

ORGANIZATIONAL RESPONSES TO SOCIETAL DEMANDS AND THEIR IMPLICATIONS FOR ENVIRONMENTAL PERFORMANCE

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ABSTRACT

Institutional theory has overlooked the implications of organizational responses to societal demands. We investigate how three conventional corporate responses to the demand for climate change action, including compromise, avoidance, and manipulation, relate to actual emissions reduction. We also examine the moderating effect of reputational risk on these relationships. Our analysis is founded on panel data regression of 5,431 firm-year observations of S&P500 companies between 2011 and 2021. Our results show that compromising is associated with a reduction in emissions over time. We find marginal evidence that avoiders increase emissions and that, under high reputational risk, organizations manipulate more and consequently increase their emissions. Our study contributes to institutional theory by connecting organizational responses to societal expectations with environmental performance. Our findings vindicate the promise of corporate sustainability strategies in reducing carbon emissions.

Key words: compromise, avoidance, manipulation, reputational risk, carbon performance.

INTRODUCTION

Organizations are increasingly operating in complex institutional settings characterized by multiple, conflicting societal expectations. Contributing to these complex institutional environments are global demands such as climate change action, biodiversity preservation and human rights protection which may interfere with primary organizational goals and local norms and values (Almandoz et al., 2017; Furnari, 2018; Höllerer et al., 2017). Organizations cannot ignore global demands as failure to satisfy societal expectations invites sanctions that may lead

to legitimacy loss (Berrone et al., 2017; Khan et al., 2015; Porter & Kramer, 2011). Organizational legitimacy – a generalized perception that organizational actions are appropriate within socially constructed norms and values (Suchman, 1995: 574) - is also at stake when firms incur high reputational risk after disregarding societal expectations thereby attracting media attention (Etter et al., 2019; Schaltegger & Burritt, 2018). Hence, to safeguard legitimacy and ensure competitiveness in these complex settings, organizations employ several response strategies that may range from partial conformity to high resistance towards societal demands (Besharov & Smith, 2014; Greenwood et al., 2011; Pache & Santos, 2021; Pache & Santos, 2010). These response strategies have long been discussed in institutional theory.

Oliver (1991) provides a fundamental typology of how organizations respond when confronted with various societal demands arguing that organizations can acquiesce, compromise, avoid, defy, or manipulate. This typology has been expanded by other institutional scholars to include polarization and exploitation (Schedler & Rüeegg-Stürm, 2014), ambiguity and neutralization (Meyer & Höllerer, 2016), advocacy, reinterpretation, integration and isolation (Bertels & Lawrence, 2016), among others. Nonetheless, this field of research inquiry requires further attention by empirically exploring the implications of these responses to societal demands. For example, Boxenbaum and Jonsson (2017) point out that virtually no study has attempted to examine the societal consequences of avoidance practices such as decoupling.

Institutional theory has mostly overlooked the implications of institutional processes such as organizational responses for societal expectations (Greenwood et al., 2011; Wooten & Hoffman, 2017). Hence, we are asking: *‘Do organizational responses affect organizational performance on societal demands?’* We explore this question in the context of climate change action – a societal demand (arguably) representing the greatest challenge of our time (Howard-Grenville et al., 2014). The paucity of empirical institutional research on this topic is surprising because institutional theory possesses the power to explicate grand challenges like climate

change (Gümüşay et al., 2020; Lounsbury & Wang, 2020). Here, we seek to address this knowledge gap by examining three types of organizational responses to the societal demand for climate change action.

To our knowledge, no study has taken an empirical institutional perspective leveraging organizational responses to explore effects of organizational actions on climate performance. Institutional scholars have paid little attention to the implications that organizational responses to pressure for climate action have on climate performance (Grodal & O'Mahony, 2017). Therefore, our research provides new empirical insights, drawing on the organizational responses to institutional processes proposed by Oliver (1991). Thus, we also address concerns by scholars who criticized that certain institutional perspectives may dominate and crowd other forms of explanations, yet offering no solutions to the challenges facing today's society (Alvesson et al., 2019; Alvesson & Spicer, 2019).

Our paper contributes to this debate by exploring how three of Oliver's (1991) response strategies—i.e. compromise, avoidance, and manipulation—affect corporate carbon performance. Further, since organizations employ these strategic responses to safeguard legitimacy and competitiveness, we also investigate how organizational reputational risk interacts with each of the three relationships. We exclude two alternative responses outlined by Oliver (1991) – i.e. acquiescence and defiance – arguing that these responses are scarcely employed against the demand for climate change action. First, conforming to societal pressure for climate change action often contradicts organizational profit making goals and acquiescence is inapplicable to such contradictory demands (Pache & Santos, 2010). Second, defiance is now a rare response to climate change pressure because the climate issue has already gained a critical mass of support, thus making it difficult for organizations to openly resist (Furnari, 2018).

Our findings establish an important theory link between organizational responses and institutional demands. This connection allows us to address previous calls to understanding the outcomes of organizational responses to institutional expectations (Greenwood et al., 2011;

Grodal & O'Mahony, 2017). We find that compromise is associated with a reduction in emissions over time. With limited evidence, we find that avoidance is associated with an increase in emissions and that manipulating organizations engage more in political activity and, consequently, increase their emissions when facing high reputational risk. We obtain inconsistent results on the relationship between manipulation and carbon emissions. Insights into the moderating role of reputational risk on the avoidance-emissions relationship were not robust. Emanating from these results, we point out specific leverage points for policy makers and social movement organizations to accelerate carbon emissions reduction.

CONCEPTUAL DEVELOPMENT AND HYPOTHESES

Institutional scholarship provides a foundation for building arguments about the implications of organizational responses for societal issues such as climate change. For instance, Seo and Creed (2002) as well as Thornton et al., (2012) argue that opportunities for societal change can arise at the interstices of conflicting institutional demands. Such opportunities have multiplied due to glocalization (Höllerer et al., 2017). Under glocalization, organizations become multi-purpose entities due to influence of global issues such as sustainability and climate change, which interfere with local organizational goals, thus evoking conflicting expectations (Almandoz et al., 2017; Furnari, 2018). The resulting complex institutional patterns and organizational configurations can either perpetuate or mitigate global challenges like climate change (Schüssler et al., 2014). Organizations respond to these contradictory expectations through several strategies that have been assessed by institutional scholars (Pache & Santos, 2021; Pache & Santos, 2010). Despite a profound body of theoretical knowledge, the connection between organizational responses and societal change e.g., solving grand challenges like climate change, has received limited empirical attention (Ferraro et al., 2015).

Institutional theory describes several strategies with which organizations respond to institutional demands. For example, Oliver (1991) provides a ground-breaking typology, applicable to a wide range of industries, which has remained relevant for more than 30 years (Pache & Santos, 2021). This typology includes acquiescence, compromise, avoidance, defiance and manipulation as possible strategies (Oliver, 1991). According to Oliver (1991), acquiescing organizations mimic, comply, and unconsciously follow institutional demands. Compromising organizations take actions that pacify, placate, and balance elements of all institutional demands (Oliver, 1991). By contrast, avoidance implies that organizations pretend to care about institutional pressures such as climate change while their internal actions are decoupled from what is communicated externally. Organizations may also defy institutional demands by dismissing or attacking the sources or institutions that place demands (Oliver, 1991). Lastly, manipulation involves co-opting and influencing the sources of institutional demands (Oliver, 1991). While these responses have been examined intensively by scholars, their implications for solving climate change challenges are currently not well understood.

We surmise that organizational responses to the institutional demand for climate action have consequences on organizational environmental performance. Institutional pressure for environmental action materializes as a long-term, global demand that may contradict short-term goals such as profit making (Bansal & DesJardine, 2014; Slawinski & Bansal, 2012, 2015). As a result, organizations adopt a heterogeneous repertoire of responses, ranging from strategic market responses (Ambec & Lanoie, 2008; Busch et al., 2022; Busch & Friede, 2018; Busch & Lewandowski, 2018; Friede et al., 2015) to adversarial translations of environmental pressure into ‘business-as-usual’ (Wright et al., 2021; Wright & Nyberg, 2017). The wide array of organizational responses may also involve trade-offs (Battilana et al., 2022; Zietsma & Lawrence, 2010), some of which have perpetuated the current global climate crisis (Economist, 2022; U.N., 2022). Several studies that examine this issue from signaling, disclosure, legitimacy, and Corporate Social Responsibility (CSR) perspectives indicate that organizational

actions have implications on societal demands (Delmas et al., 2016; Hummel & Schlick, 2016; Li & Wu, 2020). Despite this profound body of work, we still do not understand how to distinguish organizations that positively contribute to climate change mitigation from those taking an adversarial corporate stance.

We employ institutional theory to provide a platform for further investigating the implications of organizational responses for climate change (Gümüşay et al., 2020; Lounsbury & Wang, 2020). Our conceptualization points out that, although organizations acknowledge the existential nature of the climate change crisis, carbon emissions keep spiraling out of control. While some firms implement substantial reforms, most firms retain objectives aimed at shareholder value and management of competition (Miller et al., 2011), as these objectives continue to be regarded as drivers of efficiency (Thornton, 2002). Hence, we seek to distinguish firms that positively contribute to climate change mitigation from those taking an adversarial stance based on firm response strategies.

Compromise and Greenhouse Gas (GHG) Emissions

Compromising can be exercised on contradictory, yet complimentary, or purely contradictory expectations. Compromising on contradictory, yet complimentary, demands allows organizations to dynamically balance coexisting demands and maintain their distinction while benefiting from their independence (Ashforth & Reingen, 2014; McPherson & Sauder, 2013; Smets et al., 2015). On the other hand, applying compromise to purely contradictory institutional demands results in hybrid organizations that can accommodate demands from conflicting institutional spheres (Battilana et al., 2017; York et al., 2016). Hence, such responses would result in a win-win between environmental protection and economic performance.

Previous studies show a heterogenous pattern of organizational responses to climate change. Since the 1970s, organizations in carbon intensive industries have typically taken an adversarial approach to emissions reduction, citing prohibitive costs of transition to low carbon business

(Levy & Egan, 2003). Conversely, organizations that are neither involved in fossil fuel exploitation nor are fossil fuel dependent have exhibited higher willingness to adopt meaningful change (Nyberg et al., 2023). These organizations reveal compromising strategies through a discourse of corporate sustainability as they seek to benefit both their shareholders and the environment (Jermier et al., 2006; Porter & Kramer, 2006; Porter & Linde, 1995). This discourse balances both shareholder and environmental demands by adopting eco-efficiency practices that reduce GHG emissions while reducing costs and improving profitability (Dauvergne & Lister, 2013).

Several studies already explored the benefits of balancing social or environmental demands with firm financial goals, yielding inconsistent findings (Margolis et al., 2012; Margolis & Walsh, 2003; Orlitzky et al., 2003). Despite this ambiguity, studies are clear about the legitimacy benefits of paying attention to both non-market and market demands (DiMaggio & Powell, 1991; McGuire, 1988; Meyer & Rowan, 1977; Schaltegger & Burritt, 2018; Scott, 2001). This approach also has an effect of transforming social or environmental responsibility into profit (Barnett & Salomon, 2012; Saeidi et al., 2015). As a result, some organizations continue to balance between meeting shareholder goals and the societal demand for emissions reduction.

Compromising responses can also be understood through a temporal perspective of organizational responses (Raaijmakers et al., 2015; Slawinski & Bansal, 2012). Studies on the sustainability implications of time assert that corporate environmentalism is achieved when organizations attempt to safeguard intergenerational equity by making intertemporal trade-offs (Bansal & DesJardine, 2014). Such trade-offs are an indication of compromising responses. In that regard, Slawinski and Bansal (2015) demonstrate that organizations that juxtapose and confront the tension between temporary business goals and long term climate change questions move on to identify integrated and multidimensional solutions to this tension. Hence,

compromising organizations find a balance between own business goals and emissions reduction.

In any of the available approaches of compromise, organizations do not aim to give salience to one institutional sphere at the expense of another, neither do they resist conformity to the dictates of either institutional demand. Instead, organizations seek ways to fulfil all societal expectations at least partially (Oliver, 1991; Rivera, 2010). In some cases, organizations facing various institutional demands, establish collaborative relationships with different institutional constituents to overcome uncertainties thereby contributing to negotiated organizational compliance with imposed expectations (Desai, 2016). Hence, organizations that engage in compromising practices generally do not resist institutional demands. We expect such organizations to show improving performance in satisfying climate performance expectations. We, therefore, argue that compromising organizations will reduce their carbon emissions over time. Hence:

H1: Compromising responses are negatively related to GHG emissions.

Avoidance and GHG Emissions

Avoidance is employed as a way of ensuring legitimacy when organizational efficiency is threatened by contradictory societal expectations (Cho et al., 2015; Meyer & Rowan, 1977). According to Oliver (1991:152), organizations avoid in three major ways: “disguising non-conformity,” “loosening institutional attachments,” and “changing goals, activities or domains.” Hence, organizations avoid institutional pressure by symbolically conforming to demands for climate action while their true internal practices still uphold ‘business as usual’ approaches (Wright & Nyberg, 2015).

Ways in which organizations avoid are extensively discussed in the impression management and greenwashing literature (Gaim et al., 2021; Marquis et al., 2016; Neu et al., 1998; Talbot & Boiral, 2015). Delmas and Burbano (2011) define greenwashing as a company’s efforts focused on creating a gap between environmental action and communication. Lyon and

Maxwell (2011) define greenwashing as selectively disclosing positive information about an organization's environmental performance while hiding negative information to create an overall positive image. Hence, greenwashing companies present themselves as attentive to institutional pressure for environmental responsibility while their actions progress in an opposite direction (Bowen & Aragon-Correa, 2014; Short & Toffel, 2010).

The case study of impression management exercised by ExxonMobil and British Petroleum (BP) over a 13-year period (1997-2009) shows how organizations decouple substantive from symbolic action and manage the societal pressure that is subsequently invited (van Halderen et al., 2016). In this study, ExxonMobil and BP adopted several shifting stances painting a non-adversarial picture to climate action pressure while maintaining pursuit of profits at the expense of the environment. During the investigated period, BP rebranded itself to 'Beyond Petroleum', indicating a shift from fossil fuels, yet the company's operations continued to include burning of fossil fuels (Bruno, 2000). In addition, although BP mentioned investments into solar energy, those statements were never followed by substantial action. Consequently, several institutional constituents associate escalating GHG emissions with impression management by companies that overstate environmental commitments but fail to substantiate communicated goals with adequate action (Economist, 2022; U.N., 2022).

Avoidance practices are common among poor environmental performers. For instance, firms exhibiting environmental wrongdoing engage in activities that portray a picture of going beyond mere regulatory compliance (Bryant et al., 2020; Gaim et al., 2021; Jung & Sharon, 2019; Lane, 2010). Organizations symbolically setting targets as a legitimizing tool tend to not show significant emission reductions over time (Dahlmann et al., 2019). In addition, organizations that seem ambitious about environmental performance and substantive action decouple their actions from portrayed image (Bams & van der Kroft, 2022; Boiral, 2007; Jaworska, 2018; Kim & Lyon, 2011). Conjointly, these observations demonstrate that organizations that hide their true practices tend to be poor environmental performers. Such

organizations are expected to perform worse with regards to satisfying environmental demands. Hence, we expect avoidance responses to be associated with an unfavorable performance in solving the climate change crisis. Accordingly, we hypothesize that:

H2: Avoidance responses are positively related to GHG emissions.

Manipulation and GHG Emissions

In response to pressure for climate action, organizations manipulate through practices such as environmental policy lobbying. Employing this strategy, organizations in environmentally sensitive industries engage in political activities as a way of strategically managing environmental policy pressure (Anastasiadis, 2014; Cho et al., 2006; Levy & Egan, 2003). Corporate political activity studies demonstrate that much of this political involvement opposes government threats for stringent regulations (Fremeth & Richter, 2011) and seeks to afford organizations with legitimacy in spite of negative societal impacts (Alakent & Ozer, 2014).

While Delmas et al., (2016) show how both ‘dirty’ and ‘clean’ organizations are involved in climate lobbying, we surmise that there has been a general inertia to adopting stringent climate policies (Nyberg et al., 2023). This delayed movement towards tougher climate policies has been attributed to the considerable power and influence of the ‘Big Oil industry’ (Nyberg et al., 2023). The persistence of the fossil fuel hegemony is a product of private firms engaging established institutions to play politics that side-line the possibilities of radical climate change legislation (Nyberg et al., 2023). Hence, the lobbying arena is still mostly dominated by ‘dirty’ industry firms who are opposed to mandatory and stringent climate policies. Lyon et al., (2018) argue that corporate political actions possess considerable influence on environmental quality and call for consideration of corporate political activity in assessing organizational environmental performance. Such effects are more manifest in mature fields such as the oil industry with centrally positioned powerful organizations (Maguire et al., 2004) that are market oriented and, hence, more inclined towards climate inaction (Slawinski et al., 2017).

We also argue that supportive organizational actions for climate policies are not always genuinely altruistic (Kim & Darnall, 2016; Weinhofer & Hoffmann, 2010). Corporate leaders involve themselves in shaping climate policies by supporting weaker regulations so as to buttress themselves against stronger legislation (Collins, 2019; Hanoteau, 2014). These political actions allow companies to maintain or expand their carbon intense businesses, hence contributing to higher GHG emissions.

Manipulation practices, such as lobbying, act directly on the source of institutional pressure. Pache and Santos (2010) and Rivera (2010) point out that manipulation represents the strongest level of resistance to institutional demands. For example, major fossil fuel corporations and petrostates have continued to produce enormous amounts of GHG emissions while simultaneously lobbying for continued use of fossil fuels (Heede, 2014; Taylor et al., 2019; Wright et al., 2021). Further, Slawinski et al., (2017) assert that organizations that do not openly challenge market centric strategies but rather fuel uncertainty through practices such as lobbying, will likely harbor inaction towards climate change. We contend that organizations employing manipulation strategies are poor climate performers whose shareholder objectives are threatened by policies inclined towards climate action. Hence such organizations will yield increasing emissions over time. We, therefore, hypothesize that:

H3: Manipulation responses are positively related to GHG emissions.

The Moderating Role of Organizational Reputation

Societal demands for action against climate change represent legitimacy expectations that organizations must satisfy (Thornton, 2004) because institutional actors are conscious of the role of social legitimacy in shaping long-term survival and competitiveness (DiMaggio & Powell, 1991; Meyer & Rowan, 1977; Scott, 2001). When legitimacy expectations are not met, organizations may face high reputational risk (Schaltegger & Burritt, 2018). For example, avoidance practices such as decoupling expose organizations to high reputational risk (Crilly et

al., 2012; Marquis & Qian, 2014). This risk is often invoked when organizations commit environmental violations that catch media attention (Etter et al., 2019).

Reputational risk is likely to affect the relationship between organizational responses and GHG emissions. Organizational reputation is the evaluation of an organization's quality (Love et al., 2017) and the overall public opinion about an organization (Pham & Tran, 2020). Organizational reputation reflects the assessment of an organization by its stakeholders after comparing the organization's behavior against that of other organizations and their instrumental and normative expectations for practices (Deephouse & Carter, 2005; Lange et al., 2011). As a result, organizations can build or destroy their reputation based on environmental and social impacts of their operations (Fombrun, 2005). Therefore, we examine the moderating effect of environmental reputational risk on the relationship between organizational responses and climate performance.

Our first argument is that we expect *compromising* organizations to confront little to no reputational risk as they are balancing various institutional demands. We draw this argument from Hoffman (2005) as well as Lash and Wellington (2007) who assert that corporations establishing sustainability functions that view climate change as a strategic concern do so in order to cushion themselves against risk and to exploit opportunity. The risks that these organizations aim to avoid include market risks, regulatory risks, reputational risks, and physical risks. Kim et al., (2021) support this notion by showing that by balancing CSR and shareholder obligations, organizations obtain risk management benefits. When compromising organizations face high reputational risk, we do not expect significant change in their behavior since they operate at the equilibrium between shareholder and environmental demands.

Secondly, as regards, *avoiding* firms, we assert that when reputational risk is high, overall organizational performance is negatively affected. As a result, firms exposed to higher scrutiny and global norms engage less in avoidance practices (Marquis et al., 2016). Reputation challenges involving environmental issues drive financial risk and negatively affect a

company's growth opportunities (Fafaliou et al., 2022; Shakil, 2021). Similarly, media coverage of firm focal events trigger social movements that in turn affect corporate financial targets (King & Soule, 2007). We argue that, while facing high reputational risk due to negative environmental impacts, organizations seek ways to protect their firm performance.

The Volkswagen (VW) diesel emissions scandal of 2015 is a prominent case of avoidance in which business performance was negatively affected by high reputational risk (Jung & Sharon, 2019; Welch, 2019). Following detection of the company's avoidance practices, VW suffered far-reaching financial and reputational consequences (Gaim et al., 2021), resulting in a legitimacy loss that also affected other vehicle producers such as Audi and Porsche (Gaim et al., 2021). These companies had to 'repair' their public image by addressing emissions issues to regain market confidence and revive business performance. Therefore, we posit that organizations facing high reputational risk minimize their negative environmental impacts to avoid further loss of legitimacy and economic performance. Hence:

H4: Reputational risk weakens the positive relationship between avoidance and GHG emissions such that when reputational risk is high, GHG emissions are lower.

Lastly, *manipulating* firms have consistently lobbied despite various reputational issues. In spite of various reputational backlashes against fossil fuel companies known for their persistent lobbying behavior, these companies have maintained a hegemony that enables them to continue to expand fossil fuel extraction (Nyberg et al., 2023; Wright et al., 2021). Nyberg et al., (2023) provide several cases in which the fossil fuel industry has relied on jurisdiction, the military, and the police to thwart protests and coerce the public into submitting to fossil fuel dominance. Deviant organizations can pursue their strategies undeterred and be privileged to influence institutional rules (Desai, 2016; Gilad, 2014; Susskind & McMahon, 1985).

While the public has been protesting fossil fuel use, the associated industry has indeed been expanding by engaging in gas fracking and oil exploration projects (Abas et al., 2015). Increased investment into corporate political activity during times of high reputational risk

enables organizations to keep expanding their businesses (Alakent & Ozer, 2014). Firms secure protection following their political investments (Nyberg et al., 2023) and proceed to expand their environmentally damaging businesses (Milman, 2023; Morris & Thomas, 2021). We, therefore, expect a more positive relationship between manipulation and GHG emissions when companies face high reputational risk. Hence:

H5: Reputational risk strengthens the positive relationship between manipulation and GHG emissions such that when reputational risk is high, GHG emissions are higher.

METHODS

Sample

We collected data on 5,431 firm-year observations from Standard and Poor's (S&P) 500 companies. These companies are regarded as the best single gauge of large-cap US indices since they cover approximately 80% of available market capitalization (Goh et al., 2020). S&P500 companies also account for 32% of US total emissions which translates to 2.1 billion tonnes of CO₂ per year – an amount that almost exhausts the total CO₂ absorption capacity (2.2 billion tonnes) of the Amazon Forest (Quartz, 2023). We obtain data for our measures from various Environmental Social and Governance (ESG) data sources including S&P Global, OpenSecrets, the Centre for political Accountability (CPA)-Zicklin Center, CDP (previously Carbon Disclosure Project), Ceres, Climate Xchange and RepRisk. After merging all datasets, we dropped 343 observations due to missing values. Our dataset covers the period 2011 to 2021. While data on most measures is available for years before 2011, the year 2011 is the year when availability of data for our measure of avoidance (political spending disclosure) starts. Similarly, the year 2021 is the year when data for our measure of manipulation (lobbying intensity) ends. Several policy changes took place within this period, and we employ state level regulation controls and year dummies to account for these changes.

Dependent Variable

We utilized annual changes in *GHG emissions* as a measure of climate change performance. We obtained GHG emission data from the S&P Global database (e.g., Delmas et al., 2015). S&P Global gathers environmental performance data for over 15,000 of the world's largest companies, relying on publicly disclosed sources such as annual reports as well as third-party datasets such as CDP. Data are subsequently corrected for errors and standardized across companies, regions, and sectors. S&P Global also uses modelled values to address data gaps whenever metrics are not provided in primary data sources. Emissions are measured as tons of CO₂ equivalent (CO₂e), i.e., they include all GHG protocol emissions weighted by their global warming potential. We also obtained GHG protocol emissions (Ranganathan et al., 2004), i.e., direct (Scope 1), purchased electricity, steam, heat or cooling used directly in operations (Scope 2). We did not include supply chain emissions (Scope 3) as data were not consistent due to a lack of established measurement processes for this emissions category (Hertwich & Wood, 2018; Shrimali, 2022). Further, since the balance of direct versus indirect emissions may differ from one firm to another (Delmas et. al., 2016), we carried out regression analyses for Scope 1, and Scope 2 variables respectively. We also log-transformed measures to mitigate the effect of outliers and adjust for skewness (Delmas et al., 2016).

Independent Variables

We measured *compromising* using *CDP Scores*. CDP gathers environmental data from companies through a questionnaire scoring method. Each company's response is then assessed in terms of its comprehensiveness, proof of awareness of environmental issues, management practices and, also, progress in pursuing environmental stewardship (CDP, 2023). CDP Scores have been used widely in management research to represent organizational performance regarding disclosure and attainment of environmental stewardship (Dahlmann et al., 2019). We determine that the incorporation of *demonstrated actions towards emission reduction* in the CDP scoring systems renders CDP Scores a suitable measure of compromising strategies.

While the self-regulation nature of the CDP scoring methodology has been criticized for allowing firms to selectively report on environmental issues (Andrew & Cortese, 2011; Callery, 2023), we use this weakness to our advantage by arguing that this placating of environmental expectations reflected in CDP Scores satisfies the definition of compromising (Oliver, 1991; Rivera, 2010). According to Oliver (1991), compromising organizations balance and placate institutional demands. In support of this notion, Rivera (2010) states that compromising involves limited adoption of environmental protection efforts to pacify influential institutional constituents. Further, Rivera (2010) notes that compromisers circumvent more stringent environmental standards through incorporation of economic growth interests in their response strategies. As a result, compromisers show partial conformity to all societal demands (Oliver, 1991). Hence, among several carbon performance scores, we find CDP Scores most suitable for measuring compromising.

We measure *avoidance* through *political spending disclosure* (PSD). Studies on organizational political activity explore avoidance through the willingness of organizations to disclose their political activity (Kong et al., 2017). For example, Goh et al., (2020) use political spending disclosure to distinguish between symbolic and substantive organizational actions. According to this study, the gap between action and communication can be captured by PSD, since only firms engaging in value enhancing political activity will be willing to voluntarily disclose more about their political spending (Goh et al., 2020). The authors further argue that such level of transparency cannot be mimicked by firms engaging in opportunistic political activity. As a result, higher PSD scores indicate close alignment between performance and disclosure while lower scores indicate less alignment. We obtained PSD data from the CPA-Zicklin Center. The CPA-Zicklin index measures the level of voluntary PSD for S&P 500 firms (Centre for Political Accountability, 2023).

We measure *manipulation* through *lobbying intensity*. Corporate lobbying is one of the ways by which companies engage political forces and push back against unfavorable regulation

(Brulle, 2018; Wright et al., 2021). This organizational behavior reflects our definition of manipulation. Similar to prior research, we use annual lobbying intensity as a measure of the level of political activity of firms (Correia, 2014; Goh et al., 2020). We define lobbying intensity as a firm's annual lobbying expenditure divided by its total assets at the beginning of the financial year (Kong et al., 2017). We obtained corporate lobbying expenditures from OpenSecrets and firm assets from S&P Global. US companies are mandated under the Lobbying Disclosure Act (1995) to file quarterly reports on their lobbying activity (Senate Office of Public Records, 1995). OpenSecrets gathers these data, standardizes them, and makes records available to the public. Initial lobbying expenditures from OpenSecrets represented lobbying activity on any issue available in a dataset containing over 1.6 million observations (Open Secrets, 2023). To obtain climate related lobbying, we followed Delmas et. al., (2016) and developed a code that could extract only climate lobbying expenditures from the initial dataset.

Moderator Variable

We measured the moderating role of reputational risk using *Reputational Risk Index* (RRI) scores from RepRisk (RepRisk, 2023). These scores measure the extent to which a company faces reputational risk in media due to environmental impacts of the company's operations. Scores range from 0 to 100 with lower values indicating low reputational risk and higher values indicating high reputational risk.

Control Variables

We controlled for factors that may affect firms' responses to the institutional demand for climate change action. Market power influences the behavior of firms if the benefits are concentrated within a smaller group (Olson, 1971). Hence, we included *market concentration ratio*, which we calculated as market share of the four largest firms at the two-digit North American Industry Classification System (NAICS) code level. In addition, shareholders, through resolutions, influence firm stance on environmental issues (Delmas & Montes-Sancho,

2010; Reid & Toffel, 2009). Thus, we controlled for *shareholder resolutions*, which we included as a binary variable, with 1 if a firm was targeted by at least one climate related resolution in a particular year or 0 otherwise. We gathered resolutions data from Ceres, which is a sustainability online database providing resolutions and other climate related data (Ceres, 2023). The state-level political environment also affects firm response strategies (Delmas & Montes-Sancho, 2010). In line with this assertion, there is heterogeneity in state-level regulation as regards climate policies. We, therefore, controlled for this heterogeneity by including a binary variable called *state regulation threat*. We coded this variable as 1 if a firm is headquartered in a state that has passed climate legislation and belonging to an industry targeted by climate legislation or 0 otherwise. We also included *state regulation deterrence* as a variable to capture the deterrence effect on firms headquartered in states that passed climate legislation but belonging to untargeted industries. We obtained data on US state-level climate legislation from Climate Xchange, a platform providing an online register for US climate legislation (ClimateXchange, 2023).

Firms operating across sectors may improve their environmental performance by divesting from a more pollution intense sector to a less pollution intense sector. Hence we followed Berrone and Gomez-Mejia (2009) and created an *industry pollution position* index, a measure representing the mix of industry sectors a firm operates in, accounting for their pollution intensity. We anticipated that pressure for climate change action was getting stronger over the years under investigation. Hence, we added a *time clock* variable to account for this pressure change. We also note that there could have been a period of less pressure for firms when the US pulled out of the Paris Climate Agreement under President Donald J. Trump. We controlled for this period by adding a dummy variable, *Trump Era*, with 1 for years 2017 to 2020 and 0 otherwise. Firms' lobbying behavior may vary between firms with existing relationships with lobbyists and law makers and those without. Hence, in models involving lobbying intensity, we

included a dummy variable *previous year manipulation* (on any issue) to satisfy this exclusion restriction (Delmas et al., 2016).

We also included a number of standard control measures based on prior research (Marquis et al., 2016; Walls et al., 2012). All the data for the control variables comes from S&P Global. We controlled for organizational *financial performance* since financial performance is argued to influence environmental disclosure (Barth et al., 1997; Neu et al., 1998). To control for financial performance, we used annual return on assets which we can calculate by dividing net income by starting year assets. We also controlled for *firm capital intensity*, since capital intensity can affect environmental damage thereby leading to avoidance practices. We calculated capital intensity as the ratio of net property, plant, and equipment to total assets. We also controlled for *firm size*, which we calculated as log of total assets. We controlled for *sale's growth* calculated as change in sales from the previous year. We controlled for *leverage* which we calculated as the ratio of total debt to total assets. We controlled for *advertising intensity*, calculated as advertising expenditure over sales. Lastly, we controlled for *Research and Development (R&D) intensity* which we calculated as R&D expenditure over sales.

Analysis

First, we conducted the *Breusch-Pagan Lagrange multiplier test* to confirm whether panel data regression or pooled ordinary least squares was the most suitable approach for testing our model (Breusch & Pagan, 1980) and results favored panel data regression. Second, we implemented the *modified Wald test* to check if heteroskedasticity was a concern in our sample (Driscoll & Kraay, 1998). We confirmed the presence of heteroskedasticity and, hence, clustered the standard errors at the firm level. Lastly, we carried out an *optimal lag selection test* since there may be a delay between when a strategy is implemented and when there is an effect on environmental performance. However, none of the test results were significant and we did not lag the effects of the response strategies. Nevertheless, we lagged *previous year*

manipulation with one year to ensure lobbying on any issue represented lobbying for each previous year as required by our exclusion restriction.

We tested hypotheses 1, 2 and 3 by regressing our measures for each organizational response and control variables against emissions. We conducted the *Hausmann test* to check whether fixed or random effects were suitable for our model. The test confirmed that unique errors were correlated with the regressors. Hence, we added *fixed effects* at the *firm* and *year* levels (Nichols, 2007). These fixed effects allowed us to control for omitted variable biases due to unobservable variables that vary over time but are constant across firms or variables that vary across firms yet are constant over time.

We tested our hypotheses in two different models. The general model for testing hypotheses 1, 2 and 3 is represented by Equation (1) while the general model for testing hypothesis 4 and 5 is represented by Equation (2).

$$E_{it} = \alpha_i + \beta X_{it} + \delta_i + \lambda_t + \varepsilon_{it} \dots\dots\dots (1)$$

where, E_{it} = Scope 1 or Scope 2 emissions, for entity i at time t ; α_i = the unknown intercept for each entity; β = the coefficient representing common effect across entities after controlling for individual heterogeneity; X_{it} = a vector of all predictors and control variables, for entity i at time t ; δ_i = within entity error term; λ_t = unknown coefficient for the time regressors t ; ε_{it} = the overall error term

$$E_{it} = \alpha_i + \beta X_{it} + \beta Y_{it} * RRI_{it} + \delta_i + \lambda_t + \varepsilon_{it} \dots\dots\dots (2)$$

Where, Y_{it} = the focal variable for the interaction term and RRI_{it} = moderating variable.

FINDINGS

Descriptive Statistics

Our final dataset comprised of an unbalanced panel with two outcome variables (Scope 1 and Scope 2 emissions), three predictor variables (CDP Score, political spending disclosure and lobbying intensity), one moderator (reputational risk) and fourteen control variables. Summary

statistics of all variables are provided in Table 1. We also diagnosed for correlation among the explanatory variables as shown in Table 2. We did not find any serious issues within our sample.

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Insert Table 1 about here
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Insert Table 2 about here
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Response Strategies against GHG Emissions (Hypotheses 1, 2 and 3)

We computed four regression models with model 1 representing effect of compromising on emissions, model 2 representing effect of avoidance on emissions, model 3 representing effect of manipulation on emissions and model 4 representing effect of all explanatory variables on emissions. We included all control variables in each model but limited the inclusion of previous year manipulation to models involving manipulation (models 3 and 4). We found this step plausible since the exclusion criteria only affected lobbying firms. However, to confirm if previous year manipulation had no effect on other hypotheses, we conducted robustness checks that we present later. Models from our main results had R-squared values between 0.086 and 0.112. These values are not different from those obtained in other studies on organizational actions and corporate environmental performance (Combs et al., 2022; Gong et al., 2021; Kim & Lyon, 2015; Pham & Tran, 2020; Romero, 2022).

Our results are significant in terms of Scope 1 emissions and insignificant for Scope 2 emissions. We, therefore, exclusively present Scope 1 emissions results. As shown in the model fit in Table 3, our results confirm hypothesis 1. Models (1 and 4) testing the effect of compromising on Scope 1 emissions yielded significant results ($\beta = -0.02$; $SE = 0.01$; $p = 0.06$ and $\beta = -0.03$; $SE = 0.01$; $p = 0.02$). Hence, we find that a 1 unit increase in compromising (increase of 1 CDP score) results in a 2% to 3% decrease in Scope 1 emissions for compromising organizations. Hypothesis 2 was also marginally confirmed in one (model 2) out

of two models ($\beta=0.13$; $SE=0.08$; $p=0.09$). We find that, a 1 unit increase in avoidance (decrease of 1% PSD) results in a 13% increase in Scope 1 emissions for avoiding organizations. Although this result became non-significant in model 6 (Table 4) after adding the interaction, we consider the model 2 result as dominant since reputational risk does not affect the avoidance-emissions relationship.

However, results on the relationship between manipulation and Scope 1 emissions do not confirm our hypothesis. The results show a negative ($\beta=-0.05$; $SE=0.13$; $p=0.70$) relationship between manipulation and Scope 1 emissions against our third hypothesis. This result, however, becomes marginally significant ($\beta=-1.04$; $SE=0.60$; $p=0.08$) after adding the interaction as shown in Table 4. However, in this case, we consider findings from the model without interaction (Table 3) to be dominant since we do not anticipate organizations to be under reputational risk all the time.

The Moderating Effect of Reputational Risk (Hypotheses 4 and 5)

Regarding Scope 1 emissions, Table 4 provides marginal evidence ($\beta= 3.14$; $SE=1.72$; $p=0.07$) that reputational risk positively moderates the negative relationship between manipulation and Scope 1 emissions, thereby confirming hypothesis 5. Probing this interaction, Figure 1 shows that under low reputational risk, the manipulation-emissions relationship is negative but under high reputational risk, the relationship becomes positive. Intersection of the two lines also confirms the presence of this interaction effect. Hypothesis 4 was not supported.

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Insert Table 3 about here
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Insert Table 4 about here
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Insert Figure 1 about here
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Robustness Checks

We examined the robustness of our results by assessing the effect of the exclusion criteria in models that did not measure manipulation. We had not included this control variable in models 1 and 2 (as shown in both Tables 3 and 4) since we did not anticipate an effect of prior manipulation on either compromising or avoidance. Nevertheless, to ensure our results remained robust in case this variable influenced compromising and avoidance, we included previous year manipulation and ran models 1 and 2 and model 4. Our results remain stable across all hypotheses.

Since our measure for manipulation under Hypothesis 3 might have included both organizations lobbying for and against climate policy (Delmas et al., 2016), we distinguished these organization using a second dataset. We collected data on SP500 companies captured by InfluenceMap, an independent think tank tracking organizational engagements with climate policy. We collected a sample of 115 organizations and their respective organizational scores – measures of the degree of organizational obstructive behavior towards climate policies. Scores range from 0 to 100, with 0 representing the most obstructive and 100 the most supportive. Scores are calculated based on assessments of organizational media appearances in climate policy discussions. Data from InfluenceMap was only available for the period 2019 to 2021. We computed regressions for all hypotheses using organizational scores from InfluenceMap as measures of manipulation. Our finding, regarding Hypothesis 3, remained consistent.

DISCUSSION

Our research sought to provide empirical evidence on the association between organizational responses and performance when tackling climate change. We responded to calls by institutional theorists to contribute towards an understanding of how organizational actions are shaping the most pressing challenges of our time (Wooten & Hoffman, 2017). Our attention was specifically centered on the response strategies of compromise, avoidance and

manipulation and their association with GHG emissions of organizations. We also sought to investigate the moderating effect of reputational risk on the relationships between organizational responses and GHG emissions.

Theoretical Implications

Our analysis confirmed one hypothesis with strong evidence, two with marginal evidence, whereas two hypotheses were not confirmed. Consistent with our first hypothesis, our results show that organizations that try to balance between all institutional demands (compromisers) lower their emissions over time. Similarly, as we had hypothesized, avoiding organizations increase their emissions over time. However, this hypothesis was only marginally supported. Our analysis also marginally confirmed the positive moderating effect of reputational risk on the relationship between manipulation and GHG emissions.

A lack of evidence in support of our third hypothesis is surprising. Although, one might expect companies heavily involved in lobbying to show unequivocally inferior performance in terms of GHG emissions, we find no support for this assumption. Further, we argue that the lack of evidence may not point to a non-linear relationship suggested in previous studies (Delmas et al., 2016; Kim, 2022). We distinguished between firms lobbying for and those lobbying against climate policy using data from InfluenceMap and our results remained consistent.

We noted that 70.5% of firms in this dataset represented the four most polluting industry sectors – utilities, manufacturing, petroleum and mining, and transportation. Although previous research has argued that organizations in carbon intensive industries take an adversarial approach to emissions reduction (Levy & Egan, 2003), our results do not confirm that these organization increase their emissions. We also argue that carbon performance exhibited by these firms is true since organizations from carbon intense industries are under close public scrutiny such that they cannot easily hide their actual performance (Kim & Lyon, 2015; Marquis et al., 2016). Hence, carbon emissions of ‘dirty’ firms remain higher than emissions from other

industries, due to the nature of carbon intensive businesses, but emissions do not increase over time. Nevertheless, we leave further analysis of the behavior of carbon intense organizations to future research which must utilize larger datasets.

Regarding our fourth hypothesis, the lack of evidence of behavior changes when avoiders are facing high reputational risk is surprising. We suggest three explanations for this finding. First, we argue that avoiding is subtle and there is limited clarity regarding what constitutes green behavior (Delmas & Burbano, 2011). Even when facing reputational risk, it is probably not easy to identify avoiders, such that they may not be likely to change. Second, decoupling internal structure from external pressures enables organizations to maintain internal efficiency when external pressures threaten organizational performance (Meyer & Rowan, 1977). Hence, avoiders may not change under high reputational risk as they find protection from the buffers they create between internal practices and external images. Third, as a caveat of our study, our measure for avoidance may not be the most suitable and future research might lean on alternative metrics instead.

Practical Implications

Availability of evidence that compromising organizations lower their emissions over time vindicates the promise of corporate sustainability strategy. Organizations that seek to benefit both their shareholders and the environment (Jermier et al., 2006) achieve positive environmental outcomes. As Dauvergne and Lister, (2013) argue, this discourse balances both shareholder and environmental demands by adopting eco-efficiency practices that reduce GHG emissions while reducing costs and improving profitability. Hence, organizations that truly balance shareholder and climate demands (Dyllick & Muff, 2016) achieve favorable environmental performance. As a result, a corporate sustainability approach can help companies fulfill their moral purpose of contributing to prosperous economies through positive societal impact (Porter & Kramer, 2006).

Limitations and Future Directions

We acknowledge how evaluation of organizational activity must not end with the organization itself. In many cases, organizations promote their market and non-market goals through their industry associations (Lyon & Delmas, 2018). For example, in 2017, Ford and General Motors released sustainability reports that claimed great commitment towards mitigating climate change. On the other hand, their industry association, Alliance for Automotive Manufacturers lobbied the Trump administration to weaken standards for reducing vehicle emissions (Lyon & Delmas, 2018). Our study did not investigate this dimension of organizational responses, and we thus propose the examination of industry association responses to environmental demands as an avenue for future research.

We provide evidence that compromisers lower their emissions over time, but compromising is detrimental to internal organizational stability. In some cases, compromising breeds internal conflict and organizational complexity (Pache & Santos, 2021). Hence, we still need to know the circumstances under which the negative association between compromising and carbon performance of organizations is sustained.

Our study does not exhaust all organizational responses to environmental demands. Hence, we propose that future studies expand the repertoire of organizational responses and, subsequently, explore associations between those responses and climate change performance. Future studies may also explore the hypotheses we developed in jurisdictions different from the S&P500 companies data set. In addition, since this study takes an early institutional empirical approach to investigate the organizational action - climate change nexus, the measures that we employed may benefit from further improvement. We tested our hypotheses relying on variables from corporate political activity literature, arguing that climate change has become a political issue (Nyberg et al., 2023), thereby driving organizations to political actions (Hillman & Hitt, 1999). Nevertheless, future studies may explore more innovative measures for organizational responses and relate them to climate change performance.

CONCLUSION

In this study, we have argued that the global society still lacks answers as to why carbon emissions keep increasing, despite a suite of organizational actions. We also asserted how institutional theory, particularly the organizational responses debate, remains to be extended to encompass societal level outcomes of organizational responses. As a contribution to these discussions, we demonstrated, using Oliver's (1991) typology, that compromising organizations lower emissions over time. Our study vindicates the effectiveness of compromising through corporate sustainability strategies in reducing GHG emissions. We also call for greater vigilance among policy makers and society at large in evaluating avoiding and manipulating organizations, as the implications of these responses on GHG emissions may not be easily predicted. We trust our findings and the research trajectory that we have set will inspire additional research and improve our understanding of the organizational action – carbon performance interplay.

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APPENDICES

Table 1: Descriptive statistics

Variable	Mean	SD	Min.	Max.	Obs
Scope1 emissions	11.74	2.73	0	19.51	5,079
Scope 2 emissions	11.97	1.79	0	16.92	5,079
CDPscore	6.06	1.99	1	9	2,806
Political Spending Disclosure (PSD)	0.53	0.34	0	1	3,333
Lobbying Intensity	0.01	0.03	0	1.37	5,431
Previous Year Manipulation	0.40	0.49	0	1	5,442
Market Concentration Ratio	0.40	0.20	0.19	0.92	5,343
Shareholder resolution	0.12	0.33	0	1	5,376
State Regulation Threat	0.36	0.48	0	1	5,321
State Regulation Deterrence	0.23	0.42	0	1	5,321
Firm performance	0.06	0.08	-0.57	0.57	5,330
Firm size	16.73	1.50	11.41	22.04	5,332
Leverage	0.30	0.24	0	3.89	5,332
R&D Intensity	0.04	0.16	0	8.27	5,346
Advertising Intensity	0.01	0.02	0	0.46	5,346
Sales growth	0.10	0.42	-0.84	22.00	5,320
Reputational Risk	0.15	0.21	0	1	4,577
Time clock	6.00	3.16	1	11	5,442
Trump Era	0.45	0.50	0	1	5,442
Industry Pollution Position	23.43	19.46	-28.5	67.64	5,242

Notes: SD = standard deviation, Min. = minimum, Max. = maximum, Obs = observations

Table 2: Correlation matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
(1) Scope1	1																			
(2) Scope2	0.54	1																		
(3) Compromising	0.04	0.15	1																	
(4) Manipulation	0.12	0.04	0.06	1																
(5) Avoidance	-0.11	-0.23	-0.26	-0.05	1															
(6) Previous Year Manipulation	0.26	0.27	0.06	0.13	-0.21	1														
(7) Trump Era	-0.08	-0.14	0.16	-0.09	-0.07	-0.21	1													
(8) Time Clock	-0.1	-0.18	0.16	-0.08	-0.1	-0.23	0.84	1												
(9) Industry Pollution Position	0.4	0.11	0	0.06	0.04	0.02	-0.01	-0.01	1											
(10) State Reg. Deterrence	0.17	0.14	-0.1	-0.01	-0.04	0.09	0.07	0.06	0.04	1										
(11) State Regulation Threat	-0.2	-0.21	0.05	-0.03	-0.03	-0.14	0.18	0.28	-0.07	-0.41	1									
(12) Shareholder Resolution	0.26	0.23	0.05	0.02	-0.12	0.12	0.01	-0.02	0.12	0.03	-0.08	1								
(13) Concentration Ratio	0.04	0.02	-0.03	-0.05	0	0.03	-0.03	-0.03	-0.05	0.07	-0.11	0.08	1							
(14) Reputational Risk	0.54	0.24	0	0.12	-0.06	0.12	-0.03	-0.03	0.29	0.1	-0.12	0.21	-0.11	1						
(15) Sales Growth	-0.17	-0.11	-0.08	-0.04	0.1	-0.08	0.02	-0.07	-0.08	-0.04	0.02	-0.08	0	-0.12	1					
(16) R&D Intensity	-0.17	-0.1	0.02	0	-0.03	0.04	0.01	0.02	-0.07	-0.12	0.28	-0.13	-0.2	-0.22	0.13	1				
(17) Advertising Intensity	0	0.06	0.05	-0.04	-0.04	0	-0.01	-0.01	0.05	-0.01	-0.03	-0.02	-0.09	0.03	-0.06	0.08	1			
(18) Leverage	0.2	0.13	0.08	0	0.01	-0.04	0.2	0.22	0.13	-0.01	0.02	0.06	0.09	0.1	-0.14	-0.04	0.18	1		
(19) Firm Size	0.08	0.28	0.26	0.01	-0.39	0.29	-0.11	-0.12	0.02	0.03	-0.11	0.23	-0.03	-0.02	-0.06	-0.14	-0.07	-0.23	1	
(20) Firm Performance	-0.12	0.01	-0.07	-0.01	0.03	-0.07	-0.04	-0.07	-0.12	-0.04	0.07	-0.07	-0.03	-0.11	0.29	0.17	0.17	0.06	-0.34	1

Note: The full sample had 5 431 observations and the Pearson correlations between any two variables were all but one under 0.75 indicating low probability of multi-collinearity (Bothello et al., 2023). Our statistical program did not detect any multi-collinearity between the two highly correlated variables, Trump Era and Time Clock when we ran the analysis.

Table 3: Model fit for hypotheses 1, 2 and 3 using Scope 1 emissions.

	Model 1			Model 2			Model 3			Model 4		
	b	Robust SE	p-value	b	Robust SE	p-value	b	Robust SE	p-value	b	Robust SE	p-value
Compromising Avoidance Manipulation	-0.02	(0.01)	(0.06)	0.13	(0.08)	(0.09)				-0.03	(0.01)	(0.02)
Previous Year Manipulation							0.13	(0.19)	(0.49)	-0.05	(0.13)	(0.70)
Market Concentration Ratio	0.29	(0.61)	(0.64)	-0.27	(0.67)	(0.69)	0.01	(0.04)	(0.74)	-0.04	(0.03)	(0.14)
Shareholder Resolution	-0.02	(0.02)	(0.49)	0.02	(0.03)	(0.62)	0.03	(0.03)	(0.36)	-0.01	(0.03)	(0.85)
State Regulation Threat	-0.10	(0.07)	(0.13)	-0.08	(0.06)	(0.20)	-0.08	(0.07)	(0.26)	-0.06	(0.06)	(0.31)
State Regulation Deterrence	0.09	(0.08)	(0.21)	0.04	(0.07)	(0.57)	-0.03	(0.07)	(0.70)	0.09	(0.07)	(0.17)
Firm Performance	0.01	(0.28)	(0.98)	0.39	(0.28)	(0.16)	0.78	(0.32)	(0.02)	0.07	(0.24)	(0.76)
Firm Size	0.46	(0.07)	(0.00)	0.46	(0.07)	(0.00)	0.59	(0.06)	(0.00)	0.32	(0.06)	(0.00)
Leverage	-0.50	(0.14)	(0.00)	-0.45	(0.14)	(0.00)	-0.39	(0.15)	(0.01)	-0.49	(0.13)	(0.00)
Advertising Intensity	-0.78	(0.74)	(0.29)	-1.65	(0.72)	(0.02)	2.16	(1.79)	(0.23)	-1.15	(1.94)	(0.56)
R&D Intensity	-0.06	(0.55)	(0.91)	0.77	(0.37)	(0.04)	-0.18	(0.10)	(0.08)	0.03	(0.47)	(0.96)
Sales Growth	0.03	(0.07)	(0.66)	-0.03	(0.08)	(0.68)	-0.01	(0.05)	(0.90)	0.15	(0.08)	(0.07)
Time Clock	-0.03	(0.01)	(0.00)	-0.05	(0.01)	(0.00)	-0.13	(0.03)	(0.00)	-0.14	(0.03)	(0.00)
Trump Era	-0.00	(0.02)	(1.00)	-0.03	(0.03)	(0.24)	0.82	(0.26)	(0.00)	0.94	(0.23)	(0.00)
Industry Pollution Position	-0.00	(0.00)	(0.36)	-0.00	(0.00)	(0.80)	0.00	(0.00)	(0.96)	-0.00	(0.00)	(0.06)
Time fixed effects	Included			Included			Included			Included		
Firm fixed effects	Included			Included			Included			Included		
R ²	0.108			0.086			0.112			0.098		
Number of firms	340			429			462			305		
Number of observations	2633			3129			4316			1832		

Note: All p-values less than 0.05 are significant at 95% confidence interval and all p-values less than 0.1 are significant at 90% confidence interval.

Table 4: Model fit for all hypotheses including the interaction term and using Scope 1 emissions.

	Model 5			Model 6			Model 7			Model 8		
	b	Robust SE	p-value	b	Robust SE	p-value	b	Robust SE	p-value	b	Robust SE	p-value
Compromising	-0.02	(0.01)	(0.07)							-0.03	(0.02)	(0.03)
Compromising*Reputational Risk	0.02	(0.03)	(0.59)							0.03	(0.03)	(0.38)
Avoidance				0.11	(0.09)	(0.22)				-0.01	(0.08)	(0.89)
Avoidance*Reputational Risk				0.12	(0.21)	(0.57)				-0.01	(0.23)	(0.98)
Manipulation							-0.47	(0.63)	(0.45)	-1.04	(0.60)	(0.08)
Manipulation *Reputational Risk							1.80	(1.76)	(0.31)	3.14	(1.72)	(0.07)
Previous Year Manipulation							0.01	(0.04)	(0.82)	-0.04	(0.03)	(0.17)
Reputational Risk	-0.02	(0.20)	(0.92)	-0.03	(0.15)	(0.82)	0.04	(0.09)	(0.66)	-0.16	(0.28)	(0.56)
Market Concentration Ratio	0.38	(0.67)	(0.58)	-0.28	(0.77)	(0.71)	0.35	(0.72)	(0.63)	-0.55	(0.63)	(0.38)
Shareholder Resolution	-0.03	(0.02)	(0.20)	0.01	(0.03)	(0.85)	0.03	(0.03)	(0.37)	-0.01	(0.03)	(0.63)
State Regulation Threat	-0.11	(0.07)	(0.11)	-0.08	(0.06)	(0.16)	-0.08	(0.07)	(0.25)	-0.06	(0.06)	(0.34)
State Regulation Deterrence	0.09	(0.07)	(0.18)	0.08	(0.07)	(0.27)	0.00	(0.06)	(0.98)	0.11	(0.07)	(0.09)
Firm Performance	-0.05	(0.27)	(0.86)	0.35	(0.27)	(0.20)	0.88	(0.34)	(0.01)	0.09	(0.25)	(0.71)
Firm Size	0.41	(0.07)	(0.00)	0.44	(0.08)	(0.00)	0.60	(0.06)	(0.00)	0.32	(0.06)	(0.00)
Leverage	-0.47	(0.14)	(0.00)	-0.48	(0.13)	(0.00)	-0.41	(0.15)	(0.01)	-0.50	(0.12)	(0.00)
Advertising Intensity	-0.83	(1.32)	(0.53)	-2.81	(1.91)	(0.14)	2.03	(1.80)	(0.26)	-1.36	(2.02)	(0.50)
R&D Intensity	0.08	(0.56)	(0.88)	0.68	(0.26)	(0.01)	-0.19	(0.10)	(0.07)	0.16	(0.48)	(0.74)
Sales Growth	0.11	(0.07)	(0.13)	-0.03	(0.11)	(0.75)	-0.01	(0.05)	(0.85)	0.14	(0.08)	(0.07)
Time Clock	-0.12	(0.03)	(0.00)	-0.15	(0.03)	(0.00)	-0.14	(0.03)	(0.00)	-0.14	(0.03)	(0.00)
Trump Era	0.80	(0.20)	(0.00)	0.95	(0.24)	(0.00)	0.83	(0.28)	(0.00)	0.95	(0.23)	(0.00)
Industry Pollution Position	-0.00	(0.00)	(0.37)	-0.00	(0.00)	(0.51)	-0.00	(0.00)	(0.72)	-0.00	(0.00)	(0.05)
Time fixed effects		Included			Included			Included			Included	
Firm fixed effects		Included			Included			Included			Included	
R ²		0.097			0.083			0.117			0.102	
Number of firms		312			392			429			299	
Number of observations		2301			2632			4053			1819	

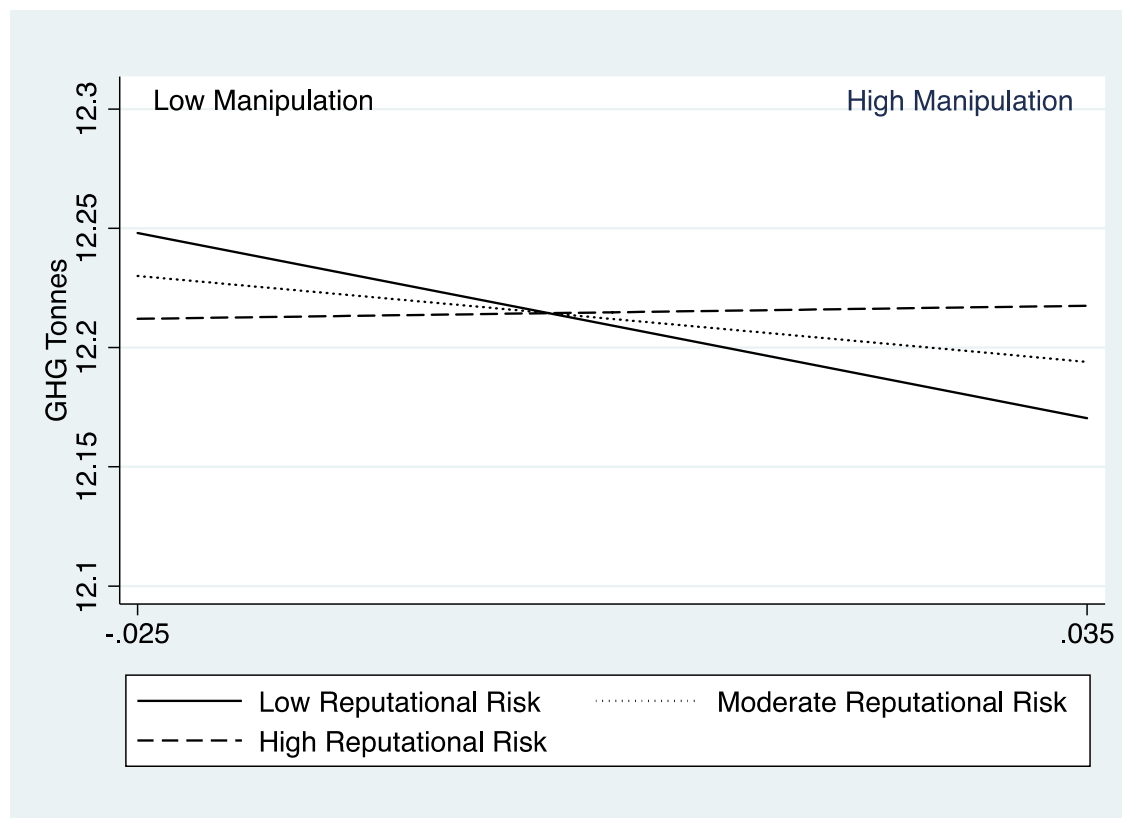


Figure 1: Margin plots for the moderating effect of reputational risk on the relationship between GHG emissions and manipulation. For higher reputational risk, the relationship between manipulation and emissions is positive.