

**ESG controversies, corporate governance, and the market for corporate control**

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### **Abstract**

Capitalizing on a unique measure of takeover vulnerability principally based on the staggered passage of state legislation, we examine how environmental, social, and corporate governance (ESG) controversies are influenced by the takeover market, which is widely regarded as a crucial instrument of external governance. This paper is the first to investigate how ESG controversies are influenced by the market for corporate control. The sample consists of unbalanced panel data of 6,236 firm-year observations from 2002 through 2014. Firm level fixed-effects regression forms the baseline analysis. To address potential endogeneity, we estimate Propensity Score Matching (PSM) and Instrumental Variable (IV) analyses. Further, we employ entropy balancing approach to address the issue of observable selection. The results show that the disciplinary mechanism associated with the takeover market compels managers to take actions that benefit shareholders and thus avoiding ESG controversies. An increase in takeover susceptibility by one standard deviation results in a 10.12% decline in controversial activities. Furthermore, we demonstrated a significant drop in firm profitability and a substantial increase in firm risk in response to ESG controversies. The findings have implications for practitioners and regulators.

*JEL Classification: M14, G32, G34*

*Keywords: ESG, corporate social responsibility, ESG controversies, takeovers, corporate governance, market for corporate control*

## **I. Introduction**

Although the literature is replete with research on corporate social responsibility (CSR) and environmental, social, and corporate governance (ESG) performance, ESG controversies have received little attention. ESG controversies should be investigated more frequently because they have been shown to substantially reduce firm value (Frooman, 1997; Klassen and McLaughlin, 1996). Investors have paid a high price for ESG-related scandals. A study by Bank of America Merrill Lynch suggests that major ESG-related controversies shaved USD 534 billion from the value of leading US corporations in the S&P 500 from 2014 to 2019 (Luo, 2021). Therefore, it is difficult to overstate the importance of ESG controversies. Furthermore, ESG controversies matter a great deal according to legitimacy theory (Suchman, 1995), stakeholder theory (Donaldson and Preston 1995; Godfrey et al. 2009; Kacperczyk 2009; Aouadi and Marsat, 2018), and agency theory (Jensen and Meckling, 1976). As relatively little research exists on ESG controversies, we fill this gap by exploring how ESG controversies are influenced by the takeover market.<sup>1</sup>

The takeover market, often known as the market for corporate control, has long been recognized as one of the most important external governance mechanisms (Manne, 1965; Fama, 1980; Fama and Jensen, 1983; Lel and Miller, 2015; Cain, McKeown, and Solomon, 2017). Unsurprisingly, substantial research has been conducted on the effects of the takeover market on a broad range of corporate policies, strategies, and outcomes. For instance, prior studies have examined the effects of the takeover market and found that stronger takeover vulnerability brings about higher productivity and profitability ((Bertrand and Mullainathan, 2003), more corporate

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<sup>1</sup> ESG controversies refer to incidents or situations that raise concerns or criticisms related to a company's performance in environmental, social, and governance (ESG) aspects. These controversies can include issues such as environmental damage, poor labor practices, unethical governance, or any other actions that conflict with sustainable and responsible business practices. Essentially, they are events or behaviors that negatively impact stakeholders' perception of a company's commitment to ESG principles.

risk-taking (Low, 2009), higher leverage (Garvey and Hanka, 1999), higher managerial ownership (Cheng, Nagar, and Rajan, 2005), less powerful executive risk-taking incentives (Ongsakul, Chatjuthamard, Jiraporn, Jiraporn, 2020), lower board gender diversity, larger board size, and lower board independence (Chatjuthamard, Jiraporn, Lee, Uyar, and Kilic, 2021), and a stronger culture of corporate integrity (Ongsakul, Chatjuthamard, Jiraporn, and Chaivisutangkun, 2021).

We offer two competing hypotheses on the effect of the takeover market on ESG. First, the *agency cost reduction hypothesis* asserts that increased takeover threats result in fewer ESG controversies. According to this view, the disciplinary mechanisms of the takeover market mitigate agency problems and encourage managers to avoid ESG controversies, which have been shown to diminish shareholder value (Frooman, 1997; Klassen and McLaughlin, 1996; Luo, 2021). The *managerial myopia hypothesis* contends that companies that are more susceptible to hostile takeovers engage in more ESG controversies. Managerial myopia is exacerbated by an active takeover market because managers are less secure in their employment when facing more takeover threats. Thus, they may participate in controversial activities that boost short-term outcomes but have negative long-term effects.

To capture the extent of ESG controversies, we relied on data from Refinitiv. To gauge the degree of takeover vulnerability, we employed a novel measure of takeover susceptibility based on the staggered adoption of state legislations, which are plausibly exogenous.<sup>2</sup> Based on a large

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<sup>2</sup> State laws related to corporate takeovers play a crucial role in regulating how these acquisitions are conducted and managed. These laws vary significantly across states, each designed to protect shareholders and manage the process of changing company ownership. For example, Delaware, a popular state for corporate registrations, has statutes that provide flexibility to corporations in managing takeover bids, including the 'poison pill' strategy which allows existing shareholders to purchase additional shares at a discount to dilute the stake of the new acquirer. In contrast, states like Pennsylvania have more stringent anti-takeover laws, such as requiring a supermajority vote for mergers to be approved. California's laws focus on fairness in takeovers, ensuring that all shareholders are treated equally in a transaction. These laws create a diverse legal landscape that companies must navigate when considering mergers and acquisitions, significantly impacting the strategies and outcomes of corporate takeovers. A complete list of the state laws used in our study is available in Cain, McKeon, and Solomon (2017).

sample of U.S. firms, our results support the agency cost hypothesis, showing that greater takeover susceptibility brings about significantly fewer ESG controversies. Companies are involved in fewer ESG controversies when their managers are subject to more takeover threats, which mitigate agency conflicts. In terms of economic magnitude, an increase in takeover susceptibility by one standard deviation diminishes ESG controversies by 10.12%.

We also examine how ESG controversies affect profitability. According to the legitimacy, stakeholder, and agency theories, ESG controversies are expected to affect firm performance (Suchman, 1995; Donaldson and Preston 1995; Freeman 1984; Godfrey et al. 2009; Kacperczyk 2009; Aouadi and Marsat, 2018; Jensen and Meckling, 1976). Our results demonstrate that firm profitability declines significantly when firms are involved in more ESG controversies, which is consistent with the theories' predictions. Specifically, when ESG controversies increase by one standard deviation, firm profitability drops by 3.51% after controlling for other firm-specific attributes. Finally, our analysis reveals that firm-specific risk increases significantly in response to ESG controversies; an increase in ESG controversies by one standard deviation results in an increase in idiosyncratic risk by 2.43% after accounting for other firm-specific characteristics. Crucially, our findings support prior research that documents an adverse impact on firm performance in response to ESG controversies (Frooman, 1997; Johnson, 2003; Klassen and McLaughlin). Finally, ESG engagement is not related to ESG controversies, implying that socially responsible firms are no less likely to participate in these controversies.

Our results are unlikely to be affected by endogeneity because our measure of takeover susceptibility is plausibly exogenous (Cain, McKeown, and Solomon, 2017). Importantly, we controlled for firm-fixed effects, which mitigated the endogeneity bias ascribed to unobserved heterogeneity. Nevertheless, we conducted various robustness checks to further reduce

endogeneity. Specifically, we performed propensity score matching, entropy balancing, and instrumental variable analysis. The findings survived all robustness checks and are, therefore, unlikely to be contaminated by endogeneity.

The motivation behind our research is multifaceted, drawing on both theoretical frameworks and practical considerations to explore the under-researched area of ESG controversies. Theoretically, ESG controversies present a fertile ground for analysis through various established theories. Legitimacy theory (Suchman, 1995) explores how organizations seek to establish their legitimacy in the eyes of stakeholders, while stakeholder theory (Donaldson and Preston, 1995; Godfrey et al., 2009; Kacperczyk, 2009; Aouadi and Marsat, 2018) examines the impact of corporate actions on different stakeholder groups. Agency theory (Jensen and Meckling, 1976), on the other hand, concentrates on the conflicts between managers and shareholders. Despite the rich theoretical landscape these frameworks offer, there is a conspicuous gap in the literature regarding ESG controversies specifically. This oversight is striking given the increasing emphasis on sustainable and ethical corporate practices globally. Our research aims to bridge this gap by applying these robust theoretical lenses to understand and analyze ESG controversies more deeply.

From a practical standpoint, the motivation for our study is underscored by the substantial empirical evidence showing the negative impact of ESG controversies on firm value and shareholder wealth (Luo, 2021). These controversies do not exist in a vacuum; they have tangible, significant financial consequences that ripple across a wide spectrum of stakeholders, including shareholders, managers, regulators, and investors. In today's business environment, where corporate actions are scrutinized for their ethical and sustainable impact, understanding the nature and implications of ESG controversies becomes imperative. Despite their evident financial

and societal importance, there is a surprising scarcity of focused research on ESG controversies. This gap in the literature signifies a crucial area of exploration, one that our study seeks to address comprehensively.

By investigating the dynamics of ESG controversies and their broader implications, our research aims to provide valuable insights that can guide stakeholders in making informed decisions. These insights are essential for the development of effective strategies to manage and mitigate the impact of ESG controversies, thereby enhancing corporate responsibility and sustainability. Through our study, we endeavor to deepen our understanding of ESG controversies, linking theoretical perspectives with practical realities, and thereby advancing the knowledge in this vital area of corporate governance and ethical business practice.<sup>3</sup>

Our research makes significant contributions to various important fields within the literature, enhancing our understanding of corporate practices and governance. First, our study addresses a notable gap in the existing body of research. While there is an abundance of studies focusing on corporate CSR/ESG performance, there is a striking lack of research specifically examining ESG controversies. This oversight is crucial in a business environment increasingly focused on sustainability and ethics. Our research pioneers in this area by being the first to systematically explore the influence of the market for corporate control on ESG controversies. This not only fills a critical void in the literature but also sets the stage for further scholarly investigation into this pertinent issue.

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<sup>3</sup> Our study diverges from two recent studies related to ESG controversies and the takeover market, which focus on different aspects. Zhu et al. (2023) investigate the impact of foreign acquirers' ESG misbehavior on cross-border acquisition completion, while Maung et al. (2021) examine the influence of a country's religiosity on cross-border mergers and acquisitions. Unlike these studies, our research zeroes in on domestic acquisitions. We distinctively analyze how takeover vulnerability, influenced by variations in state takeover laws, affects a company's involvement in ESG controversies. This approach sets our study apart, offering a novel perspective on the interplay between legal frameworks and corporate ESG conduct within the domestic context.

Second, our findings significantly contribute to the literature on corporate governance. The role of the takeover market as an external governance mechanism is well-established, known to impact a wide array of corporate outcomes. This has been evidenced in the works of several researchers, such as Bertrand and Mullainathan (2003), Low (2009), Garvey and Hanka (1999), and others including Cheng, Nagar, and Rajan (2005), and more recent studies by Ongsakul et al. (2020) and Chatjuthamard et al. (2021). Our study builds upon this existing knowledge, revealing how the takeover market can have a significant impact on ESG controversies. By doing so, we add a new layer of understanding to the complex dynamics of corporate governance, particularly in the context of ethical and sustainable business practices.

Third, our study confirms prior research (Frooman, 1997; Johnson, 2003; Klassen and McLaughlin) by showing that ESG controversies significantly reduce firm profitability, highlighting their real financial impact. We also contribute to the understanding of corporate risk-taking (Low, 2009; Chaivisuttangkun and Jiraporn, 2021; Lee, Jiraporn, Kim, and Park, 2021; Jiraporn and Lee, 2018), revealing that ESG controversies escalate firm-specific risk. In alignment with legitimacy, stakeholder, and agency theories (Suchman, 1995; Palazzo and Scherer, 2006; Donaldson and Preston 1995; Freeman 1984; Godfrey et al. 2009; Jensen and Meckling, 1976), our findings indicate that ESG controversies impact both profitability and risk. Furthermore, our results do not suggest that takeover threats promote short-termism and motivate managers to engage in controversial activities that improve short-term benefits, challenging the managerial myopia hypothesis (Bhojraj and Libby, 2005; Laverty, 1996, 2004). Lastly, our use of the hostile takeover index as an exogenous measure (Cain, McKeown, and Solomon, 2017; Ongsakul et al., 2020, 2021; Chatjuthamard et al., 2021) adds to a growing area of research on takeover susceptibility.



## II. Related literature and hypothesis development

### *a. ESG controversies*

According to the literature, at least three theories are germane to ESG controversies: the legitimacy theory, stakeholder theory, and agency theory. First, according to legitimacy theory, ESG controversies are crucial. Corporate legitimacy is critical to a firm's long-term viability. According to Suchman (1995), legitimacy is the widely held view or assumption that an entity's acts are desirable, legitimate, or suitable within a socially formed system of norms, values, beliefs, and definitions (Aouadi and Marsat, 2018). When companies are involved in controversial issues, they are deemed to lack acceptable legitimacy, and their organizational legitimacy is questioned (Palazzo and Scherer 2006; Aouadi and Marsat, 2018). Accusations of questionable behavior have a detrimental effect on a company's brand and reputation (Donaldson and Preston 1995; Aouadi and Marsat, 2018).<sup>4</sup>

Moreover, according to stakeholder theory, socially responsible actions increase a company's value by fostering favorable interactions with stakeholders (Donaldson and Preston 1995; Freeman 1984; Godfrey et al. 2009; Kacperczyk 2009; Aouadi and Marsat, 2018). In comparison, controversial activities exacerbate stakeholder distrust and perceptions of corporate duplicity (Du et al. 2010; Maignan and Ralston 2002; Aouadi and Marsat, 2018), resulting in diminished credibility (Godfrey et al. 2009; Yoon et al. 2006; Aouadi and Marsat, 2018).<sup>5</sup>

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<sup>4</sup> More research related to the legitimacy theory includes Archel, Husillos, Larrinaga, and Spence (2009), O'donovan (2002), Guthrie and Parker (1989), Wilmshurst and Frost (2000), Mobus (2005), and Deegan (2014),

<sup>5</sup> Additional research on the stakeholder theory can be found in Friedman and Miles (2002), Phillips, Freeman, and Wicks (2003), Freeman (1999), Jones and Wicks (1999), Laplume, Sonpar and Litz (2008), Mainardes, Alves, and Raposo (2011), Sternberg (1997), and Pesqueux and Damak-Ayadi (2005).

Finally, agency theory suggests that managers acting as agents for shareholders may not always act in the best interests of shareholders due to agency problems (Jensen and Meckling, 1976). Agency conflicts arise when managers' incentives do not align with those of shareholders. It is conceivable that self-interested managers may have the firm engage in controversial activities to enhance their private benefits at the expense of shareholders. However, corporate governance mitigates agency conflicts and brings shareholder and manager interests into better alignment. Prior research has used agency theory to explore the effects of corporate governance on ESG/CSR performance (Jo and Harjoto, 2012, Jain and Jamali, 2016; Chintrakarn, Jiraporn, Kim, and Kim, 2016; Chintrakarn, Jiraporn, Tong, Jiraporn, and Proctor, 2020; Chintrakarn, Jiraporn, and Treepongkarun, 2021).<sup>6</sup>

While the literature is teeming with studies that focus on socially responsible actions, research on ESG is relatively scarce. ESG controversies are expected to have negative effects on firm value (Orlitzky 2013; Adams 2002; Fombrun and Shanley 1990; Weigelt and Camerer 1988; Aouadi and Marsat, 2018). According to Frooman (1997), the stock market reacts unfavorably when a corporation engages in socially irresponsible or suspect social conduct. Similarly, Klassen and McLaughlin (1996) report that negative ESG news articles lead to adverse market returns (Aouadi and Marsat, 2018).<sup>7</sup>

*b. Corporate governance and the market for corporate control*

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<sup>6</sup> Agency theory is also explored in the following studies: Tate, Ellram, and Bals, and Hartmann, and Valk (2010), Nyberg, Fulmer, and Gerhart, and Carpenter (2010), Bendickson, Muldoon, Liguori, and Davis (2016), Bosse and Phillips (2016), and Pepper and Gore (2012).

<sup>7</sup> Additional research on ESG controversies can be found in Dorfleitner, Kreuzer, and Sparrer (2020), de Franco (2020), Shakil (2021), and DasGupta (2021),

According to the literature, the market for corporate control, frequently referred to as the takeover market, is a critical external disciplinary mechanism for corporate governance (Manne, 1965; Fama, 1980; Fama and Jensen, 1983; Lel and Miller, 2015; Cain et al., 2017; Ongsakul, Chatjuthamard, Jiraporn, 2021; Ongsakul, Chatjuthamard, Jiraporn, and Jiraporn 2020; Chatjuthamard, Jiraporn, Lee, Uyar, and Kilic, 2020). Many studies have examined changes in takeover susceptibility by examining variations in specific takeover defenses or anti-takeover legislation (Bertrand and Mullainathan, 2003; Schwert, 2000; Karpoff and Malatesta, 1989). Nonetheless, a key shortcoming of prior research in this field has been its exclusive focus on a single or limited number of anti-takeover statutes (Cain et al., 2017).

To address the problems raised in previous research, Cain, McKeown, and Solomon (2017) developed a hostile takeover index based primarily on the staggered adoption of 17 takeover statutes passed between 1965 and 2014. Using this innovative measure of takeover susceptibility, they show that stronger takeover protection reduces company value, supporting managerial entrenchment and agency cost arguments. Their findings are noteworthy not only because they represent a substantial step toward addressing endogeneity but also because they cover the whole spectrum of state laws (Cain et al., 2017; Ongsakul, Chatjuthamard, Jiraporn, 2021; Ongsakul, Chatjuthamard, Jiraporn, and Jiraporn 2020; Chatjuthamard, Jiraporn, Lee, Uyar, and Kilic, 2020).

Recently, the takeover index has increased in popularity and has been used in several studies. According to Ongsakul, Chatjuthamard, Jiraporn, and Chaivisuttangkun (2021), a higher degree of takeover vulnerability, as defined by the takeover index, leads to greater corporate integrity when corporate integrity is measured using a novel metric obtained from cutting-edge machine learning techniques. Likewise, Chatjuthamard, Ongsakul, and Jiraporn (2021) used a new proxy for corporate complexity based on textual analysis to show a considerable decline in

corporate complexity in response to greater takeover vulnerability. According to the authors, increased takeover susceptibility exacerbates managerial myopia, leading to fewer long-term and less complex investments.

Furthermore, according to Ongsakul, Chatjuthamard, and Jiraporn (2021), higher takeover vulnerability diminishes innovation efficiency, as proxied by research quotient (Cooper, Knott, and Yang, 2021). In addition, hostile takeover threats have been found to have a significant influence on board governance because they alter crucial board characteristics, including board independence and gender diversity (Chatjuthamard, Jiraporn, Lee, Uyar, and Kilic, 2021).

*c. Managerial short-termism*

According to previous research, managers may display myopic conduct (Bhojraj and Libby, 2005; Graham et al., 2005; Lavery, 1996, 2004; Lundstrum, 2002; Mizik, 2010). Numerous variables contribute to the development of managerial myopia, such as agency conflicts and information asymmetry (Bebchuck and Stole, 1993; Lundstrum, 2002; Mizik, 2010; Narayanan, 1985). Agency conflicts may occur when managers' career horizons are shorter than shareholders' investment horizons. Managers have little incentive to pursue earnings that may be realized beyond the end of their employment (Schuster et al., 2018; (Ongsakul, Chatjuthamard, Jiraporn, and Chaivisuttangkun, 2021; Chatjuthamard, Ongsakul, and Jiraporn, 2021).

Additionally, the stock market's short-term orientation may increase managerial myopia in publicly traded companies (Bhojraj and Libby, 2005, Giger, Kanodia, Sapra, and Venugopalan, 2014; Schuster et al., 2018). Quarterly profit pressure and regular reporting add to managers' short-termism (Gigler et al., 2014; Lavery, 2004). Managers plagued by myopia can adopt steps that boost short-term performance for their own personal gain, even if these activities eventually reduce

shareholder value. Managers who are not expected to stay with the company for a long period, such as those approaching retirement or seeking a new position, may emphasize short-term profits over long-term earnings. Consequently, managerial myopia can exacerbate agency conflicts (Ongsakul, Chatjuthamard, Jiraporn, and Chaivisuttangkun, 2021; Chatjuthamard, Ongsakul, and Jiraporn, 2021).

#### *d. Hypothesis development*

Based on the literature, we propose two competing hypotheses. First, the *agency cost reduction hypothesis* argues that greater takeover threats result in fewer ESG controversies. According to this view, the disciplinary mechanism associated with the takeover market mitigates agency problems and motivates managers to avoid engaging in ESG controversies that diminish firm value (Frooman, 1997; Klassen and McLaughlin, 1996). Consistent with this view, Cain et al. (2017) report that a higher degree of takeover vulnerability raises firm value, suggesting that hostile takeover threats represent a disciplinary mechanism that alleviates agency problems. Similarly, Ongsakul, Chatjuthamard, Jiraporn, and Chaivisuttangkun (2021) demonstrate that more takeover threats significantly enhance a corporate culture of integrity, implying that takeover vulnerability leads to more positive outcomes; therefore, this hypothesis predicts that more takeover threats result in fewer ESG controversies.

By contrast, the *managerial myopia hypothesis* argues that companies that are more vulnerable to hostile takeovers tend to engage more in ESG controversies. A more active takeover market exacerbates managerial myopia because managers are less secure in their jobs when facing more takeover threats. Consequently, they may engage in controversial activities that improve short-term results, although these pursuits may have adverse long-term consequences. Managerial entrenchment permits managers to retain their jobs for prolonged periods. This ongoing presence

has ramifications for stakeholders: with longer tenure, stakeholders are more likely to interact with the same management and corporate policies over a prolonged period. Problematic manager behavior nearly always encourages stakeholders to predict similar behavior in the future, as long as the same management team remains in place (Anderson et al., 2004; Jiraporn, Chintrakarn, Kim, and Liu, 2013). Due to concerns about their reputation, entrenched managers are less inclined to participate in controversial activities. However, in a more active takeover market, this reputation mechanism is significantly weakened as hostile takeovers considerably threaten managers' job security. Therefore, this view predicts that greater takeover vulnerability results in more ESG controversies.

Consistent with managerial myopia, takeover vulnerability has recently been shown to worsen managerial short-termism, leading to significantly less innovation and lower corporate complexity (Ongsakul, Chatjuthamard, and Jiraporn, 2021; and Chatjuthamard, Ongsakul, and Jiraporn, 2021).

### **III. Sample construction, data description, and methodology**

#### *a. Sample formation and data description*

The data on ESG controversies come from Refinitiv. Cain, McKeown, and Solomon (2017) provided the data for the hostile takeover index. COMPUSTAT provides firm-specific attributes. Outliers were removed at the 1% and 99% levels where necessary. The final sample was an imbalanced panel dataset of 6,236 firm-year observations from 2002 to 2014.<sup>8</sup> The ESG

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<sup>8</sup> The data on ESG controversies are available starting in 2002. The data on the takeover index are available until 2014. A key limitation of our study is the data coverage, which only extends up to 2014. This gap presents an opportunity for future research to enhance and update our findings using more recent data as it becomes available. Such an extension would be invaluable in ensuring that our insights remain relevant and reflective of the latest trends and changes in corporate governance and ESG practices.

controversy score was calculated based on 23 ESG controversy topics, with recent controversies reflected in the latest complete period.<sup>9</sup> A percentile rank formula was applied to each industry group; therefore, the score reflects the extent to which a firm engages in ESG controversies relative to its industry peers. Detailed information on the construction of the ESG controversy score is available in Refinitiv.<sup>10</sup> Board independence is the percentage of independent outside directors on the board.

*b. Measuring hostile takeover vulnerability*

To assess takeover susceptibility, we employed the hostile takeover index, consistent with recent research (Cain et al., 2017; Chatjuthamard et al., 2020; Ongsakul et al., 2021). This index has a substantial advantage because it is based on exogenous variables. The index comprises three parts: (1) legal determinants (the staggered adoption of 17 state laws governing takeovers), (2) macroeconomic factors (capital liquidity), and (3) a company factor that is not affected by firm choice (firm age). A higher index value indicates greater takeover susceptibility. This metric is far less vulnerable to endogeneity than any other measure employed in previous studies.

Cain, McKeown, and Solomon (2017) created a firm-level takeover index based on the findings of their logistic regression analysis to predict the probability of a hostile takeover. Cain et al. (2017) went into further depth in constructing a takeover index. In the recent literature, the hostile takeover index has been frequently employed, demonstrating its practical usefulness (Cain,

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<sup>9</sup> The ESG Controversies Score is derived from an analysis of 23 ESG controversy topics. Throughout the year, any scandal involving a company results in penalties, directly impacting their overall ESG performance. The repercussions of such events can extend into the subsequent year, particularly if new developments arise, such as lawsuits, ongoing legislative disputes, or fines. We continuously capture new media materials to track the progression of each controversy. Additionally, our scoring method takes into account the market cap bias, a phenomenon where large-cap companies, due to their higher media visibility compared to smaller-cap firms, are more likely to be affected by negative publicity. This approach ensures a more equitable assessment across companies of different sizes.

<sup>10</sup> More information about the construction of the ESG controversies score is available here: [https://www.refinitiv.com/content/dam/marketing/en\\_us/documents/methodology/refinitiv-esg-scores-methodology.pdf](https://www.refinitiv.com/content/dam/marketing/en_us/documents/methodology/refinitiv-esg-scores-methodology.pdf)

McKeown, and Solomon, 2017; Ongsakul, Chatjuthamard, Jiraporn, and Jiraporn, 2020; Ongsakul, Chatjuthamard, Jiraporn, and Chaivisuttangkun, 2021; Chatjuthamard, Ongsakul, and Jiraporn 2021; Ongsakul, Chatjuthamard, Jiraporn, 2021; Chatjuthamard, Jiraporn, Lee, Uyar, and Kilic, 2021).

*c. Additional variables and empirical modeling*

Essentially, we estimated the following regression analysis:

$$ESG\ Controversies\ Score_{it} = a + b (Hostile\ Takeover\ Index)_{it} + c (Controls)_{it}$$

where  $i$  indexes firms and  $t$  indexes years.

Based on previous research (Haque and Ntim, 2020; Jiraporn, Jiraporn, Boeprasert, and Chang, 2014; Jo and Harjoto, 2012; Chintrakarn, Jiraporn, Kim, Kim, 2016), we included many variables to account for other factors that may impact ESG controversies: firm size (Ln of total assets), profitability (EBIT/total assets), leverage (total debt/total assets), investments (capital tures/total assets), intangible assets (R&D/total assets and advertising expense/total assets), discretionary spending (SG&A expense/total assets), cash holdings (cash holdings/total assets), dividend payouts (dividends/total assets), and asset tangibility (fixed assets/total assets).

We included year-fixed effects to control for possible variations over time. Crucially, we included firm fixed effects, which are important because they account for any unobservable characteristic that remains constant across time. Finally, as more socially responsible companies are less likely to engage in contentious activities, we included Refinitiv's ESG score to account for the level of ESG engagement. Appendix Table A1 summarizes the definitions of the variables. Table 1 presents the summary statistics for the ESG controversy score, hostile takeover index, and firm-specific characteristics.

#### **IV. Results**



*a. Baseline regression analysis*

Table 2 reports the firm-fixed-effects regression results where the dependent variable is the ESG controversies score (the higher the score, the fewer ESG controversies the firm participates in). The standard errors are clustered by firm and year. Model 1 has the hostile takeover index as the only independent variable, whereas Model 2 includes all the control variables. The coefficients of the hostile takeover index are positive and significant in both regressions. The results corroborate the agency cost reduction hypothesis, where the disciplinary mechanism associated with the takeover market encourages managers to take steps that benefit shareholders in the long term, including avoiding ESG controversies. Notably, our findings aptly align with those by Cain, McKeown, and Solomon (2017), who found that a higher level of takeover susceptibility enhances firm value, validating the prediction of the arguments based on managerial entrenchment and agency conflicts. It is noteworthy that the coefficient of the ESG score is not significant, implying that more socially responsible firms are not any less likely to engage in controversial activities.

Regarding economic significance, we estimate the magnitude of the takeover market's effect on ESG controversies as follows. The coefficient of the takeover index is 27.897, and the standard deviation of the index is 0.106. Therefore, an increase in takeover susceptibility by one standard deviation raises the ESG controversy score by  $0.106 \times 27.897$ , which is 2.957. Because one standard deviation of the ESG controversies score is 29.214, a rise by 2.957 represents a 10.12% increase. Not only is the effect of the takeover market statistically significant, but it is also economically meaningful.

Crucially, because we included firm fixed effects in our regression analysis, our results are unlikely to have been contaminated by endogeneity bias that can be attributed to unobservable firm characteristics. Moreover, because our proxy for takeover vulnerability was principally based

on the staggered passage of state legislation, which is plausibly exogenous (Cain, McKewon, and Solomon, 2017), our findings may reflect causal influence rather than merely correlation.

*b. Propensity score matching*

Although endogeneity was unlikely, we executed further robustness checks to mitigate it even further. We validated our findings through propensity score matching (Rosenbaum and Rubin, 1983; Lennox, Francis, and Wang, 2011). The sample was divided into quartiles using the hostile takeover index. The treatment group comprised observations within the top quartile of distribution (highest takeover vulnerability). Then, for each observation in the treatment group, we selected the most comparable observation from the remainder of the sample based on the 11 company characteristics (i.e., the 11 control variables included in the regression analysis). Therefore, apart from takeover susceptibility, our treatment and control groups were nearly identical in every observable parameter. We adopt one-to-one matching with the nearest neighbor method with replacement.

Diagnostic testing was conducted to confirm the matching accuracy. The results are summarized in Table 3 Panel A. Model 1 is a logistic regression with a binary dependent variable equal to one if the company is in the treatment group (more takeover susceptibility) and zero otherwise. It includes the whole sample (pre-match). This finding indicates that the treatment firms differ significantly from the rest of the sample in several ways. In particular, firms in the treatment group are larger in size, have less capital expenditure, hold less cash, pay larger dividends, and take more socially responsible actions. We must account for these material differences because they may have biased our results.

Model 2 is a logistic regression model created for the propensity-score matched sample (post-match). None of the coefficients in Model 2 are significant; as a result, our treatment and control companies are statistically identical in all observable aspects. Our treatment and control firms should have comparable ESG controversies to the extent that takeover susceptibility is immaterial. The regression results for the propensity-score matched sample are shown in Panel B of Table 3. The coefficient of the hostile takeover index remains significantly positive, validating the agency cost reduction hypothesis. Our conclusion does not appear to be primarily driven by endogeneity based on the consistency of our PSM findings.<sup>11</sup>

*c. Entropy balancing*

Previous studies have critically relied on the concept of observable selection. To circumvent this assumption, we used Hainmueller's (2012) entropy balancing methodology, which is a variation of the conventional matching algorithms. In particular, entropy balancing achieves a high degree of covariate balance by including covariate balance directly in the weight function applied to the sample units (Hainmueller, 2012; Balima 2020). Hainmueller (2012) provides more details on entropy balancing. This novel matching approach has been widely used in recent studies (McMullin and Schonberger, 2020; Wilde, 2017; Neuenkirch and Tillmann, 2016; Freier, Schumann, and Siedler, 2015; Bol, Giani, Blais, and Loewen, 2020; Neuenkirch and Neumeier, 2016; Glendening, Mauldin, and Shaw, 2019; Truex, 2014; Marcus, 2013; Ongsakul, Chatjuthamard, Jiraporn, and Chaivisuttangkun, 2021; Chatjuthamard, Ongsakul, and Jiraporn, 2021).

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<sup>11</sup> As a robustness check, we also perform an additional analysis where we match each observation in the treatment group with an observation in the bottom two quartiles. The result remains similar.

This is how we achieved entropy balancing. For the treatment group, we chose companies whose takeover susceptibility was in the top quartile, and the remaining sample was referred to as the control group. Subsequently, for all control variables, we used entropy balancing to ensure that the mean and variance of the observations in the two groups were comparable. Table 4 presents the regression result for the entropy-balanced sample. The coefficient of the hostile takeover index remains positive and significant. Firms with a higher takeover susceptibility engage in significantly fewer ESG controversies. The agency cost reduction hypothesis is again confirmed.

*d. Instrumental-variable analysis*

To further mitigate endogeneity in our analysis, we employ an instrumental-variable approach. Our chosen instrument is the average value of the hostile takeover index of all companies located in the same city. This choice is grounded in the rationale that companies situated in close proximity often experience similar economic conditions, making this measure a pertinent instrument. Moreover, the location of a company's headquarters, which often influences the company's exposure to these economic conditions, is typically established early in the firm's history and rarely changes over time. This historical decision, as Pirinsky and Wang (2006) suggest, is likely exogenous to the current characteristics of the firm. Therefore, the headquarters' location provides a reliable variable that is exogenous to contemporaneous firm characteristics while being uncorrelated with the error term in our regression model.

This methodological approach, leveraging geographic identification, has been increasingly recognized and utilized in recent academic literature. It has been effectively applied in various studies, such as Jiraporn et al. (2014), Chintrakarn et al. (2017), and Chintrakarn et al. (2015). These studies underscore the validity and increasing acceptance of this approach in addressing endogeneity concerns. Table 5 presents the regression results. Model 1 is the first-stage regression

that uses the hostile takeover index as the dependent variable. As expected, the coefficient of the average takeover index for all firms in the same city is significantly positive. Model 2 is the second-stage regression, in which the ESG controversy score is the dependent variable. The hostile takeover index instrumented in the first stage has a significantly positive coefficient.

Furthermore, for robustness, we also run additional analysis with alternative model specifications. In particular, we add two control variables that influence the extent of takeover vulnerability. First, staggered boards are considered a takeover defense mechanism as it takes more time for the acquirer to replace most of the directors on the board when the board is staggered, thereby complicating takeover efforts (Cremers, Litov, and Sepe, 2017; Amihud and Stoyanov, 2017; Jiraporn and Liu, 2008). We include a binary equal to one if the board is staggered, and zero otherwise. Second, share repurchases can be used as a takeover defense by increasing the company's share price and reducing the number of available shares on the market, making a takeover bid more costly and difficult for potential acquirers (Bagwell, 1991). Accordingly, we include share repurchases as a control variable (the ratio of share repurchases to total assets). We show the regression results in Table A2 in the Appendix. Notably, the coefficient of the hostile takeover index instrumented from the first stage remains significantly positive. Because the IV results remain consistent, it is unlikely that our conclusions are tainted by endogeneity.

*e. Regression analysis with additional control variables*

To enhance the robustness of our findings, we conducted a regression analysis using additional control variables. First, we considered internal governance factors by including board-related variables such as board size, board independence (percentage of independent directors), board gender diversity (percentage of female directors), and board ethnic diversity (percentage of ethnic minority directors) as the board of directors is commonly recognized as a crucial internal

governance mechanism (Weir, Laing, and McKnight, 2002; Kyaw, Chindasombatcharoen, Jiraporn, and Treepongkaruna, 2020). Second, we acknowledged institutional ownership as another significant governance mechanism due to the monitoring role played by large institutional shareholders (Kang, Luo, and Na, 2018; Kyaw, Thomsen, and Treepongkaruna, 2022). Moreover, to account for industry-specific variations, we incorporated industry-level variables based on the first two SIC digits. These variables included industry competition (measured by the Herfindahl Index based on market share), industry-average profitability (industry-average ratio of EBIT to total assets), and industry-level leverage (industry-average ratio of total debt to total assets).

Table A3 in the Appendix presents the regression results. Remarkably, the coefficient of the hostile takeover index remains significantly positive, confirming that increased vulnerability to takeovers results in fewer ESG controversies. Our conclusion remains robust even after expanding our set of control variables to include board characteristics, institutional ownership, and industry-level variables.

*f. The effect of ESG controversies on corporate profitability*

In this section, we explore the effects of ESG controversies on profitability and firm risk. The motivation to study the impact of ESG controversies on firm profitability and risk is well-founded in several key theoretical frameworks. These theories collectively suggest that ESG controversies can significantly undermine a firm's performance and increase its risk profile. First, legitimacy theory posits that controversies adversely affect a company's brand and image (Donaldson and Preston 1995; Aouadi and Marsat, 2018). When a company is embroiled in ESG controversies, its legitimacy in the eyes of stakeholders is compromised, leading to potential declines in customer loyalty, investor confidence, and overall brand value. This erosion of brand

and image can directly impact profitability as customers and investors may choose to dissociate from the firm.

Stakeholder theory further emphasizes the importance of ESG issues, arguing that controversial business practices can lead to stakeholder distrust and perceptions of corporate deception (Du et al. 2010; Maignan and Ralston 2002; Aouadi and Marsat 2018). This erosion of trust can have serious financial implications, as stakeholders – including customers, employees, and investors – might withdraw their support, leading to a decline in sales, productivity, and investment. Moreover, agency theory raises concerns about management's role in ESG controversies, suggesting that self-interested actions by management could lead to decisions that harm the company while benefiting individual managers (Jensen and Meckling, 1976). Such actions can result in significant financial and reputational damage to the firm, thereby increasing firm risk and potentially harming long-term shareholder value.

Given these theoretical perspectives, it is imperative to empirically investigate the extent to which ESG controversies affect firm profitability and risk. This is particularly relevant in the context of our analysis on the effect of the takeover market on ESG controversies. Understanding the impact of ESG controversies on firm performance not only contributes to academic discourse but also provides practical insights for managers, investors, and policymakers on the consequences of failing to adhere to ESG principles. Therefore, our study tests the hypothesis that an increase in ESG controversies is associated with a rise in firm risk, and anticipates a negative impact on profitability, in line with theoretical predictions.

We employ four alternative proxies to capture corporate profitability. First, we use return on assets (ROA), which is net income divided by total assets. Second, we use the EBIT and EBITDA ratios, which are EBIT and EBITDA divided by total assets, respectively. Finally, using

principal component analysis, we combine the previous three ratios and construct the profitability index, which is the first component resulting from the principal component analysis of the three profitability ratios discussed earlier. By focusing only on the three common profitability ratios, we may be able to reduce measurement errors to the extent that the errors in the three ratios are not correlated.

Table 6 presents the regression results. The coefficients of ESG controversy are all significantly positive in all regressions. As a higher ESG controversies score is associated with fewer controversies, a positive coefficient reveals that fewer ESG controversies raise firm profitability significantly, which is consistent with theoretical predictions. In terms of economic significance, we estimated the magnitude of the ESG controversies regarding profitability as follows. The coefficient of ESG controversy in Model 4 is 0.219, and the standard deviation of ESG controversies is 29.214; thus, an increase in the ESG controversy score by one standard deviation raises profitability by  $0.219 \times 29.214$ , which is 6.398. As the standard deviation of the profitability index is 163.864, an increase in the ESG controversy score by one standard deviation boosts a firm's profitability by 3.904% (6.398 divided by 163.864).

Notably, our findings are similar to those of previous studies. For instance, according to Frooman's (1997) meta-analysis, the stock market reacts unfavorably when a corporation engages in socially irresponsible or suspect social conduct. Similarly, Johnson (2003) shows that illicit CSR activities have detrimental effects on financial performance. Klassen and McLaughlin (1996) examined 22 adverse ESG news items (e.g., gas leaks and oil spills) and concluded that unfavorable stock returns are associated with negative ESG-related articles (Aouadi and Marsat, 2018).

*g. The effect of ESG controversies on firm risk*



Theory suggests that ESG controversies hurt firm performance. This prediction is consistent across legitimacy theory (Suchman, 1995), stakeholder theory (Donaldson and Preston 1995; Freeman 1984; Godfrey et al. 2009; Kacperczyk 2009; Aouadi and Marsat, 2018), and agency theory (Jensen and Meckling, 1976). These theoretical considerations suggest that ESG controversy exacerbates firm risk. In this section, we test the hypothesis that firm risk increases with more ESG controversy.

We measure firm-specific risk as follows. Daily stock returns are regressed against daily market returns, and the standard deviation of the regression residuals is then calculated. This variable captures idiosyncratic risk by excluding the influence of broad market risk (Chaivisuttangkun and Jiraporn, 2021; Lee, Jiraporn, Kim, and Park, 2021; Jiraporn and Lee, 2018). Table 7 presents the regression results, where the dependent variable is firm-specific risk. The coefficient of ESG controversy is significantly negative. Because a higher ESG controversy score implies fewer controversies, companies involved in fewer controversies experience significantly lower risk. More controversies exacerbate firm risk, corroborating the predictions of legitimacy theory, stakeholder theory, and agency theory.

In terms of economic significance, we estimated the effect of ESG controversy on idiosyncratic risk as follows. The coefficient of ESG controversy in Table 7 is -0.010. The standard deviation of ESG controversies is 29.214. An increase in the ESG controversies score (fewer controversies) by one standard deviation reduces idiosyncratic risk by  $29.214 \times 0.010$ , which is 2.921. Since one standard deviation of idiosyncratic risk is 12.025, a drop of 2.921 is equivalent to a 2.43% decline in firm-specific risk after accounting for other firm-specific attributes.

## **V. Conclusions**

In sharp contrast to the immense volume of research on ESG/CSR performance, ESG controversies have generated substantially less research, although ESG controversies have been demonstrated to impair corporate value (Frooman, 1997; Klassen and McLaughlin, 1996; Luo, 2021). Furthermore, ESG controversies have been recognized as important by legitimacy theory (Suchman, 1995), stakeholder theory (Donaldson and Preston 1995; Freeman 1984; Godfrey et al. 2009; Kacperczyk 2009; Aouadi and Marsat, 2018), and agency theory (Jensen and Meckling, 1976).

We address this important gap in the literature by investigating how ESG controversies are influenced by the takeover market, which is widely acknowledged as a crucial instrument for external governance (Manne, 1965; Fama, 1980; Fama and Jensen, 1983; Lel and Miller, 2015; Cain, McKeown, and Solomon, 2017). Two opposing hypotheses have been proposed. The agency cost reduction hypothesis argues that the pressure associated with the takeover market prevents opportunistic managers from taking dubious actions and compels them to take actions that align with shareholders' interests, such as avoiding ESG controversies. By contrast, the managerial myopia hypothesis suggests that an active takeover market threatens managers' job security, motivating them to act myopically and participate in controversial activities that may improve firm performance in the short term.

By exploiting a unique measure of takeover susceptibility principally based on the staggered enactment of state legislation, we show that more takeover threats result in significantly fewer ESG controversies, reinforcing the agency cost reduction hypothesis. In particular, an increase in takeover vulnerability by one standard deviation diminishes ESG controversy by 10.12%. The effect of the takeover market on ESG controversies is statistically significant and economically palpable. Endogeneity is unlikely to have tainted our findings as we relied on a

distinctive measure of takeover vulnerability based on exogenous factors. In any case, we ran a variety of robustness checks, namely, propensity score matching, entropy balancing, and instrumental variable analysis. All robustness checks validated the findings, suggesting that they are unlikely to be contaminated by endogeneity and therefore probably reflect a causal effect rather than a mere association.

Moreover, we investigated the effect of ESG controversies on firm profitability. Consistent with the theoretical predictions, we documented a substantial decline in firm profitability and a significant increase in firm-specific risk in response to more ESG controversy. Our findings are similar to those of prior studies that report an adverse effect of ESG controversies on firm performance (Frooman, 1997; Johnson, 2003; Klassen and McLaughlin). Finally, our results demonstrate that ESG engagement is unrelated to ESG controversies, implying that more socially responsible companies are no less likely to participate in these controversies.

The findings of our study not only extend the academic literature but also offer several practical ramifications for a broad range of stakeholders. First, investors, shareholders, and managers should be particularly cautious about engaging in controversial activities as they can have a detrimental impact on firm profitability. As our research establishes a link between ESG controversies and firm profitability, efforts should be made to avoid actions that may lead to such controversies. It is crucial to recognize that the consequences of ESG controversies extend beyond mere perception and can directly affect companies' financial performance.

Second, regulators should take note of our results as we demonstrate that the takeover market—an external governance mechanism—plays a vital role in reducing ESG controversies. Our findings emphasize the importance of market discipline in curbing the opportunistic behavior of managers who may prioritize their own private benefits over the shareholders' interests. When

considering regulations aimed at preventing ESG controversies, regulators should consider the substantial role that markets play in corporate control. Furthermore, shareholders of firms that are less subject to the pressure of the takeover market should exercise caution: these firms may have managers who are less restrained by market discipline and may thus participate in more contentious activities that ultimately harm firm performance. Shareholders should be mindful of the risks associated with such firms and actively engage in monitoring and oversight to ensure responsible and sustainable practices.

Customers are expected to benefit from our study. Knowledge of the relationship between the takeover market and ESG controversy can influence customer choices and preferences. Customers who prioritize sustainability and ethical practices may favor companies with a lower incidence of ESG controversies. This information empowers consumers to make informed decisions, encouraging companies to prioritize ESG considerations to attract and retain customers. Finally, nongovernmental organizations (NGOs) and activist groups focusing on ESG issues can leverage this knowledge to advocate for improved corporate behavior and drive positive change. Understanding the role of the takeover market in reducing ESG controversies allows them to identify areas of concern and engage with companies, shareholders, and policymakers to promote responsible practices.

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**Table 1: Summary statistics**

The ESG controversies score is provided by Refinitiv. A high value of the score indicates fewer ESG controversies, relative to the industry peers. The hostile takeover index is constructed by Cain, McKewon, and Solomon (2017) primarily based on the staggered adoption of state legislations. A higher value of the takeover index suggests higher takeover vulnerability. The ESG score is also provided by Refinitiv. A higher value indicates more ESG activities. Total assets are in millions.

	Mean	S.D.	25th	Median	75th
<u>Environment, Social, and Governance (ESG)</u>					
ESG Controversies Score	82.924	29.214	75.000	100.000	100.000
ESG Score	38.334	19.478	23.115	34.315	51.330
<u>Takeover Susceptibility</u>					
Hostile Takeover Index	0.192	0.106	0.109	0.168	0.273
<u>Firm-specific Characteristics</u>					
Total Assets	16000.000	44000.000	2595.475	5258.250	12000.000
Total Debt/Total Assets	0.240	0.176	0.115	0.222	0.335
Capital expenditures/Total Assets	0.049	0.048	0.020	0.034	0.059
Advertising Expense/Total Assets	0.015	0.035	0.000	0.000	0.014
R&D Expense/Total Assets	0.029	0.053	0.000	0.004	0.035
Cash Holdings/Total Assets	0.150	0.147	0.042	0.101	0.209
Dividends/Total Assets	0.017	0.023	0.000	0.008	0.025
Fixed Assets/Total Assets	0.505	0.354	0.220	0.407	0.741
SG&A Expense/Total Assets	0.209	0.172	0.078	0.168	0.297
<u>Profitability Measures</u>					
EBITDA/Total Assets	0.153	0.086	0.102	0.145	0.197
EBIT/Total Assets	0.112	0.084	0.065	0.105	0.155
ROA (Net Income/Total Assets)	0.059	0.088	0.030	0.063	0.102

**Table 2: The effect of hostile takeover vulnerability on ESG controversies**

The ESG controversies score is provided by Refinitiv. A high value of the score indicates fewer ESG controversies, relative to the industry peers. The hostile takeover index is constructed by Cain, McKewon, and Solomon (2017) primarily based on the staggered adoption of state legislations. A higher value of the takeover index suggests higher takeover vulnerability. The ESG score is also provided by Refinitiv. A higher value indicates more ESG activities.

	(1)	(2)
	ESG Controversies Score	ESG Controversies Score
<b>Hostile Takeover Index</b>	<b>30.350***</b>	<b>27.897***</b>
	<b>(4.213)</b>	<b>(4.612)</b>
Firm Size		-1.889
		(-1.237)
Leverage		1.291
		(0.297)
Profitability		23.173**
		(2.717)
Capital Investments		9.195
		(0.532)
Advertising Intensity		-40.102
		(-0.895)
R&D Intensity		22.930
		(1.197)
Cash Holdings		-3.539
		(-0.599)
Dividend Payouts		6.249
		(0.192)
Asset Tangibility		-2.200
		(-0.430)
Discretionary Spending		-9.881
		(-0.802)
ESG Score		-0.103
		(-1.560)
Constant	77.080***	98.146***
	(57.889)	(6.213)
Firm Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
Observations	6,226	6,226
Adjusted R-squared	0.339	0.341

Robust t-statistics in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 3: Propensity score matching**

The ESG controversies score is provided by Refinitiv. A high value of the score indicates fewer ESG controversies, relative to the industry peers. The hostile takeover index is constructed by Cain, McKewon, and Solomon (2017) primarily based on the staggered adoption of state legislations. A higher value of the takeover index suggests higher takeover vulnerability. The ESG score is also provided by Refinitiv. A higher value indicates more ESG activities.

**Panel A: Diagnostic testing**

	(1)	(2)
	Pre-Match	Post-Match
	Treatment	Treatment
	(High Takeover Vulnerability)	(High Takeover Vulnerability)
Firm Size	0.286*** (3.108)	0.016 (0.168)
Leverage	-0.666 (-1.347)	-0.325 (-0.551)
Profitability	-1.542 (-1.516)	-0.006 (-0.005)
Capital Investments	-5.516** (-2.180)	-1.135 (-0.441)
Advertising Intensity	2.036 (0.752)	1.292 (0.373)
R&D Intensity	-1.654 (-0.794)	0.471 (0.146)
Cash Holdings	-2.708*** (-3.572)	0.168 (0.187)
Dividend Payouts	10.903*** (3.303)	-2.790 (-0.700)
Asset Tangibility	0.351 (1.057)	-0.178 (-0.485)
Discretionary Spending	-0.224 (-0.329)	-0.451 (-0.611)
ESG Score	0.016*** (4.143)	0.001 (0.132)
Constant	-3.684*** (-4.290)	0.160 (0.176)
Pseudo R-squared	0.105	0.004
Observations	6,236	3,118

Robust z-statistics in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 3: Propensity score matching (continued)****Panel B: Regression analysis with propensity score matching**

	(1)
	ESG Controversies Score
<b>Hostile Takeover Index</b>	<b>18.071**</b> <b>(2.641)</b>
Firm Size	-5.047 (-1.687)
Leverage	6.233 (0.704)
Profitability	41.566** (2.308)
Capital Investments	33.784 (0.982)
Advertising Intensity	11.197 (0.127)
R&D Intensity	89.780 (1.004)
Cash Holdings	1.684 (0.140)
Dividend Payouts	82.087* (1.900)
Asset Tangibility	2.438 (0.291)
Discretionary Spending	-64.493** (-2.391)
ESG Score	-0.026 (-0.248)
Constant	121.071*** (4.051)
Firm Fixed Effects	Yes
Year Fixed Effects	Yes
Observations	3,003
Adjusted R-squared	0.419

Robust t-statistics in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

**Table 4: Entropy balancing**

The ESG controversies score is provided by Refinitiv. A high value of the score indicates fewer ESG controversies, relative to the industry peers. The hostile takeover index is constructed by Cain, McKewon, and Solomon (2017) primarily based on the staggered adoption of state legislations. A higher value of the takeover index suggests higher takeover vulnerability. The ESG score is also provided by Refinitiv. A higher value indicates more ESG activities.

	(1)
	ESG Controversies Score
<b>Hostile Takeover Index</b>	<b>16.990**</b>
	<b>(2.369)</b>
Firm Size	-3.592
	(-1.366)
Leverage	7.107
	(0.896)
Profitability	39.423**
	(2.692)
Capital Investments	15.153
	(0.551)
Advertising Intensity	41.287
	(0.528)
R&D Intensity	76.967
	(0.603)
Cash Holdings	10.407
	(0.857)
Dividend Payouts	67.589
	(1.142)
Asset Tangibility	2.529
	(0.331)
Discretionary Spending	-42.105
	(-1.680)
ESG Score	-0.072
	(-0.909)
Constant	105.380***
	(3.858)
Firm Fixed Effects	Yes
Year Fixed Effects	Yes
Observations	6,226
Adjusted R-squared	0.394

Robust t-statistics in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1



**Table 5: Instrumental-variable analysis**

The ESG controversies score is provided by Refinitiv. A high value of the score indicates fewer ESG controversies, relative to the industry peers. The hostile takeover index is constructed by Cain, McKeon, and Solomon (2017) primarily based on the staggered adoption of state legislations. A higher value of the takeover index suggests higher takeover vulnerability. The ESG score is also provided by Refinitiv. A higher value indicates more ESG activities.

	(1)	(2)
	Hostile Takeover Index	ESG Controversies Score
<b>Hostile Takeover Index (City-average)</b>	<b>0.454***</b>	
	<b>(10.161)</b>	
<b>Hostile Takeover Index (Instrumented)</b>		<b>56.186**</b>
		<b>(2.074)</b>
Firm Size	-0.001	-1.874
	(-0.874)	(-1.575)
Leverage	-0.004	1.290
	(-0.929)	(0.329)
Profitability	0.006	22.888***
	(1.400)	(3.337)
Capital Investments	0.001	9.627
	(0.130)	(0.617)
Advertising Intensity	0.047**	-41.486
	(2.183)	(-1.213)
R&D Intensity	-0.007	22.873
	(-1.042)	(1.478)
Cash Holdings	-0.008**	-3.214
	(-2.343)	(-0.626)
Dividend Payouts	0.053**	3.895
	(2.129)	(0.154)
Asset Tangibility	-0.003	-2.170
	(-0.721)	(-0.558)
Discretionary Spending	-0.008	-9.435
	(-1.025)	(-1.113)
ESG Score	-0.000	-0.101***
	(-0.964)	(-2.797)
Constant	0.095***	102.050***
	(6.709)	(8.133)
Firm Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
Observations	6,236	6,236
Adjusted R-squared	0.961	0.474
Cragg-Donald Wald F statistic	1735.44***	

Robust t-statistics in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 6: The effect of ESG controversies on profitability**

The ESG controversies score is provided by Refinitiv. A high value of the score indicates fewer ESG controversies, relative to the industry peers. The hostile takeover index is constructed by Cain, McKeon, and Solomon (2017) primarily based on the staggered adoption of state legislations. A higher value of the takeover index suggests higher takeover vulnerability. The ESG score is also provided by Refinitiv. A higher value indicates more ESG activities. For ease of interpretation, we divide the ESG controversies score by 100.

	(1)	(2)	(3)	(4)
	ROA	EBIT/Total Assets	EBITDA/Total Assets	Profitability Index
<b>ESG Controversies Score</b>	<b>0.019***</b> <b>(3.939)</b>	<b>0.009**</b> <b>(3.050)</b>	<b>0.012**</b> <b>(2.997)</b>	<b>0.219***</b> <b>(4.180)</b>
Firm Size	-0.029** (-2.357)	-0.020*** (-3.614)	-0.016 (-1.301)	-0.362** (-2.468)
Leverage	-0.144** (-2.941)	-0.062*** (-3.887)	-0.099** (-2.197)	-1.641*** (-3.111)
Capital Investments	0.126 (1.418)	0.222*** (3.262)	0.141 (1.278)	2.908* (2.084)
Advertising Intensity	-0.036 (-0.108)	0.017 (0.066)	0.060 (0.168)	0.274 (0.053)
R&D Intensity	-0.625*** (-4.129)	-0.144 (-1.653)	-0.345* (-1.787)	-5.771** (-2.893)
Cash Holdings	0.012 (0.315)	0.002 (0.089)	-0.024 (-0.693)	-0.045 (-0.093)
Dividend Payouts	0.708*** (3.635)	0.784*** (5.333)	0.976** (3.031)	14.024*** (4.115)
Asset Tangibility	-0.104*** (-3.633)	-0.090*** (-5.419)	-0.046 (-1.427)	-1.356*** (-3.459)
Discretionary Spending	-0.033 (-0.537)	0.092** (2.491)	0.115 (1.769)	1.102 (1.299)
ESG Score	-0.000 (-1.082)	0.000 (0.038)	-0.000 (-0.055)	-0.001 (-0.426)
Constant	0.399*** (3.360)	0.295*** (5.375)	0.299** (2.436)	3.658** (2.537)
Firm Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	6,226	6,226	6,224	6,224
Adjusted R-squared	0.385	0.696	0.593	0.616

Robust t-statistics in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 7: The effect of ESG controversies on firm-specific risk**

Daily stock returns are regressed against daily market returns. Then, we calculate the standard deviation of the regression's residuals. This variable captures idiosyncratic risk by excluding the influence of broad market risk. The ESG controversies score is provided by Refinitiv. A high value of the score indicates fewer ESG controversies, relative to the industry peers. The hostile takeover index is constructed by Cain, McKewon, and Solomon (2017) primarily based on the staggered adoption of state legislations. A higher value of the takeover index suggests higher takeover vulnerability. The ESG score is also provided by Refinitiv. A higher value indicates more ESG activities.

	(1) Firm-Specific Risk
<b>ESG Controversies Score</b>	<b>-0.010*</b> <b>(-1.834)</b>
Firm Size	-2.860** (-2.466)
Leverage	5.737* (1.930)
Profitability	-27.884*** (-3.737)
Capital Investments	-2.104 (-0.213)
Advertising Intensity	24.683 (1.164)
R&D Intensity	0.545 (0.071)
Cash Holdings	3.108 (1.117)
Dividend Payouts	-61.239** (-3.031)
Asset Tangibility	1.096 (0.350)
Discretionary Spending	5.345 (1.001)
ESG Score	0.008 (0.501)
Constant	52.550*** (4.801)
Firm Fixed Effects	Yes
Year Fixed Effects	Yes
Observations	3,758
Adjusted R-squared	0.728

Robust t-statistics in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Appendix

**Table A1: Variable definitions**

Variable	Definition
<u>ESG</u>	
ESG Controversies Score	The ESG Controversies Score from Refinitiv indicates the percentile rank score of a firm's engagement in ESG controversial activities relative to its industry peers. The higher the score, the fewer ESG controversies the firm engages in
ESG Score	The ESG Score from Refinitiv indicates the percentile rank score of a firm's engagement in ESG activities relative to its industry peers. The higher the score, the more ESG activities the firm engages in
<u>Hostile Takeover Exposure</u>	
Hostile Takeover Index	This index is constructed by Cain, McKeown, and Solomon (2017) based on state legislations, capital liquidity, and firm age
<u>Firm-specific Characteristics</u>	
Firm Size	Total Assets
Leverage	Total Debt/Total Assets
Profitability	EBIT/Total Assets
Capital Investments	Capital Expenditures/Total Assets
Advertising Intensity	Advertising Expense/Total Assets
R&D Intensity	R&D Expense/Total Assets
Dividend Payouts	Dividends/Total Assets
Cash Holdings	Cash Holdings/Total Assets
Discretionary Spending	SG&A Expense/Total Assets
Asset Tangibility	Fixed Assets/Total Assets
<u>Alternative Profitability Measures</u>	
EBITDA Ratio	EBITDA/Total Assets
ROA	Net Income/Total Assets

**Table A2: Instrumental-variable analysis with additional control variables**

The ESG controversies score is provided by Refinitiv. A high value of the score indicates fewer ESG controversies, relative to the industry peers. The hostile takeover index is constructed by Cain, McKeon, and Solomon (2017) primarily based on the staggered adoption of state legislations. A higher value of the takeover index suggests higher takeover vulnerability. The ESG score is also provided by Refinitiv. A higher value indicates more ESG activities.

	(1)	(2)
	Hostile Takeover Index	ESG Controversies Score
<b>Hostile Takeover Index (City-average)</b>	<b>0.456***</b>	
	<b>(3.904)</b>	
<b>Hostile Takeover Index (Instrumented)</b>		<b>53.425**</b>
		<b>(1.969)</b>
Firm Size	-0.002	-2.127*
	(-0.539)	(-1.745)
Leverage	-0.005	2.650
	(-0.654)	(0.658)
Profitability	0.002	23.613***
	(0.354)	(3.273)
Capital Investments	0.002	7.453
	(0.173)	(0.473)
Advertising Intensity	0.053	-45.798
	(1.069)	(-1.244)
R&D Intensity	-0.006	18.406
	(-0.484)	(1.161)
Cash Holdings	-0.008	-0.939
	(-1.160)	(-0.180)
Dividend Payouts	0.066	-12.742
	(1.244)	(-0.467)
Asset Tangibility	-0.004	-3.257
	(-0.412)	(-0.813)
Discretionary Spending	-0.010	-7.067
	(-0.583)	(-0.814)
ESG Score	-0.000	-0.108***
	(-0.207)	(-2.969)
Staggered Boards	0.007**	1.552
	(2.299)	(0.988)
Share Repurchases	0.003	-5.709
	(0.345)	(-0.806)
Constant	0.126***	
	(3.341)	
Firm Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
Observations	6,066	6,066
Adjusted R-squared	0.960	0.343
Cragg-Donald Wald F statistic	1696.05***	

Robust t-statistics in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table A3: Regression analysis with additional control variables**

The ESG controversies score is provided by Refinitiv. A high value of the score indicates fewer ESG controversies, relative to the industry peers. The hostile takeover index is constructed by Cain, McKewon, and Solomon (2017) primarily based on the staggered adoption of state legislations. A higher value of the takeover index suggests higher takeover vulnerability. The ESG score is also provided by Refinitiv. A higher value indicates more ESG activities.

	(1)
	ESG Controversies Score
<b>Hostile Takeover Index</b>	<b>16.174**</b> <b>(2.354)</b>
<u>Firm-specific Characteristics</u>	
Firm Size	-9.613*** (-7.461)
Leverage	8.854 (1.605)
Profitability	18.629* (1.928)
Capital Investments	28.451 (1.649)
Advertising Intensity	-63.617* (-1.980)
R&D Intensity	-2.324 (-0.161)
Cash Holdings	-16.747*** (-3.147)
Dividend Payouts	-21.160 (-0.771)
Asset Tangibility	-5.643** (-2.203)
Discretionary Spending	-7.184 (-1.184)
ESG Score	-0.193** (-2.940)
<u>Board Characteristics</u>	
Ln (Board Size)	7.954* (1.872)
Board Independence (% Independent Directors)	-0.035 (-0.706)
Board Gender Diversity (% Female Directors)	0.059 (0.798)
Board Ethnic Diversity (% Ethnic Minority Directors)	-0.036 (-0.848)
<u>Institutional Ownership</u>	
Institutional Ownership (%)	14.433*** (4.721)
<u>Industry-level Variables</u>	
Herfindahl Index (Market Competition)	-4.918 (-1.398)
Industry Leverage	-9.220 (-1.175)
Industry Profitability	-33.570*

Constant	(-1.811) 153.005*** (12.982)
Year Fixed Effects	Yes
Observations	4,139
Adjusted R-squared	0.237
<hr/>	
Robust t-statistics in parentheses	
*** p<0.01, ** p<0.05, * p<0.1	