentration of large institutions increases their incentives to seek active monitoring (Huang and Kang, 2017). Taken together, it is argued that geographic proximity between institutional shareholders can increase their coordination, thus enhancing their collective power and pressuring the managers of their portfolio firms to prioritize their

demands (Cheng et al., 2023). In line with this notion, empirical studies provide evidence consistent with the governance effects of institutional shareholder geographic proximity. For instance, institutional investor geographic proximity enhances firm value (Huang and Kang, 2017), increases stock price informativeness (Kim et al., 2018), and promotes corporate innovation (Mathers et al., 2020). Conversely, in a more recent study, Cheng et al. (2023) reveal that workplace safety violations increase with institutional blockholder geographic proximity. However, it is unclear if disclosure of climate risk information can be influenced by institutional blockholder geographic proximity.

3. Theoretical framework and hypothesis development

In this study, we use voluntary disclosure theory to investigate why institutional blockholder coordination may affect climate change risk disclosure. Following the voluntary disclosure perspective, managers face a trade-off between the benefits and costs of disclosing firms' exposure to climate change risks (Ben-Amar and McIlkenny, 2015). Disclosing climate change risk information makes the pricing of climate change risks more efficient. Therefore, environmentally transparent firms enjoy less information asymmetry between managers and stakeholders, a lower cost of capital, a higher firm value, a more accurate analyst forecast, and a larger investor base (Tsang et al., 2023). However, the extent of information disclosed in firms' CSR reports might be influenced by the desire to avoid certain costs. Disclosing environmental information entails substantial proprietary costs (Flammer et al., 2021). Proprietary costs are indirect costs that depend on the nature of the published information. As climate change risk disclosure represents negative corporate social responsibility information, information receivers are likely to respond negatively when climate change risk disclosure is initiated (Kim et al., 2023). Thereby, according to the voluntary disclosure perspective, companies that are highly exposed to climate change risk would choose not to publish this information.

In the following, we discuss how pressure from coordinated institutional blockholders might also reduce managerial incentives to provide such costly public disclosure. According to voluntary disclosure theory, managers may withhold climate change risk information due to its potential disadvantages, such as short-term adverse market reactions to the firm and possible drops in managerial compensation (Song and Xian, 2024). This reluctance might also be intensified by coordinated institutional blockholders due to the following reasons. First, although institutional investors' demand for climate change risk disclosure is well documented (Ding et al., 2023), shareholders with significant influence, such as blockholders, exert pressure on CEOs to deliver positive financial results and are prepared to use the threat of intervention (firing CEOs, for example), if the company's performance falls short of expectations (Guthrie and Sokolowsky, 2010). Thus, having considerable influence to obtain access to corporate management for private information (Akamah and Shu, 2021) as well as envisioning the potential negative market reactions to climate change risk disclosure, institutional blockholders might be incentivized to substitute public information acquisition with private communication channels. Supporting this view, Ertimur et al. (2014) provide evidence that managers of bad-news firms are influenced by large shareholders to delay disclosures. Second, it is suggested by theory that the private information advantages of large shareholders are crowded out by ricker public information (Akamah and Shu, 2021). In line with this notion, prior studies reveal that opaque disclosure environment is more beneficial and preferrable for large shareholders (Maffett, 2012; Baik et al., 2020). For instance, Maffett (2012) find that more informed trading is experienced by institutional investors from firms with less disclosure transparency. Taken together, these arguments suggest that institutional blockholders' desire to maintain their private benefits will result in discouraging climate change risk disclosure. However, in practice, institutional investors have difficulty acting collectively to influence corporate managers because institutional ownership has become widely dispersed with regards to institutional investors' number and types (Mathers et al., 2020). Thereby, anecdotal and survey evidence suggest that institutional investors do coordinate their efforts to exert greater pressure on management (Huang and Kang, 2017). Thus, we argue that institutional blockholder coordination would increase their collective power. Accordingly, corporate managers would face increased pressure to comply with coordinated institutional blockholders' demands to release less information about climate change risks. Consequently, exploiting the U.S. context, where institutional investors own more than 70% of the outstanding equity in the thousand largest U.S. corporations and climate change risk disclosure is mandatory (Kim et al., 2023), we hypothesise.

H1a. There is a negative relationship between institutional blockholder coordination and climate change risk disclosure

However, there are also reasons to believe that our hypothesized relation may not hold. In fact, a striking picture is painted by a recent survey of 439 institutional investors: it is believed by the majority that climate risk reporting equals financial reporting in importance, and one-third considers it even more important (Ilhan et al., 2023). Due to their substantial holdings in portfolio companies, institutional investors are more exposed to the climate change risks affecting these companies. In addition, they often employ dedicated staff members for monitoring them (Dimson et al., 2015). As a consequence, they are more incentivized to drive corporate management to increase climate change risk disclosure. In line with these arguments, Flammer et al. (2021) find that shareholder activism is positively associated with climate change risk disclosure. Likewise, Ilhan et al. (2023) reveal that climate risk disclosure increases with climate-conscious institutional ownership. Nevertheless, recent studies argue that persuading an engaged company's management requires more coordinated effort when it comes to environmental and social issues as compared to corporate governance issues. It is difficult to convince management to make changes on your own not only because of the widely dispersed institutional ownership structure (Mathers et al., 2020), but also because these changes are often less standard and entail higher costs to implement (Dimson et al., 2015). Therefore, environmental and social engagements particularly witness the prevalence of coordination and partnership among institutions and stakeholders (Dimson et al., 2021), which are crucial in enhancing environmental and social engagements' success rates. Given that institutional owners, who represent the most important set of shareholders in the U.S. stock market, are increasingly paying attention to climate-related information of their firms (Flammer et al., 2021; Ilhan et al., 2023), institutional blockholder coordination may enhance climate change risk disclosure of U.S. firms.

H1b. There is a positive relationship between institutional blockholder coordination and climate change risk disclosure

4. Research design

4.1. Data and samples

Our study encompasses S&P500 companies during the period 2010 to 2022. Given their substantial market capitalization, these companies face notable pressures from stakeholders and society to address climate change risks and assume a leadership role in climate-related initiatives (Alonso et al., 2023). Our focus is on the period subsequent to the issuance of the 2010 SEC guidance that advocated for disclosing more information about material climate risks. This is in line with prior research indicating that disclosure quantity and quality could be augmented by regulatory guidance (Miihkinen, 2012). Risk factor disclosures are extracted from 10-K filings in SEC EDGAR between 2010 and 2021. Thomson Reuters 13F Institutional Holdings is used to source institutional holdings data, whereas Compustat, Bloomberg, and Datastream are used to obtain firm characteristics data. We exclude financial firms as well as firms with missing data from our analysis. The resulting sample comprises 2887 firm-year observations between 2010 and 2022.

All continuous variables are winorized at the 1% and 99% levels for both tails of the distribution. Sample selection and distribution are presented in Appendix A.

4.2. Variable construction

4.2.1. Climate change risk disclosure

We use the frequency count (i.e., number of occurrences) of climate change risk-related keywords in firms' 10-K filings to measure a firm's climate change risk disclosure, *CD*, following Chen et al. (2023). We use the climate change risk disclosures' keyword list provided by Kim et al. (2023) as presented in Appendix 2.

4.2.2. Institutional blockholder coordination

Following prior research (Cheng et al., 2023; Kim et al., 2018; Mathers et al., 2020), we measure shareholder coordination using the geographic proximity among a firm's institutional blockholders. To construct this measure, we start by gathering the zip codes of institutional blockholders' headquarters from their 13F filings, accessible through the Securities and Exchange Commission Electronic Data Gathering, Analysis, and Retrieval (SEC EDGAR) system. Then, we obtain the latitude and longitude of each of the zip codes using the US Census Bureau's Gazetteer Place and Zip Code database. The following standard formula is used to determine the distance between institution i and institution j:

$$D_{i,j} = \mathrm{r} \times \arccos\left\{\cos(lat_i)\cos(lon_i)\cos(lat_j)\cos(lon_j) + \cos(lat_i)\sin(lon_i)\cos(lat_j)\sin(lon_j) + \sin(lat_i)\sin(lat_j)\right., \quad (1)$$

where $D_{i,j}$ represents the distance in statutory miles, r is Earth's radius (approximately 3963 statutory miles), and lat and lon are the latitudes and longitudes of the institutional blockholders' headquarters.

For each firm-year, we first calculate the geographic distance between all possible and unique pairs of institutional blockholders, weighted by their investment in the firm. Then, we take the natural logarithm of the variable to lessen the influence of outliers. Finally, we reversely code it to facilitate interpretation. Our measure of institutional blockholder coordination, *COORD*, is as follows:

$$COORD = -log\left(\frac{\sum_{i,j}^{N} Distance_{i-j} * O_i * O_j}{(N^2 - N)/2}\right) \quad (2)$$

Where $Distance_{i-j}$ represents the geographic distance between institutions i and j. N is the total number of institutional blockholders for the firm, and O_i and O_j are the ownership percentages for investors i and j, respectively.

4.2.3. Control variables

Following prior studies in the U.S. context (Alonso et al., 2023; Cheng et al., 2023; Ding et al., 2023; Flammer et al., 2021; Song and Xian, 2024), we include a series of control variables that may potentially influence climate change risk disclosure. We classify the control variables into three groups: financial characteristic variables, corporate governance variables, and other corporate characteristic variables. As for financial characteristic controls, we incorporate firm size (*SIZE*), leverage (*LEV*), capital expenditures ratio (*CAPEX*), market-to-book ratio (*MTB*), cash ratio (*CASH*), and profitability (*ROA*). We expect that larger and more profitable firms will disclose more climate change risk information (Flammer et al., 2021). Similarly, given that firms with higher leverage are under higher scrutiny, we expect these firms to release more information related to their climate change risk exposure (Alonso et al., 2023). We use *MTB* given that high-growth companies face greater information asymmetry and thus may reveal more climate change-related information (Ding et al., 2023). We add *CASH* and *CAPEX*, in line with Song and Xian (2024). With regards to corporate governance controls, we include board size (*BS*), board meetings (*BM*), board gender diversity (*BGD*), board independence (*BIND*), CEO duality (*CEO DUAL*), CSR committee (*CSR*), institutional ownership (*IO*), and local institutional ownership (*LOCAL IO*). Prior studies document that board characteristics play an important role in shaping voluntary environmental information; thus, we control for *BS*, *BM, BGD*, *BIND*, and *CEO DUAL* (Ding et al., 2023). We account for *IO* and *LOCAL IO* to ensure that our results are not driven simply by the presence of institutional investors or their geographic proximity to portfolio firms (Cheng et al., 2023). We control for *CSR*, following Alonso et al. (2023). Finally, as for other corporate characteristic controls, we include ESG controversies (*ESG CON*), in line with Alonso et al. (2023). Control variables are defined in detail in Appendix 3.

4.3. Model

We adopt the following firm fixed effects regression model to examine how institutional blockholder coordination affect climate change risk disclosure:

$$CD_{i,t} = \beta_0 + \beta_1 COORD_{i,t} + Controls_{i,t} + Firm\ FE + Year\ FE + \varepsilon_{i,t} \quad (3)$$

Where i denotes firm and t denotes year. The dependent variable is *CD*, proxied by the frequency count (i.e., number of occurrences) of climate change risk-related keywords in firms' 10-K filings. *COORD* is the independent variable measured based on the geographic proximity among a firm's institutional blockholders. Controls represent a vector of control variables that may impact *CD* significantly. To control for any unobservable time-invariant firm characteristics and time-variant characteristics across firms, we control for firm and year fixed effects, respectively.[3] Standard errors are clustered at the firm level.

5. Empirical results

5.1. Descriptive statistics

Table 1 displays summary statistics for all variables in our baseline regression. The average *CD* is almost 15, with a standard deviation of 24.6, suggesting a large variance in *CD* across firms. The mean value of *CD* is compatible with Ding et al. (2023). The mean of the geographic proximity-based shareholder coordination measure (*COORD*) is −9.6 with a standard deviation of.95, exhibiting close summary statistics as those in Kim et al. (2018). With regards to corporate governance variables, we find that independent members represent 85.4% of board size in our sample firms; board size comprises 10.9 members on average; 22.7% of board members are female; board members hold 7.8 annual meetings on average; 45.5% of firms' boards include CSR committees; CEOs in 50.5% of sample firms also work as board chairs; institutional investors own 88.1% of sample firms; and 5.5% of those institutional investors are local. Regarding financial characteristic variables, we find that the average SIZE is 9.7; the mean ROA is 7.7, the average LEV is 1.2, cash ratio represents 9.2 % on average, the average of CAPEX is 4.4%, and that market to book ratio has a mean of 4.9. Finally, as for other corporate characteristic variables, we find that the mean ESG CON is 81.3. The summary statistics of the control variables exhibit a reasonable range and are in line with previous studies.

5.2. Correlation matrix

Table 2 displays the correlation matrix for variables used in the

[3] In untabulated analysis, we include industry fixed effects to account for the unobservable industry characteristics that could drive our results, and we reach similar results.

Table 1
Descriptive statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
Dependent variable					
CD	2887	15.492	24.612	0	123
Independent variable					
COORD	2887	−9.606	0.945	−11.524	−7.702
Financial characteristic controls					
SIZE	2887	9.739	1.011	7.526	12.079
LEV	2887	1.156	3.467	−11.995	24.665
ROA	2887	7.704	6.935	−14.905	29.458
MTB	2887	4.931	16.715	−87.516	88.413
CASH	2887	9.207	8.801	0.092	42.991
CAPEX	2887	4.4	3.486	0.306	17.906
Corporate governance controls					
BS	2887	10.92	1.87	6	15
BM	2887	7.775	2.967	4	19
BIND	2887	85.358	7.835	57.143	93.333
CEO DUAL	2887	0.505	0.5	0	1
CSR	2887	0.455	0.498	0	1
BGD	2887	22.719	9.835	0	50
IO	2887	88.164	10.937	54.038	99.457
LOCAL IO	2887	5.542	4.351	0.533	20.702
Other corporate characteristic controls					
ESG CON	2887	81.26	29.511	2.78	100

Notes: This table presents the descriptive statistics of all variables. Continuous variables are winsorized at the 1% and 99% levels for both tails of the distribution. Variables are defined in detail in Appendix 3.

analysis. The mean VIF for all variables is 2.40, which is much lower than 10, indicating that there are no multicollinearity concerns. The correlation between *COORD* and *CD* is negative and significant, consistent with firms whose institutional blockholders are highly coordinated disclosing less climate change risk information. However, without a multivariate framework that considers and controls for factors that affect *CD*, conclusions cannot be solely derived from the univariate tests.

5.3. Baseline results

Table 3 presents baseline regression results on the association between *COORD* and *CD*. In particular, Column (1) presents the results without control variables, whereas Column (2) incorporates control variables. The coefficients of *COORD* are −0.885 and −0.954 in Column (1) and Column (2), respectively, and they are significant at the 1% level in both models. Thus, *COORD* is negatively and significantly associated with *CD*, supporting hypothesis H1a, which predicts that institutional blockholder coordination decreases companies' disclosure of climate change risks. Our result is consistent with Cheng et al. (2023), which provide evidence that institutional blockholder coordination is associated with more workplace safety violations. Likewise, this finding is in line with research conducted by Lin et al. (2024), which indicates that institutional investor clique ownership increases managers' likelihood of issuing positive news in earnings forecast disclosures while decreasing their likelihood of issuing negative news.

Conversely, our result contradicts the findings of Kim et al. (2018) that shareholder coordination enhances corporate information environment. Overall, our finding supports voluntary disclosure theory, suggesting that managers may abstain from releasing information voluntarily when its potential downsides exceed its potential benefits (Ben-Amar and McIlkenny, 2015). Although disclosing climate change risk information diminishes information asymmetry among the firm and outsiders, leading resources to be efficiently allocated, the initiation of climate change risk disclosure is likely to entail unfavourable responses from information receivers (Kim et al., 2023). Thus, managers may be reluctant to release this information. This tendency might also be intensified by institutional blockholders, as they hold substantial stakes in their portfolio companies and thus are highly impacted by climate change risk disclosures' negative repercussions (Flammer et al., 2021).

Table 2
Correlation matrix.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
(1) CD	1.000																
(2) COORD	**−0.075**	1.000															
(3) SIZE	**0.351**	−0.002	1.000														
(4) LEV	0.024	−0.002	**0.081**	1.000													
(5) ROA	**−0.309**	**0.075**	**−0.359**	−0.036	1.000												
(6) MTB	**−0.074**	0.023	**−0.051**	**0.413**	**0.127**	1.000											
(7) CASH	**−0.332**	−0.009	**−0.324**	**−0.047**	**0.268**	**0.043**	1.000										
(8) CAPEX	**0.358**	−0.023	**0.129**	0.025	**−0.049**	**−0.037**	**−0.190**	1.000									
(9) ESG CON	−0.012	0.009	**−0.366**	−0.029	**0.087**	0.010	0.023	−0.034	1.000								
(10) BS	**0.169**	**0.078**	**0.445**	**0.065**	**−0.151**	0.020	**−0.204**	0.036	**−0.178**	1.000							
(11) BM	**0.196**	**−0.061**	**0.199**	**0.040**	**−0.204**	−0.025	**−0.049**	**0.043**	**−0.087**	**0.106**	1.000						
(12) BIND	**0.175**	**−0.060**	**0.262**	**0.056**	**−0.103**	0.003	**−0.110**	−0.030	**−0.066**	**0.163**	**0.154**	1.000					
(13) CEO DUAL	0.027	−0.031	**0.147**	0.003	**−0.040**	−0.027	**−0.131**	0.023	−0.034	**0.054**	−0.029	**0.250**	1.000				
(14) CSR	**0.239**	−0.009	**0.319**	0.030	**−0.107**	−0.017	**−0.168**	**0.089**	**−0.106**	**0.202**	**0.141**	**0.182**	**0.061**	1.000			
(15) BGD	0.011	0.026	**0.162**	**0.064**	0.018	**0.081**	−0.005	**−0.059**	**−0.065**	**0.075**	**0.112**	**0.183**	0.016	**0.283**	1.000		
(16) IO	**−0.196**	**−0.160**	**−0.417**	**−0.063**	**0.097**	−0.009	**0.179**	**−0.146**	**0.252**	**−0.271**	−0.026	**−0.070**	**−0.191**	**−0.066**	0.034	1.000	
(17) LOCAL IO	**−0.095**	**0.041**	**−0.099**	−0.014	**0.062**	**0.049**	**0.203**	**−0.085**	**0.045**	0.006	0.021	**−0.069**	**−0.054**	**−0.080**	**0.039**	0.027	1.000

Notes: This table includes Pearson correlation coefficients for all regression variables used in this study. The p-value of numbers presented in bold is less than 5%. Variables are defined in detail in Appendix 3.

Table 3
Baseline regression results.

	(1)	(2)
	CD	
COORD	−0.885***	−0.954***
	(-2.64)	(-2.73)
SIZE		−1.003
		(-1.10)
LEV		0.068
		(1.57)
ROA		−0.013
		(-0.43)
MTB		−0.012*
		(-1.78)
CASH		−0.002
		(-0.08)
CAPEX		−0.389**
		(-2.53)
ESG CON		0.005
		(0.48)
BS		0.465**
		(1.99)
BM		−0.06
		(-0.74)
BIND		−0.026
		(-0.61)
CEO DUAL		−0.022
		(-0.03)
CSR		−0.712
		(-0.88)
BGD		0.06
		(1.52)
IO		−0.113*
		(-1.65)
LOCAL IO		0.124
		(0.31)
Constant	6.186*	22.185*
	(1.96)	(1.75)
Year FE	Yes	Yes
Firm FE	Yes	Yes
N	2887	2887
Within R-squared	0.187	0.205

Notes: This table presents the results of the OLS regression regarding the influence of institutional blockholder coordination, *COORD*, on climate change risk disclosure, *CD*. Standard errors are clustered at the firm level. T-statistics are presented in parenthesis. Significance levels of 1%, 5%, and 10% are indexed by ***,**, and * respectively. Variables are defined in detail in Appendix 3.

Additionally, they benefit from private information acquisition (Akamah and Shu, 2021). Thereby, they may use their collective power induced by geographic proximity-based coordination to elevate their voice and exert considerable influence on corporate managers to lessen climate change risk disclosure. Our results provide valuable insights into environmental management. Prior research highlights how crucial climate change-related information is for actively managing climate change-related risks. In order for the shift to a decarbonized economy to be effective, firms must take action and release decision-relevant information about it (Ding et al., 2023). Kim et al. (2023) reveal that companies that disclose climate change risks have a tendency to participate in more (less) pro-environmental (anti-environmental) actions. Therefore, our evidence that institutional blockholder coordination diminishes climate change risk disclosure suggests that such coordination adversely affects a firm's environmental management.

5.4. Alternative measure of climate change risk disclosure

In the main regression, we use the frequency count (i.e., number of occurrences) of climate change risk-related keywords in firms' 10-K filings to measure climate change risk disclosure. However, although some keywords are relevant whatever the context (e.g., climate change risk), others (e.g., climate) are only pertinent within context. To address this concern, we use the climate change risk disclosure measure used in Berkman et al. (2024), *CLIMATE RISK*. *CLIMATE RISK* is a raw risk score that depends not only on the extent of pertinent disclosure within company 10-Ks but also the specificity of the language used, with higher scores assigned to language that directly addresses climate risk. We re-estimate the main regression model using this measure and present the results in Table 4. We reveal that the coefficient of *COORD* is −2.568, and is significant at the 5% level in Column (1), not including control variables. Likewise, Column (2), where control variables are incorporated, shows that the coefficient of *COORD* is −2.748, and is significant at the 5% level. This suggests that *COORD* negatively affects *CLIMATE RISK*, enhancing the robustness of our main results.

5.5. Cross-sectional analyses

5.5.1. Conditional on institutional blockholder characteristics

The institutional blockholder coordination measure (*COORD*) assumes that all blockholders exhibit similar capabilities and incentives to exploit private information. However, blockholders are not a homogenous group, as they show systematic variation in position sizes, types of firms selected for a position, number of positions taken, and holding periods (J Hadlock and Schwartz-Ziv, 2019). A recent stream of

Table 4
Alternative measure of climate change risk disclosure.

	(1)	(2)
	CLIMATE RISK	
COORD	−2.568**	−2.748**
	(-2.35)	(-2.52)
SIZE		5.002*
		(1.83)
LEV		0.015
		(0.16)
ROA		0.016
		(0.18)
MTB		−0.03*
		(-1.79)
CASH		0.003
		(0.05)
CAPEX		−0.387
		(-0.92)
ESG CON		−0.002
		(-0.06)
BS		1.323**
		(1.99)
BM		−0.098
		(-0.36)
BIND		−0.003
		(-0.03)
CEO DUAL		−0.925
		(-0.66)
CSR		−5.855**
		(-2.12)
BGD		0.112
		(0.92)
IO		−0.254
		(-1.49)
LOCAL IO		−2.509
		(-1.06)
Constant	19.573*	−4.143
	(1.84)	(-0.13)
Year FE	Yes	Yes
Firm FE	Yes	Yes
N	2010	2010
Within R-squared	0.019	0.047

Notes: This table reports the regression results on the effect of institutional blockholder coordination, *COORD*, and an alternative measure of climate change risk disclosure, *CLIMATE RISK*. *CLIMATE RISK* is a raw score for climate change risk disclosure's extensiveness and relevance. Standard errors are clustered at the firm level. T-statistics are presented in parenthesis. Significance levels of 1%, 5%, and 10% are indexed by ***,**, and * respectively. Variables are defined in detail in Appendix 3.

literature has investigated how blockholder heterogeneity can shape firm outcomes (e.g., Ji et al., 2023; Korkmaz et al., 2017; Ramalingegowda et al., 2021). Extending this line of research, we investigate whether the relationship between *COORD* and *CD* might be influenced by coordinated blockholder characteristics. In particular, the sample is divided into subgroups based on four characteristics: blockholder portfolio diversification, the presence of multiple blockholders, the prominence of a firm to its blockholders, and dedicated blockholder ownership.

With regards to blockholder portfolio diversification, shareholders whose portfolio wealth is spread between more firms face a high opportunity cost as well as a declining marginal benefit when seeking private information regarding a particular company (Akamah and Shu, 2021). Thus, it is predicted that shareholders with more portfolio diversification will seek greater public disclosure. As a result, we hypothesise that the negative impact of *COORD* on *CD* will manifest more in firms whose blockholders hold less diversified portfolios. Following García-Kuhnert et al. (2015), we calculate institutional blockholder portfolio diversification (*DIVHERF)* as one less the total of the squared portfolio weights, where the weights represent the proportion of the total market value of the portfolio allocated to each company. Then, the sample is divided into two subgroups based on the median value of *DIVHERF*. The results shown in Panel A of Table 5 suggest that climate change risk disclosure's decline concentrates on firms whose institutional blockholders hold less diversified portfolios, thus supporting our hypothesis.

As for the presence of multiple blockholders, empirical research offers support for several advantages of having multiple blockholders, such as improving monitoring effectiveness, enhancing investment efficiency, and reducing excess leverage and tunnelling (Boateng and Huang, 2017; Jiang et al., 2018; Kang et al., 2018). These studies suggest that the controlling shareholder is incentivized to extract private benefits at the expense of minority shareholders, but competition for corporate control from other blockholders may act as a deterrent to this opportunistic behaviour. Thereby, we contend that the negative impact of *COORD* on *CD* will manifest more in firms with a smaller number of institutional blockholders. Following Jiang et al. (2018), we calculate multiple institutional blockholders (*MIB*) as the number of institutional blockholders. Accordingly, the sample is divided based on the median value of *MIB*. As expected, the results presented in Panel B of Table 5 show that coordination-disclosure relationship manifests more in firms with a smaller number of institutional blockholders.

Regarding the prominence of a firm to its institutional blockholders, although an institution could own a block in a particular company, that company can represent a small part of the institution's total portfolio (Fich et al., 2015). Investors likely derive the highest benefits from their largest positions for a given level of resources allocated to obtain private information (Akamah and Shu, 2021). To the extent that diversified shareholders exert greater effort to acquire private information regarding the firm with the prominent position in their portfolios, their incentives to request public disclosure from that firm are likely diminished. Thereby, we hypothesise that the negative association between *COORD* and *CD* will be more pronounced in firms taking prominent positions in their institutional blockholders' portfolios. Following Akamah and Shu (2021), we calculate a firm's prominence to its institutional blockholders (*PROMFIRM*) using the ratio of institutional blockholders for whom the focal firm represents the most prominent firm. Then, the sample is divided into two subsamples based on the mean value of *PROMFIRM* .[4] The results presented in Panel C of Table 5 support our hypothesis that the effect of blockholder coordination manifests more in firms with more weight in their institutional blockholders' portfolios.

[4] We use the mean value in this subsample test because most of the values of *PROMFIRM* are zero.

Table 5
Cross-sectional analysis based on institutional blockholder characteristics.

	(1)	(2)
Panel A: Institutional blockolder portfolio diversification	**high**	**low**
COORD	−0.48	−1.049**
	(-0.94)	(-2.28)
Firm Controls	Yes	Yes
Year FE	Yes	Yes
Firm FE	Yes	Yes
N	1474	1413
Within R-squared	0.142	0.248
Panel B: Multiple institutional blockholders	**high**	**low**
COORD	−0.935	−0.995**
	(-1.49)	(-2.50)
Firm Controls	Yes	Yes
Year FE	Yes	Yes
Firm FE	Yes	Yes
N	1238	1649
Within R-squared	0.177	0.22
Panel C: The prominence of a firm to its institutional blockholders	**high**	**low**
COORD	−1.104*	−0.954***
	(-1.71)	(-2.66)
Firm Controls	Yes	Yes
Year FE	Yes	Yes
Firm FE	Yes	Yes
N	229	2658
Within R-squared	0.538	0.204
Panel D: Dedicated institutional blockholder ownership	**high**	**low**
COORD	−1.372***	−0.657**
	(-2.74)	(-2.27)
Firm Controls	Yes	Yes
Year FE	Yes	Yes
Firm FE	Yes	Yes
N	1215	1227
Within R-squared	0.291	0.031

Notes: This table reports the moderating effect of institutional blockholder characteristics on the relationship between institutional blockholder coordination, *COORD*, and climate change risk disclosure, *CD*. We divide sample firms into high and low groups based on institutional blockholder characteristics, namely portfolio diversification, multiple blockholders, the prominence of a firm to its blockholders, and dedicated blockholder ownership in Panels A, B, C, and D, respectively. Standard errors are clustered at the firm level. T-statistics are presented in parenthesis. Significance levels of 1%, 5%, and 10% are indexed by ***,**, and * respectively. Firm Controls are control variables as shown in Table 3. Variables are defined in detail in Appendix 3.

Finally, instead of investigating investor characteristics separately, institutional investors are classified into dedicated and transient based on the presence of a set of characteristics collectively (Bushee, 2001). Dedicated institutional investors' holdings are substantial and long-term, enhancing their ability to directly engage with management, while transient institutional investors hold small stakes for short periods (Boone and White, 2015). Consistent with dedicated institutional investors relying more on private information, Ge et al. (2021) provide evidence that voluntary disclosure decreases with dedicated institutional blockholder ownership. Thus, we hypothesise that the negative relationship between *COORD* and *CD* will manifest more in firms with more dedicated institutional blockholder ownership. We define dedicated institutional blockholder ownership (*DIBO*) based on Bushee's (2001) classification. Then, the sample is divided into two subgroups based on the median value of *DIBO*. Supporting our prediction, the findings shown in Panel D of Table 5 show that the subgroup with a higher (lower) *DIBO* has a stronger (weaker) *COORD* effect on *CD*.

In short, our findings generally boost the view that institutional blockholder characteristics moderate the association among institutional blockholder coordination and climate change risk disclosure.

5.5.2. Conditional on firm characteristics

In this section, we discuss whether the association among institutional blockholder coordination and climate change risk disclosure varies with different firm characteristics, namely asset tangibility, corporate general counsel, customer concentration, and environmental sensitivity.

The tangible assets of a firm may experience a decrease in value if the firm operates in areas prone to significant climatic risks. The impairment may stem from the direct destruction of assets resulting from an extreme climatic event or from a decrease in asset value due to their exposure to future climate risks. Additionally, a decline in the market value of tangible assets may also occur due to the inability to sell these assets to a buyer as a consequence of heightened climate risks (Ginglinger and Moreau, 2023). Thus, we argue that the negative impact of *COORD* on *CD* will be more pronounced in firms with more asset tangibility. Asset tangibility (*TANG*) is defined as the proportion of property, plant, and equipment to total assets, following Dimson et al. (2015). Then, the sample is divided into two subgroups based on the median value of *TANG*. Supporting our prediction, the results presented in Panel A of Table 6 reveal that the influence of *COORD*on *CD*is stronger (weaker) in the subgroup with higher (lower) asset tangibility.

The number of firms facing investigations and lawsuits for not disclosing material climate change risks in their 10-K filings has increased markedly (Matsumura et al., 2022). Compared to other managers, corporate general counsels (GCs) have a deeper understanding of applicable laws and regulations (Ham and Koharki, 2016). Thus, we examine how the presence of GCs moderates the relationship between *COORD* and *CD*. Recent research offers conflicting findings regarding the consequences of corporate general counsels (GCs). For instance, whereas Kwak et al. (2012) provide evidence that management earnings forecasts issued by GC firms are more conservative and accurate, Hopkins et al. (2015) provide evidence that earnings management is more prevalent in GC firms. As such, the role of GCs in firms is not entirely clear. Following Ham and Koharki (2016), we define general counsel (*GC*) as a dummy variable that equals 1 if the firm's GC is in top management and 0 otherwise. Then, we divide the sample into firms having a general counsel ($GC = 1$) and firms without a general counsel ($GC = 0$). The results presented in Panel B of Table 6 reveal that the effect of *COORD* on *CD* is stronger (weaker) in the subgroup with (without) general counsel, supporting the view that *GC* can serve as a facilitator of management interests.

In order to make investment decisions, customers, like other firms' stakeholders (e.g., investors and creditors), request corporate information from a firm. Due to customers' greater bargaining powers, having a customer base that is more concentrated may lead a supplier firm to release more information to customers, either publicly or privately (Crawford et al., 2020). Consistent with this view, Cao et al. (2013) reveal that companies exhibit a higher likelihood of releasing quarterly earnings forecasts when depending heavily on major customers. Thus, we hypothesise that the negative relationship between *COORD* and *CD* will manifest more in firms without customer concentration. Following Dhaliwal et al. (2016), customer concentration is defined as a dummy variable, *Major Customer*, which equals one if a supplier firm discloses at least one corporate customer accounting for 10% or more of its annual revenues and zero otherwise. Then, we divide the sample into a subgroup with customer concentration (*Major Customer = 1*) and a subgroup without customer concentration (*Major Customer = 0*). The results presented in Panel C of Table 6 reveal that the influence of *COORD* on *CD* is stronger (weaker) in the subgroup without (with) major customers, thus supporting our hypothesis.

Finally, firms that belong to carbon intensive industries are viewed as major greenhouse gas emitters. Thus, they face higher regulatory climate change-related risks, resulting from government regulations and policies to reduce carbon emissions and fight climate change (Flammer et al., 2021). In line with legitimacy theory, to improve the public perception of their sustainability performance, firms belonging to environmentally sensitive industries may engage in more sustainability disclosures (Bratten and Cheng, 2023). Ding et al. (2023) provide evidence in support of this argument. Thus, we hypothesise that the negative relationship between *COORD* and *CD* will manifest more in environmentally sensitive firms. Following Emma and Jennifer (2021), to identify an environmentally sensitive firm, we apply a dummy variable, *Environmentally Sensitive*, which equals one for firms having the primary SIC codes of mining, oil exploration, paper, chemical and allied products, petroleum refining, metals or utilities (10, 13, 26, 28, 29, 33 and 49, respectively) and zero otherwise. In line with our hypothesis, the results presented in Panel D of Table 6 reveal that the effect of *COORD* on *CD* is stronger (weaker) in the subgroup with (without) environmentally sensitive firms.

Table 6
Cross-sectional analysis based on firm characteristics.

	(1)	(2)
Panel A: Asset tangibility	**high**	**low**
COORD	−1.718***	−0.136
	(-2.60)	(-0.74)
Firm Controls	Yes	Yes
Year FE	Yes	Yes
Firm FE	Yes	Yes
N	1445	1442
Within R-squared	0.206	0.434
Panel B: Corporate general counsel	**Yes**	**No**
COORD	−1.519***	−0.70**
	(-2.59)	(-2.31)
Firm Controls	Yes	Yes
Year FE	Yes	Yes
Firm FE	Yes	Yes
N	1343	1543
Within R-squared	0.23	0.212
Panel C: Customer concentration	**Yes**	**No**
COORD	−1.047**	−2.011*
	(-2.56)	(-1.80)
Firm Controls	Yes	Yes
Year FE	Yes	Yes
Firm FE	Yes	Yes
N	1999	171
Within R-squared	0.148	0.268
Panel D: Environmentally sensitive industries	**Yes**	**No**
COORD	−2.745***	−0.298
	(-2.79)	(-1.27)
Firm Controls	Yes	Yes
Year FE	Yes	Yes
Firm FE	Yes	Yes
N	843	2044
Within R-squared	0.198	0.388

Notes: This table reports the moderating effect of firm characteristics on the relationship between institutional blockholder coordination, *COORD*, and climate change risk disclosure, *CD*. We divide sample firms into high and low groups based on asset tangibility in Panel A, whereas we divide sample firms into groups with and without corporate general counsel, customer concentration, and environmental sensitivity in Panels B, C, and D, respectively. Standard errors are clustered at the firm level. T-statistics are presented in parenthesis. Significance levels of 1%, 5%, and 10% are indexed by ***,**, and * respectively. Firm Controls are control variables as shown in Table 3. Variables are defined in detail in Appendix 3.

5.6. A possible channel

Thus far, we have determined that coordination among institutional blockholders significantly reduces the disclosure of climate change risks. Our argument to predict this relationship stems from the decision horizon perspective, which suggests that CEOs will experience greater pressure from coordinated institutional blockholders to focus on short-term performance. This pressure limits the ability of CEOs to disclose information about climate change risks that may lead to negative market

Table 7
The possible channel.

	(1) High *COORD*	(2) Low *COORD*
	CEO DISMISSAL	*CEO DISMISSAL*
CD	0.03*	−0.01
	(1.74)	(-0.77)
SIZE	−0.05	0.179
	(-0.16)	(0.33)
LEV	−0.059	−0.009
	(-1.27)	(-0.23)
ROA	−0.053	−0.108**
	(-1.23)	(-1.96)
MTB	−0.004	−0.011
	(-0.27)	(-0.78)
CASH	−0.058**	−0.067
	(-2.10)	(-1.37)
CAPEX	0.133	−0.094
	(1.09)	(-0.54)
BS	−0.048	0.11
	(-0.24)	(0.68)
BM	0.157***	0.253***
	(2.78)	(4.33)
BIND	−0.054	0.021
	(-1.41)	(0.48)
CEO DUAL	−0.521	−0.774*
	(-0.86)	(-1.66)
BGD	−0.036	−0.058*
	(-1.22)	(-1.83)
IO	−0.007	−0.015
	(-0.18)	(-0.65)
Constant	0.598	−5.621
	(0.09)	(-1.05)
Year FE	Yes	Yes
Industry FE	Yes	Yes
N	531	640
Pseudo R-squared	0.243	0.30

Notes: This table reports the results of the analysis where we examine whether CEOs of firms with higher levels of climate change risk disclosure, *CD*, experience higher performance-induced turnover, *CEO DISMISSAL*, depending on the level of institutional blockholder coordination, *COORD*. We divide sample firms into two groups based on the median value of institutional blockholder coordination, *COORD*. Standard errors are clustered at the firm level. T-statistics are presented in parenthesis. Significance levels of 1%, 5%, and 10% are indexed by ***,**, and * respectively. Variables are defined in detail in Appendix 3.

reactions. If this indeed is the case, we can assume that the likelihood of performance-related CEO dismissals would be higher in firms with more climate change risk disclosure, especially with institutional blockholder coordination. Stated another way, performance-driven CEO dismissal might serve as the underlying channel connecting institutional blockholder coordination with climate change risk disclosure. Following Mathers et al. (2020), we define performance-induced CEO dismissal (*CEO DISMISSAL*) as an indicator variable, which equals one if the CEO is fired due to performance concerns and zero otherwise.[5]

To test this proposed channel empirically, we first split our sample into two subgroups based on the median value of institutional blockholder coordination (*COORD*). We then regress performance-induced CEO dismissal (*CEO DISMISSAL*) on climate change risk disclosure *(CD)* as well as a vector of control variables as in Shin and You (2023) and Mathers et al. (2020), including firm size (*SIZE*), leverage (*LEV*), capital expenditures ratio (*CAPEX*), market-to-book ratio (*MTB*), cash ratio (*CASH*), profitability (*ROA*), board size (*BS*), board meetings (*BM*), board gender diversity (*BGD*), board independence (*BIND*), CEO duality (*CEO DUAL*), and institutional ownership (*IO*). Supporting our prediction, the results presented in Table 7 reveal that *CD* is positively significant with *CEO DISMISSAL* in the subgroup with higher *COORD*.

[5] Performance-induced CEO dismissal data is obtained from https://onlinelibrary.wiley.com/doi/abs/10.1002/smj.3278.

5.7. Endogeneity tests

To address the potential endogeneity concerns, we rerun our baseline regression after lagging the independent variable by one period. In addition, we include several additional control variables in our baseline regression. Finally, we follow Abdelfattah et al. (2021) and Ullah et al. (2021) and conduct different tests including Two-stage least squares approach, Heckman two-stage method, and Propensity score matching. To save space, the results of these additional tests are presented in T 8–9 (see Appendix). Collectively, the results show that our main findings remain unchanged.

6. Conclusion

Establishing a measure of institutional blockholder coordination based on the geographic proximity between their headquarters, we find that a higher degree of institutional blockholder coordination is associated with less climate change risk disclosure. The negative relation between institutional blockholder coordination and climate change risk disclosure is robust to a battery of endogeneity tests and robustness checks. Furthermore, we find that the effect of institutional blockholder coordination manifests more in firms with less diversified institutional blockholders, a smaller number of institutional blockholders, a prominent position to their blockholders, and more dedicated institutional blockholder ownership. We also show that the negative coordination-disclosure relation is more pronounced in firms with corporate general counsels, a non-concentrated customer base, higher asset tangibility, and those that are environmentally sensitive. We also propose a possible channel through which institutional blockholder coordination can affect climate change risk disclosure. Taken together, our results support the notion that institutional blockholder coordination decreases climate change risk disclosure.

From a theoretical standpoint, our findings have important implications. First, our research is among the very few pertaining to the determinants of climate change risk disclosure (Alonso et al., 2023; Ben-Amar and McIlkenny, 2015; Ben-Amar et al., 2017; Flammer et al., 2021; Guenther et al., 2016; Ilhan et al., 2023). We extend this literature by showing that institutional blockholder coordination is an important determinant of climate change risk disclosure. To the best of our knowledge, this is the pioneer study exploring the nexus of institutional blockholder coordination and climate change risk disclosure. Second, we extend research on institutional investor influence on climate change risk disclosure. The existing literature mostly considers investor power arising from the overall level of ownership (Flammer et al., 2021; Ilhan et al., 2023). However, institutional ownership is increasingly widely dispersed amongst many institutions, and diffuse ownership is more susceptible to the free rider problem (Lin et al., 2024). Shareholder coordination, however, allows institutional investors to communicate more efficiently, making it easier for them to exert influence on management decisions (Cheng et al., 2023). We add to this stream of research by providing evidence that institutional blockholder coordination diminishes climate change risk disclosure. Thus, this study stresses the role of institutional blockholder coordination as a novel channel through which these investors can influence CSR outcomes.

Third, this paper adds to the literature on the broader field of environmental management. One advantage of climate-specific disclosure is that it may put more pressure on companies to lower their reported carbon emissions, which has been demonstrated to lessen the adverse externalities that are created for other companies and the environment as a whole (Ilhan et al., 2023). Thus, our results concerning the negative association between institutional blockholder coordination and climate change risk disclosure suggest that a firm's environmental management is adversely affected by its coordinated institutional blockholders. Fourth, we add to the literature on the implications of shareholder coordination. Some studies argue that shareholder coordination mitigates the free-rider problem under a dispersed ownership structure and

improves shareholder monitoring, resulting in better governance outcomes (Huang and Kang, 2017; Kim et al., 2018; Mathers et al., 2020). On the contrary, a more recent study suggests that shareholder coordination imposes pressure on portfolio firm managers to deliver desirable shareholder value, which may come to hurt the interests of non-shareholder stakeholders (Cheng et al., 2023). In line with this study, we provide evidence that institutional blockholder coordination decreases climate change risk disclosure, suggesting that devoting more attention to coordinated institutional blockholders that have short-term financial performance implications may come at the expense of the natural environment.

Our findings have important implications for practice. Climate change risk disclosure is of great concern to the multitude of stakeholders. For instance, investors incorporate the climate risk exposure of their portfolio companies into their decision-making and are increasingly vested in companies' disclosure of climate risks and their efforts to manage those risks (Flammer et al., 2021). Further, creditors perceive climate change risks as so substantial, as evidenced by the pricing of disclosed climate change risks in credit default swaps (CDS) markets (Kölbel et al., 2020). Moreover, Ben-Amar et al. (2024) find that climate change risk disclosures matter to financial analysts and are conducive to greater forecast accuracy. Thus, our findings provide input to a variety of stakeholders, which can inform their decision-making.

On the other hand, although U.S. companies are required to describe material climate change impacts (regulatory, business, and operational) in their annual reports according to the SEC rule enacted in 2010, climate risk is multifaceted, and there is little consensus on its materiality for firms. Additionally, there has been inconsistent enforcement of federal climate risk disclosure among firms. Furthermore, stakeholder litigation seeking to force companies to reveal climate risk has not always been successful (Matsumura et al., 2022). In this complicated institutional landscape, managers still enjoy a large degree of discretion in deciding whether to disclose or not (Ben-Amar et al., 2024). To the extent that firms may perceive the disclosure of significant climate change risks as essentially voluntary, we provide empirical evidence that climate change risk disclosure decreases with institutional blockholder coordination. Thus, the SEC should consider enhancing guidelines for climate change risk disclosure. Stricter regulations and consistent enforcement can ensure that companies are not underreporting their climate change risk exposure. Finally, this paper sheds light on the debate concerning shareholder empowerment by providing evidence that allowing shareholders greater ease in coordination impedes climate change risk disclosure. As less costly coordination is detrimental to non-shareholder stakeholders (i.e., the natural environment), a policy implication of this research would be that tightening regulatory constraints that restrict shareholders capacity for coordination, particularly institutional blockholders, could diminish their private benefits of control, thus mitigating management's self-interested behaviour.

In spite of the valuable insights provided, this study has some limitations that offer avenues for future research. First, despite the sufficiency of our sample size, focusing mainly on S&P 500 firms neglects other firms with small and medium sizes as well as non-U.S. firms. Second, we proxy for institutional blockholder coordination using geographic proximity, thus other channels of coordination could also be examined. Finally, we concentrate on a particular type of shareholders, institutional blockholders, thereby coordination among other types of shareholders or, more broadly, stakeholders could be investigated.

CRediT authorship contribution statement

Mohamed Khalifa: Writing – original draft, Software, Formal analysis, Data curation, Conceptualization. **Subhan Ullah:** Writing – review & editing, Supervision, Project administration, Conceptualization. **Tarek Abdelfattah:** Writing – review & editing, Supervision, Project administration, Conceptualization.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: No conflict of interest If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jenvman.2024.122788.

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