

# Executive Bonus Adjustments to Industry Non-Financial Violations

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## Abstract

We investigate whether higher incidences of non-financial corporate violations within an industry affect a firm's decision to include non-financial responsibility vesting metrics - targets aimed at reducing the firm's exposure to industry-wide regulatory scrutiny and reputational risks - into executive annual bonus plans. Using a large sample of corporate violations and executive annual bonus vesting formulas in S&P1500 firms over 2006-2019, we document a significant association between within-industry non-financial violations and the inclusion of non-financial responsibility vesting metrics in executive annual bonus plans. The association is driven by an upward trend in the sensitivity of firm bonus adjustments to within-industry environmental, social, and governance violations, as opposed to other forms of non-financial corporate misconduct. Cross-sectional analyses indicate that bonus adjustments are positively associated with proxies for product market competition as well as industry-specific external governance pressures. Together, our results indicate that higher instances of non-financial violations within an industry prompt firms to incorporate responsibility metrics in their executive annual bonus plans and that these adjustments are contingent on the economic and reputational costs firms may face if they neglect to incentivize executives on these targets.

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*Keywords:* Non-financial Violations; Managerial Incentives; ESG targets.

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## 1. Introduction

The last two decades have witnessed dramatic corporate governance developments, with companies facing increasing pressure from regulators, political bodies, and diverse stakeholders to embrace broader societal interests and pursue welfare objectives beyond shareholder returns (Business Roundtable 2019). In line with these trends, large investor groups are demanding additional disclosures on non-financial corporate performance, environmental, social, and governance (ESG) factors in particular, based on the expectations that ESG-related risks and opportunities can have significant financial implications for their portfolios (e.g., Ernst and Young 2017; Krueger et al. 2020; Azar et al. 2021). Consistent with these views, analytical theories predict that socially responsible activities and effective ESG-risk management can contribute to value maximization (e.g., Friedman and Heinle 2016; Edmans and Kacperczyk 2022). Supporting these predictions, archival studies find a positive association between ESG performance and firm valuation, with a negative ESG reputation being related to a decline in market value (e.g., Servaes and Tamayo 2013; Matsumura et al. 2014; Kölbel et al. 2017; Choi et al. 2020).<sup>1</sup>

Reflecting the significance of non-financial responsibility performance on market value, recent empirical evidence suggests that a growing number of firms have started integrating non-financial corporate responsibility goals in their executive incentive plans (e.g., Eccles et al. 2014; Flammer et al. 2019; Cohen et al. 2023), a trend also confirmed by practitioner executive compensation reports (e.g., Willis Towers Watson 2022; F.W. Cook 2023). For example, F.W. Cook (2023) reports that about 64% of the 250 largest US companies in 2023 disclosed the use of ESG and other non-financial responsibility metrics in their executive incentive plans (up from 56% in 2020), with the majority (about 60%) incorporating these targets in executive annual bonus plans, compared to less than 5% using these metrics in long-term performance equity grants. These

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<sup>1</sup> Firms with high ESG risks seem to face other adverse consequences such as higher cost of capital, reduced access to debt financing, and higher yield spreads (e.g., Chava 2014; Matsumura et al. 2014; Bolton and Kacperczyk 2021; Seltzer et al. 2022; Ginglinger and Moreau 2023).

incentive instruments are generally viewed as a mechanism to align executive priorities to those of investors valuing ESG performance alongside financial outcomes (e.g., Hart and Zingales 2022), as well as a signal of a firm's commitment towards responsible management (e.g., Eccles et al. 2014; Cohen et al. 2023). The alternative, less benign, view is that bonus formulas that include hard to verify non-financial targets allow managers to earn higher than optimal payouts and extract rents from shareholders and other stakeholders (Bebchuk and Tallarita 2022).

Despite their growing popularity, little is still known about the factors affecting firms' decisions to integrate non-financial responsibility metrics into their executive incentive plans. In this study, we address the role of industry-specific risks and investigate whether such incentive contracting choices represent competitive moves in response to increased regulatory scrutiny and reputational concerns within the industry. We measure industry-specific risks as the intensity of within-industry violations of federal and state regulations related to non-financial corporate responsibility issues and investigate whether higher violation frequencies in the industry prompt firms to include non-financial responsibility metrics into their executive bonus plans.<sup>2</sup>

The answer to this question is not obvious. On the one hand, corporate violations may escalate into industry-wide adverse consequences if they signal a general misalignment between industry behaviors and societal expectations (Jonsson et al. 2009; Freiberg et al. 2020). Such dynamics can lead to increased scrutiny and disruptive regulatory interventions, potentially damaging the overall performance of the industry (e.g. Blacconiere and Patten 1994; Barnett and King 2008). In response to such risks, non-violating firms may therefore adopt strategies to mitigate the threat of negative reputational spillovers across the industry and to reduce their own likelihood of similar misconduct and controversies (e.g., McDonnell and King 2013). Extensive

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<sup>2</sup> We focus on the effect of within-industry non-financial violations and exclude financial violations from our analysis since most executive bonus plans (i.e., more than 90%) include earnings and/or other financial targets. The very high frequencies of financial metrics in executive bonus plans reflect a rather limited discretion firms exercise on whether to include financial bonus vesting targets, excluding the possibility of a significant association between financial violations within the industry and the use of financial targets in firm executive bonus plans.

literature in accounting and finance underscores the importance of executive incentives in steering managerial actions toward the achievement of corporate objectives. Most of these studies have focused on the effects of equity grants on executive risk-taking behaviors (e.g., Coles et al. 2006; Hayes et al. 2012; Armstrong et al. 2013). Recent empirical evidence in Guay et al. (2019) and Bloomfield et al. (2021) confirms that bonus plans can also provide significant incentives and be effectively used to communicate actionable priorities to executives. Consistent with these views, the results in Flammer et al. (2019) and Cohen et al. (2023) indicate that the usage of non-financial responsibility incentive metrics, ESG targets in particular, contributes to better corporate ESG outcomes. Such incentive design choices can also be used to bolster the credibility of a firm's existing disclosures and signal to investors and other relevant stakeholders a firm's proactive risk management. This can be particularly relevant for investor groups willing to trade financial returns for improvements in ESG performance (Riedl and Smeets 2017; Hartzmark and Sussman 2019; Krueger et al. 2020; Barber et al. 2021). Together, these arguments suggest that instances of within-industry non-financial violations may prompt firms to adjust their executive bonus plans to avoid the potential economic and reputational costs associated with neglecting these targets.

There are, however, some circumstances under which non-financial violations within an industry might not lead to changes in executive incentive plans. First, a firm's estimated costs of engaging in non-financial misconduct might be lower than the associated benefits currently accruing to its shareholders. This scenario may occur when corporate decision makers, focused on short-term financial performance, fail to internalize the costs associated with negative externalities arising from the firm's business activities. For example, Shleifer and Vishny (1993) and Shleifer (2004) predict that in the short-run, cost-reducing misconduct such as wage and hour violations may strengthen a violating firm's competitive position by reducing its product prices. This may cause a ripple effect where fewer firms in the industry behave responsibly, leading to an increase in the number of violations and a decrease in compliance efforts in the industry. In a similar vein,

Shapira and Zingales (2017) argue that the relatively low detection probabilities and substantial time lags between misconduct detections and penalty payments may translate into environmental violations being ex-ante value-maximizing, even if the costs of avoiding the violations are substantially lower than the penalties paid ex-post. Together, such market dynamics would render changes in executive bonus plans unlikely. Second, it is possible that a firm's misconduct detection risks and reputational damages may not be perceived as affected by the violations perpetrated by other companies, either because the firm is diversified across different sectors or because it occupies a dominant position within the industry and violations by other firms further increase its competitive advantage (Naumovska and Lavie 2021). Finally, we might not observe an association between within-industry misconduct and non-financial responsibility bonus vesting metrics if such short-term incentive instruments are perceived as cheap talk rather than a costly signal of long-term commitments (Eccles et al. 2014; Flammer and Bansal 2017) or as a means to allow executives to earn higher than optimal payouts through easy to manipulate and hard to verify non-financial targets (Ittner et al. 1997; Bebchuk and Tallarita 2022).

We investigate our research question using a large sample of corporate non-financial violations and executive annual bonus plans with available vesting metric details in S&P1500 firms between 2006 and 2019. Corporate violation data are sourced from Violation Tracker, a database that collects judicial information on the criminal and civil cases initiated by U.S. federal and state agencies with regulatory oversight on financial, competition, consumer protection, environmental, employee safety, and other corporate law domains. Since we are interested in the association between within-industry non-financial violations and executive bonus vesting metrics at S&P1500 firms, we exclude violations linked to private firms and public companies outside the index and retain violations involving S&P1500 firms only.<sup>3</sup> We use the misconduct categories in Violation Tracker to classify corporate non-financial violations into ESG and other types of non-

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<sup>3</sup> All our results are robust to constructing our industry violation variables based on the number of violations committed by all public firms with available identifiers (i.e., CIK codes) on Violation Tracker.

financial violations. ESG violations consist of the federal and state cases Violation Tracker classifies as environmental, employee-safety or other employment-related violations, and government-contracting violations. Other types of non-financial violations comprise federal and state cases classified by Violation Tracker as competition or consumer-protection violations. We obtain executive bonus vesting metric details through a scraping procedure of the performance metric text fields on ISS Incentive Lab. We use these fields to extrapolate details on the type of non-financial metrics used in sample bonus formulas and classify them according to the misconduct categories identified by Violation Tracker. We classify as non-financial responsibility metrics those bonus vesting targets that are expected to mitigate a firm's exposure to increased regulatory scrutiny and reputational risks due to incidences of non-financial violations within the industry. ESG metrics include bonus vesting targets linked to environmental, social, and governance goals. Other non-financial metrics include bonus vesting targets tied to product market and customer goals.

We start our analyses with descriptive evidence on the frequencies of within-industry non-financial violations and non-financial vesting metric usage in our sample of S&P1500 firms between 2006 and 2019. Overall, the statistics point to significant common trends. Across all years and industries, approximately 38% of sample firms were involved in non-financial violations, with the average annual frequency increasing from about 36% in 2006 to about 42% in 2019. Most of the violations are ESG-related, with about 34% of the firms having been involved in at least one environmental, social, or governance violation over our sample period. ESG violations exhibit a significant increase over the years, primarily attributed to higher frequencies of social violations. Similarly, across all years and industries, about 21% of sample firms use at least one non-financial vesting metric, with the proportion rising from about 18% in 2006 to about 26% in 2019. While the usage of non-financial metrics has risen across all categories, ESG metrics experience the most substantial increase, mainly due to the inclusion of more social targets over time.

We proceed investigating our question with multivariate models that regress the number of non-financial metrics in sample executive bonus plans on the within-industry frequencies of corporate non-financial violations. As we are interested in contagion effects within the industry, we exclude violating firms from the sample used to estimate the coefficients. All models include firm and year fixed effects. To isolate the effect of within-industry violations, all models also control for incidences of non-financial violations in all other industries. This control alleviates concerns that the observed bonus adjustments are a response to a broad increase in regulatory scrutiny of corporate non-financial practices over time, rather than being specific to a firm's industry. Overall, our results reveal a significant positive association between within-industry non-financial violations and the inclusion of non-financial responsibility metrics in executive bonus plans. The effect is driven by bonus adjustments in response to ESG violations, particularly environmental and social violations, as opposed to other types of non-financial corporate misconduct. These findings are aligned with the prediction that firms may adjust their pay-for-performance policies to incentivize executives on responsibility targets and signal commitment to responsible management. Consistent with the conjecture of the effect being industry-specific, the documented associations are not observed in placebo tests that assign sample firms to randomly generated industry-year groups and when violation frequencies are computed based on size quartiles, rather than industry groups. Our results are further substantiated by cross-sectional analyses testing the incremental effect of product market competition and industry-specific external governance pressures. We find that the documented association between violation frequencies and firm selection of non-financial responsibility metrics is more pronounced for firms facing stronger competition and lower product differentiation. Additionally, industry peer compensation practices, shareholder activism, and media scrutiny all contribute to strengthening the effect of within-industry violations. Taken together, these results suggest that neglecting non-

financial responsibility metrics can translate in higher economic and reputational costs for firms operating in highly competitive industries and subject to strong external governance pressures.

Our study makes the following contributions to the literature. First, we add to the limited but growing literature on the factors affecting the usage of ESG and other non-financial corporate responsibility targets in executive incentive plans (Eccles et al. 2014; Flammer et al. 2019; Cohen et al. 2023; Ikram et al. 2023). These studies document that the likelihood of ESG-based incentives increases with corporate governance quality and active engagement by institutional investors. ESG metrics are also more common in environmentally sensitive industries and among companies demonstrating higher commitment toward sustainability (Eccles et al. 2014; Flammer et al. 2019; Ikram et al. 2023; Cohen et al., 2023). Differently from these studies, we focus on the role of industry-specific risks and investigate whether such choices represent competitive moves in response to increased regulatory scrutiny and reputational concerns within the industry. By doing so, we also contribute to the limited literature on the effects of industry characteristics on executive incentives. Aggarwal and Samwick (1999) predict that in competitive environments a firm's compensation schemes become more sensitive to those of its rivals, via a higher sensitivity of its performance to the rest of the industry.<sup>4</sup> Karuna (2007) finds that managerial incentives are positively related to product substitutability and negatively related to entry costs suggesting that competition increases the use of managerial incentives. Cunat and Guadalupe (2009), using changes in exchange rates and import tariffs associated with increased foreign market penetration, find that higher product market competition leads to greater incentive provision and higher pay-for-performance sensitivity. Other studies have focused on tournament incentives and

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<sup>4</sup> Early theoretical works predict a negative association between product market competition and managerial incentives. These studies suggest that competition can act as an alternative disciplinary mechanism for executives, thus reducing the need for explicit incentives. For example, the models in Hart (1983) and Schmidt (1997) show that competitive environments that increase the probability of a firm's liquidation reduce the need for effective incentive schemes by forcing executives to work harder to avoid liquidation and retain their jobs. In their models, competition acts as a substitutive, rather than a complementary mechanism to incentives. Some recent empirical studies on the effects of foreign market penetration (e.g., Bakke et al., 2022; Lie and Yang, 2023) find support to these predictions.

compensation contagion effects across industry peers as competitive outcomes in the market for managerial talent (e.g., Gabaix and Landier 2008; Bereskin and Cicero 2013; Coles et al. 2018). Our results of more pronounced bonus adjustments for firms in less concentrated industries and with lower product differentiation suggest that firms choose to incentivize executives on non-financial responsibility metrics following competitive dynamics. Moreover, our results on the additional external governance effects from media scrutiny and shareholder activism contribute to the evidence in Kölbel et al. (2017) and Cohen et al. (2023) that firms take strategic actions to contain the value loss associated with negative publicity and shareholder dissent. Finally, our study proposes an alternative channel through which industry peers may impact executive pay. While extensive research examines how industry peers affect the design and structure of executive compensation contracts (Bizjak et al. 2008; Faulkender and Yang 2010, 2013; Gong et al. 2011; Albuquerque et al. 2013; Feichter et al. 2022), our results indicate that increased industry-wide risks can foster executive incentive adjustments beyond compensation benchmarking practices. To the extent that firms choose peers efficiently, compensation benchmarking should facilitate the spread of specific incentive practices throughout the industry. Nonetheless, our results suggest that the propagation of regulatory scrutiny and reputational risks through an industry represents a determinant of a firm's incentive choices that is incremental to what would be observed through an analysis of compensation benchmarking alone. Consequently, our results also add to the limited literature on the effect of industry dynamics on executive incentives (e.g., Milbourn 2003; Kuhnen and Nissen 2012; Donelson et al. 2022).

The remainder of the paper is organized as follows. Section 2 describes our sample of corporate non-financial violations and executive bonus vesting metrics in S&P1500 firms between 2006 and 2019. Section 3 investigates the association between within-industry violations and a firm's selection of non-financial responsibility metrics in sample executive bonus plans. Section 4 describes the results from cross-sectional tests on the effect of product market characteristics and

external governance pressures on the documented association between within-industry violation frequencies and executive bonus vesting metrics. Section 5 concludes.

## **2. Sample and Variables**

### **2.1. Corporate non-financial violations**

We obtain corporate violations data from Violation Tracker, a database produced and regularly updated by the Corporate Research Project division of the nonprofit organization Good Jobs First, a national policy resource center promoting corporate and government accountability. The database tracks the criminal and civil violations initiated by more than 400 U.S. federal and state agencies with regulatory duties on financial, consumer protection, environmental, health and safety, wage and hour, and other corporate matters since 2000. Original sources used to build the database include agency websites, enforcement press releases, verdict reports, direct correspondences with relevant agencies, and Freedom of Information Act requests.<sup>5</sup> For each corporate violation, the dataset reports the federal or state agency initiating the investigation, name and identifier of the targeted entity, type of misconduct, penalty date and amount, and settlement amount, if applicable.<sup>6</sup> For cases involving entities that are units, subsidiaries or divisions of larger companies, the dataset matches the violating entity to the relevant parent ultimately responsible for the misconduct.<sup>7</sup> To facilitate user searches, the database organizes corporate violations in nine misconduct categories, based on the regulatory responsibility of the agency that brought the action. These categories include financial violations, competition and consumer-protection violations,

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<sup>5</sup> The full list of sources used by the Good Jobs First's Corporate Research Project to regularly update the database is available at <https://violationtracker.goodjobsfirst.org/pages/violation-tracker-data-sources>.

<sup>6</sup> A minimum penalty amount of \$ 5,000 is required for a case to be included in the dataset. Cases with lower or no monetary penalties that do not result in financial settlements with the U.S. Department of Justice are also excluded.

<sup>7</sup> Violation Tracker currently comprises data for over 3,000 parent companies. Most of these companies are firms included in the Fortune 1000, Fortune Global 500, S&P1500, Russell 3000, the Forbes list of the largest U.S. private companies, the Uniworld list of the 1,000 largest foreign firms operating in the United States, or the Private Equity International list of the 100 largest private equity firms. Cases linked to a parent company account for more than 90 percent of the total value of monetary penalties reported in the dataset.

environmental violations, employee-safety and other employment violations, government-contracting violations, healthcare, and other unclassified violations.<sup>8</sup>

We perform several steps to obtain our sample of non-financial corporate violations. Since we are interested in the association between industry violations and the use of non-financial vesting metrics in executive annual bonus plans at S&P1500 firms, we exclude violations linked to privately-held parents and other publicly-traded companies not in the index and retain violations involving S&P1500 firms only. We then use the misconduct categories in Violation Tracker to identify corporate non-financial violations and classify them into ESG and other non-financial responsibility violations. Non-financial violations include all the federal and state cases (excluding the healthcare and unclassified categories) Violation Tracker does not classify as financial violations.<sup>9</sup> ESG violations are the federal and state cases Violation Tracker categorizes as environmental violations, employee-safety or other employment violations, and government-contracting violations. Specifically, we classify a violation as “E” if Violation Tracker categorizes the offense as environmental. Examples of environmental violations include energy conservation violations, hazardous waste disposals, soil contaminations, air and water pollution violations, fuel economy violations, and offshore drilling violations. We classify a violation as “S” if Violation Tracker categorizes the offense as employee-safety or other employment related. Examples of employee-safety violations include personal protective equipment violations, inadequate safety protocols, first aid violations, employee food and utility safety violations. Other employment violations include WARN Act violations, employment discrimination, benefit plan administration violations, wage and hour violations, workplace whistleblower retaliations, and other labor

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<sup>8</sup> U.S. regulatory agencies generally do not have international authority but can, under certain circumstances, penalize domestic companies for overseas violations under U.S. laws and international treaties. Agencies like the Department of Labor, the Department of Justice, the Securities and Exchange Commission (SEC), the Bureau of Industry and Security, and the U.S. Customs and Border Protection can issue sanctions for various infractions committed overseas, including those related to forced labor and corruption. Consequently, our violation sample includes both violations committed in the U.S. and those committed abroad by foreign units of U.S. companies sanctioned by U.S. agencies.

<sup>9</sup> We exclude healthcare violations since they represent less than 0.5% of the sample and mostly refer to actions against pharmaceutical firms that fail to comply with price discount rules on prescription drugs for Medicare beneficiaries. Our results remain unaltered if we add these cases to the “Other non-financial” violation category.

relations violations. We classify a violation as “G” if Violation Tracker categorizes the offense as government-contracting related. Government-contracting violations typically include breaches of The False Claim Act, the law that addresses instances of intentional false claims made by companies to secure government funded contracts and programs, including but not limited to cases of bidding manipulation.<sup>10</sup> Finally, we classify a violation as “other non-financial” if Violation Tracker categorizes the offense as competition or consumer-protection related. Examples of competition violations include price-fixing and other anti-competitive practices, theft of trade secrets, tying arrangements, trade and export violations, collusive tendering, and intellectual property violations. Consumer-protection violations include deceptive advertising, unfair billing practices, privacy breaches, warranty terms, hidden or unfair terms and conditions, mortgage frauds, and telemarketing violations.<sup>11</sup>

Table 1 reports the number and proportions of corporate non-financial violations committed by S&P1500 firms over 2000-2019, detailed by type. The table also presents the number of unique firms involved in the violations along with the proportion of cases under federal jurisdiction and the average monetary penalty amounts (in millions).<sup>12</sup> ESG (other non-financial) violations represent about 90% (10%) of all non-financial violations. The most common ESG violations pertain to employee safety practices (about 60% of the sample), with the majority being cases initiated by federal agencies such as the Occupational Safety & Health Administration (OSHA) and the Federal Railroad Administration. Other types of employment misconduct are significantly less frequent (about 8% of the sample), mostly represented by enforcement actions

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<sup>10</sup> We categorize government-contracting as governance violations as such cases of corporate misconduct are likely to emerge in settings with weak corporate governance systems.

<sup>11</sup> Recent studies (e.g., Kölbel et al. 2017; Li and Wu 2020; Asante-Appiah and Lambert 2023) have utilized RepRisk data to measure corporate ESG reputational risk. The database computes a company’s reputational risk based on the severity of the media coverage related to ESG corporate incidents. We construct our industry violation variables using Violation Tracker instead of RepRisk data for two main reasons. First, Violation Tracker’s coverage is considerably wider than that of RepRisk, since it provides a complete representation of all violation cases initiated by U.S. regulatory agencies and is not limited to cases that generated media coverage. Second, while RepRisk often categorizes corporate incidents into more than one ESG category (e.g., environmental and social), the misconduct categorization used in Violation Tracker allows us to map violation types against specific bonus vesting metrics.

<sup>12</sup> All our results are robust to limiting sample violations to those initiated by federal agencies only.

initiated by the National Labor Relations Board (NLRB) and Wage & Hour Division (WHD). Environmental violations are the second most common type of non-financial violations, making up about 20% of the sample, with about a quarter of the cases initiated by the federal Environmental Protection Agency (EPA), and the rest by state departments and commissions with environmental oversight responsibilities. On the other hand, government-contracting offences, while resulting in the highest penalties among ESG violations, are very uncommon, representing slightly more than 1% of all non-financial violations involving S&P1500 firms over our sample period. Finally, the category of other non-financial violations predominantly includes consumer-protection cases, which constitute about 8% of the sample, and result in significantly higher average monetary penalties compared to ESG violations.

## **2.2 Executive non-financial bonus vesting metrics**

We obtain our sample of executive annual cash bonuses from the Institutional Shareholder Services (ISS) Incentive Lab's 2006-2019 tapes. We start our data collection from 2006, the year in which the SEC considerably expanded and standardized the DEF 14A disclosure requirements for the incentive grants made to firm named executives. The dataset compiles detailed information on the vesting metrics, vesting schedules, and payment instruments of the annual cash and equity grants made to the top-paid executives at the 750 largest US firms by market capitalization.

We apply several filters to obtain our sample of executive annual bonus grants. First, we require all grants on ISS Incentive Lab to have non-missing information on granting date, grant duration, expected payout, and payment instrument. Second, we retain all grants that are paid out in cash and have a one-year vesting horizon. Finally, to be able to control for executive employment and compensation characteristics in our models, we retain those grants for which we could obtain additional information on executive annual cash, equity, and total compensation, as well as corporate titles and tenure at the firm from ExecuComp.<sup>13</sup> Our sample of executive annual

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<sup>13</sup> We match Incentive Lab's to ExecuComp's named executives based on executive last, first, and middle names.

cash bonuses consists of 51,636 grants made to 12,957 unique executives in 1,246 unique S&P1500 firms operating in 61 distinct two-digit SIC codes with bonus vesting details and executive data on ExecuComp between 2006 and 2019.

ISS Incentive Lab reports three text fields with various levels of specificity about the performance metrics used to condition executive incentive payouts. The “MetricType” field generically categorizes a metric as “Accounting”, “Market”, and “Non-Financial”. The “Metric” field reports the specific metrics used in the vesting formula (e.g., EPS, Stock Returns, Employee Safety). The “MetricOther” field provides further details on the reported metrics. Since we are interested in testing the association between within-industry non-financial violations and a firm’s selection of non-financial responsibility vesting metrics, we use the “Metric” and “MetricOther” text fields to extrapolate detailed information on the type of non-financial metrics used in the bonus formulas and categorize them based on the types of non-financial misconduct identified by Violation Tracker. Since most executive bonus plans do not explicitly incentivize compliance with corporate laws and regulations, we classify as ‘responsibility’ metrics those bonus vesting goals that are expected to reduce the risk of certain types of corporate misconduct and regulatory scrutiny. To this purpose, we employ a text scraping procedure and classify sample bonus vesting metrics into ESG and other non-financial responsibility metrics. ESG metrics include vesting targets that are linked to environmental, social, and governance goals. Environmental metrics include generic emission and waste reduction, energy savings, and environmental compliance targets. Social metrics include OSHA or other regulatory employee safety and health targets, employee training and retention programs, workforce diversity, and other generic social and ethics targets. Governance metrics include regulatory compliance and other diligence targets, internal controls, and investor relations targets. Other non-financial responsibility metrics include vesting targets linked to product market and customer goals. Examples of product market metrics include product quality, product mix, and pricing targets. Examples of customer metrics include customer

satisfaction, customer service and management, and other customer life-cycle goals, such as customer acquisition and retention targets.<sup>14</sup> Table 2 describes the number and proportions of non-financial vesting metrics in sample executive bonus plans. The sample for this table comprises 16,819 extrapolated non-financial metrics in 14,371 executive annual bonus plans in 2,252 firm-year observations (about 21.5% of our original firm-year sample) pertaining to 566 distinct S&P1500 firms between 2006 and 2019. The majority of the metrics (about 40%) relate to social targets, followed by customer (about 23%) and product market (about 20%) goals. The least common types of metrics are environmental (about 10%) and governance (about 8%) targets.

Table 3 presents the proportions of sample executive bonus plans that use the categorized non-financial metrics in the vesting formulas. Since executive bonus plans may include more than one ESG and other non-financial metric, the categories displayed in the table are not mutually exclusive. Panel A reports the frequencies by year. Across all years and industries, about 21% of the S&P1500 firms in our sample use at least one of the categorized non-financial vesting metrics, with the proportion of firms increasing from about 18% in 2006 to about 26% in 2019. The usage of non-financial metrics has increased across all categories, with ESG metrics experiencing the largest increase (i.e., from 12% of sample firms in 2006 to about 19% in 2019), mainly due to increasing frequencies of social targets in the bonus formulas. These statistics are consistent with the results in Cohen et al. (2023) of a 16% usage of ESG metrics in their executive bonus sample at U.S. public companies and an overall increase in the usage of ESG metrics, social targets in particular, in their international sample of executive bonus plans between 2011 and 2020. Panel B reports the frequencies by industry group. The industries with the highest usage of non-financial responsibility metrics are mining (58%), oil and gas (55%), utilities (42%), and construction (40%), with most non-financial metrics for these industries being ESG goals, social metrics in

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<sup>14</sup> Conceptually, the metrics classified as other non-financial are also broadly linked to sustainability issues, as recognized by the SASB Conceptual Framework (Sustainability Accounting Standards Board, 2017). We categorize them separately to align our classification with prior literature on ESG metric usage (e.g., Cohen et al., 2023).

particular.<sup>15</sup> Environmental metrics are also frequent in the mining, oil and gas and utilities sectors, industries with higher environmental footprint and regulatory scrutiny. In contrast, governance metrics are relatively uncommon across all industry groups.

### **2.3 Trends in industry non-financial violations and bonus vesting metrics**

In this section, we provide preliminary evidence on a positive association between within-industry non-financial violations and a firm's selection of non-financial vesting metrics in executive annual bonus plans. We start our analyses with statistics on the frequencies of within-industry non-financial violations in our sample of 1,246 distinct S&P1500 firms with executive bonus vesting details between 2006 and 2019. The sample to compute within-industry violations includes 28,943 non-financial violations involving 835 unique S&P1500 firms between 2006 and 2019. Overall, the statistics suggest significant common trends between within-industry non-financial corporate violations and non-financial vesting metric usage.

Table 4 - Panel A presents average frequencies by year. The average annual frequencies are computed as the ratio of the number of distinct S&P1500 firms involved in non-financial violations in the year over the total number of S&P1500 firms in the same two-digit SIC code, averaged across all two-digit SIC codes on S&P1500.<sup>16</sup> Across all years and industries, about 38% of S&P1500 firms commit at least one corporate non-financial violation, with the average annual frequency increasing from about 36% in 2006 to about 42% in 2019. Most of the violations are ESG-related, with about 34% of sample S&P1500 firms involved in at least one environmental, social and governance violation, compared to 7% committing competition or consumer-protection

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<sup>15</sup> These statistics are consistent with the results in Cohen et al. (2023) that ESG-based bonuses are more common in industries with a higher environmental footprint and in countries with heavier ESG regulations and in Ikram et al. (2023) who document higher frequencies of CSR-based incentives in their subsample of S&P500 companies operating in the mining, oil and gas, and utilities sectors. They also find that most executive incentive plans in these industries are tied to milestones related to safety, health, and environment.

<sup>16</sup> We compute the annual frequencies of corporate violations based on the penalty dates, since they are reported by all federal and state agencies and are available for all types of violations in our sample. The drawback of using penalty dates is the possibility that the misconduct may have been detected earlier than the year in which it is penalized. The use of cumulative frequencies from the first year of available data on Violation Tracker until the prior year relative to bonus grants in our multivariate analyses mitigates this concern.

violations. The average annual frequency of ESG violations has increased from about 33% in 2006 to about 38% in 2019. This trend is driven by a sharp increase in the frequency of social violations over sample years, from 24% in 2006 to 34% in 2019, compared to relatively stable frequencies of environmental and governance violations. Table 4 - Panel B reports the frequencies by industry group. The industries with the highest incidences of non-financial violations are mining (78%), construction (63%), utilities (60%), retail trade (54%), and oil and gas (53%), with about 95% of the violation cases for these industries pertaining to ESG practices, especially social misconduct. Environmental violations are also frequent in the mining, oil and gas, utilities, and construction sectors. In contrast, governance violations are relatively uncommon across all industry groups.

To further test for the existence of common trends between within-industry non-financial violations and bonus vesting metrics, Figure 1 plots the average yearly coefficients from firm fixed-effect logit models estimating the likelihood of having non-financial responsibility metrics in executive annual bonus plans as a function of prior year within-industry frequencies of non-financial violations. Prior year frequencies are computed as the ratio of the number of violating S&P1500 firms in the year over the total number of S&P1500 firms in the same two-digit SIC code for that year. To test for contagion effects within the industry, we exclude violating firms from the sample used to estimate the coefficients. The sample for the figure includes 30,022 annual bonus plans pertaining to 9,668 executives in 1,081 non-violating S&P1500 firms between 2006 and 2019. The figure plots three sets of coefficients from three separate models, estimating: a) the likelihood of having non-financial responsibility metrics in a plan as a function of prior year non-financial violations; b) the likelihood of having ESG metrics as a function of prior year ESG violations; and c) the likelihood of having other non-financial responsibility metrics as a function of prior year other non-financial violations. Consistent with our expectations, we observe a positive association between within-industry corporate non-financial violations and a firm's likelihood of introducing non-financial responsibility metrics in executive annual bonus plans, with the size of

the coefficients significantly increasing over our sample period. Disaggregating the non-financial metrics into the ESG and other non-financial categories, we find that the positive and significant association is explained by an upward trend in the sensitivity of vesting metric adjustments to ESG violations, as opposed to other forms of non-financial corporate misconduct.

### 3. Effect of industry non-financial violations on bonus vesting metrics

#### 3.1 Research design

To examine the effect of industry non-financial violations on a firm's selection of non-financial responsibility bonus vesting metrics, we estimate the following model:

$$\ln(\text{NonFin Metrics} + 1)_{ijt} = \alpha + \beta_1 \sum(\text{NonFin Violations})_{kt-1} + \gamma' \mathbf{X}_{it} + \varphi' \mathbf{Y}_{jt-1} + \delta' \mathbf{Z}_{jt-1} + \text{Fixed effects} + \varepsilon_t \quad (1)$$

where  $\ln(\text{NonFin Metrics} + 1)_{ijt}$  measures the natural logarithm of the number of non-financial responsibility metrics included in executive  $i$ 's annual bonus plan at firm  $j$  in year  $t$ . Our variable of interest,  $\sum(\text{NonFin Violations})_{kt-1}$ , is the cumulative frequency of non-financial violations in firm  $i$ 's industry  $k$  from the first year of violation data on Violation Tracker until year  $t-1$ .<sup>17</sup> We expect  $\beta_1$  to be positive and significant if higher violation frequencies within the industry result in bonus formula adjustments for the inclusion of non-financial responsibility metrics.

Our main model includes controls for a set of executive, firm, and governance characteristics shown by prior studies to be associated with firm pay-for-performance policies. Table 5 reports summary statistics for our final sample of 13,085 executive annual bonus plans at 589 distinct non-violating S&P1500 firms with available bonus vesting details, executive, firm, and industry characteristics. Executive characteristics ( $\mathbf{X}_{it}$ ) include job title and tenure at the firm. We identify sample executives' job titles using the "Titleann" (i.e., annual title) text field in

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<sup>17</sup> We use cumulative violation frequencies in our models since we expect firms to adjust their executive bonus plans after having observed a critical mass of violators being reached within the industry. Our main results remain unaltered if we use alternative lagged measures of violation frequencies (i.e., one-year up to three-year lagged frequencies).

ExecuComp. Since executives often hold more than one job title during the year, we use the entire text field to extrapolate all the distinct titles held by the executive in the year (i.e., CEO, CFO, COO or other chief, president, vice-president, chairman, divisional president or chair, divisional chief, and any other title). We follow an approach similar to Aggarwal and Samwick (2003) and categorize sample executives into three mutually exclusive job categories: *CEO* (if the executive is a CEO at the firm); *NonCEO Corp* (if the executive holds other corporate positions such as CFO, COO or other chief, president, vice-president, and chairman at the firm); *NonCEO Other* (if the executive holds divisional or other titles such as divisional president and/or divisional chief with no other corporate position at the firm). *Tenure* is the number of years the executive has been working at the firm. To control for bonus incentive intensity, we also include a variable (*%ExpPayout*) measuring the dollar value of bonus expected payouts as a proportion of the executive's total annual pay (i.e., sum of salary, annual bonus, long-term incentive cash payouts, stock and option grants). Table 5 – Panel A reports summary statistics on our vector of executive characteristics. About 20% of the sample are annual bonus plans for corporate CEOs. Another 50% are bonus plans for executives holding other (non-CEO) corporate titles. The remaining 30% are bonus plans for executives holding divisional or other titles. Across sample executives, the average (median) tenure at the firm is about seven (five) years. Finally, the average (median) bonus expected payout is about 20% (18%) of the executive's total annual pay.<sup>18</sup> Table 6 – Panel A reports mean comparison tests for differences in executive characteristics between the subsamples of executive bonus plans with and without non-financial (ESG and/or other) responsibility vesting metrics (1,978 and 11,107 bonus plans, respectively). Plans that include non-financial targets are more (less) common among non-CEO executives covering divisional (corporate) titles at the firm and executives with shorter tenures. Moreover, bonus plans that include non-financial vesting targets have significantly lower expected payouts compared to plans excluding such targets.

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<sup>18</sup> Our bonus expected payout values are comparable to the 22.3% average expected payout (also measured as a proportion of executive total annual compensation) for the cash and equity performance grants in Li and Wang (2016).

The set of firm characteristics ( $\mathbf{Y}_{jt-1}$ ) includes proxies for firm size, growth, leverage, and profitability, all measured at the end of year  $t-1$  relative to granting dates.  $Size_{t-1}$  is the natural logarithm of the firm's market value (in millions) at the end of year  $t-1$ .  $BM_{t-1}$  is the ratio of firm book value of equity to market value of equity at the end of year  $t-1$ .  $R&D_{t-1}$  is firm research and development and advertising expenses scaled by firm sales at the end of year  $t-1$ .  $Capital_{t-1}$  is firm net plant, property, and equipment scaled by firm total assets at the end of year  $t-1$ .  $Leverage_{t-1}$  is firm total liabilities divided by firm total assets at the end of year  $t-1$ .  $ROA_{t-1}$  is firm net income scaled by firm total assets at the end of year  $t-1$ .  $Ret_{t-1}$  is firm buy-and-hold raw stock returns over year  $t-1$ .  $SD(StockReturns)_{t-1}$  is the standard deviation of firm daily stock returns over year  $t-1$ . Finally, we add a control for whether the firm is diversified in more than one two-digit SIC segments ( $Diversified_{t-1}$ ). Governance characteristics ( $\mathbf{Z}_{jt-1}$ ) include proxies for board independence and monitoring abilities, all measured at the end of year  $t-1$ .  $BoardSize_{t-1}$  measures the number of executive and outside directors serving on the board.  $\%OutDirs_{t-1}$  measures the proportion of board members who are independent outside directors.  $\%InstOwn_{t-1}$  measures the proportion of firm outstanding shares owned by institutions owning at least 5% of the firm's common stock. Finally, to capture cross-board governance and contracting practices, we also include a variable measuring the proportion of board members sitting on other boards ( $\%OtherBoards_{t-1}$ ). Board and ownership data are from the ISS Directors and Governance tapes, respectively. Table 5 – Panel B reports summary statistics on our sets of firm and governance characteristics. The average firm in our sample reports a book-to-market ratio of 39%, R&D and advertising expenses of about 7% of firm sales, capital expenses of about 19% of firm assets, a leverage ratio of 54%, and prior year ROA and stock returns of 7% and 13%, respectively. The majority of sample firms (about 64%) are companies operating in multiple two-digit SIC segments. The average proportion of board members who are independent directors is 80% and the average aggregate institutional ownership is about 24% of firm outstanding shares. Finally, the average

proportion of directors sitting on other boards is 25%. Univariate comparisons in Table 6 – Panel B indicate that executive bonus plans with non-financial vesting targets are more common at larger, less profitable, and less diversified firms. These firms also tend to have lower growth opportunities and lower (higher) intangible (tangible) expenses. In terms of governance characteristics, firms with non-financial executive bonus targets have larger and more independent boards, higher institutional ownership, and higher proportions of directors sitting on other boards.

All models include firm and year fixed effects and report t-statistics in parentheses based on standard errors clustered at the executive level. We include firm fixed effects to capture unobservable time-invariant firm characteristics that may be associated with both a firm's pay-for-performance policies and industry-specific risks.<sup>19</sup> To isolate the effect of within-industry violations, all models also control for the incidences of non-financial violations committed by firms in all other industries (i.e., all other two-digit SIC codes in S&P1500). This control mitigates the concern that the documented bonus adjustments are in response to a generic, not industry-specific, increase in the number of investigations and detected non-financial violations over time.

### 3.2 Main results

We report the results from estimating equation (1) in Table 7. The table presents the estimates from OLS models that regress the natural log of the number of non-financial responsibility metrics in executive annual bonus formulas on the within-industry cumulative frequencies of non-financial violations, executive characteristics, and firm-level controls. The sample for this table includes 13,085 annual bonus plans pertaining to 4,886 unique executives in 589 distinct non-violating S&P1500 firms with available executive bonus vesting formulas, firm, and industry characteristics between 2006 and 2019. Panel A – Column I presents the results from estimating the number of non-financial metrics as a function of all non-financial violations. The

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<sup>19</sup> Our results of significant coefficients on our cumulative within-industry non-financial violations' variables are robust to alternative model specifications with year and industry fixed-effects, instead of firm fixed-effects, as well as to recomputing the within-industry violations frequencies at the Fama and French (1997), instead of two-digit SIC, industry level and to clustering the standard errors at the firm level.

results indicate a positive and significant association between the within-industry cumulative frequencies of non-financial violations and the number of non-financial responsibility metrics in the executive bonus plans in our sample.<sup>20</sup> To understand whether the observed effect is driven by ESG or other types of non-financial violations, Panel A - Columns II and III estimate the number of ESG and other non-financial responsibility metrics as a function of the within-industry frequencies of ESG and other violations, respectively. The results reported in Column II reveal a positive and significant association between within-industry ESG violations and the number of ESG metrics. In contrast, in Column III, we do not find evidence of a significant association between other violations and the inclusion of other non-financial responsibility metrics in the vesting formulas. Among executive characteristics, title and tenure at the firm are not significant predictors in most models. The result of homogeneous vesting formulas across firm top executives is in line with the evidence in Guay et al. (2019) of a significant proportion of executive bonus plans with partial or perfect overlapping in the number and type of vesting metrics between the firm's CEO and the lowest paid named executive at the firm. On the other hand, non-financial vesting metrics are more likely to be included in bonus plans with lower expected payouts measured as a proportion of the executive's total annual pay. Among firm characteristics, ESG bonus adjustments are more common among smaller firms, firms with less (more) intangible (tangible) expenses, less leveraged and undiversified firms. ESG bonus adjustments are also more common among firms with higher proportions of independent outside directors and institutional ownership. These results are in line with the evidence in Cohen et al. (2023) that ESG-based pay adopters exhibit a higher percentage of institutional ownership and a positive association with engagement, voting, and trading activities by institutional investors. Panel B - Columns I-III

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<sup>20</sup> We observe that the coefficient of the variable measuring the frequency of violations committed by firms in other industries ( $\Sigma(\text{Outside-Ind Violations})_{t-1}$ ) is not significant in all models. However, when replicating the models on the subsample of diversified firms only, the coefficients of both outside and within-industry violation frequencies become significant. This result suggests that, while for undiversified firms violations outside the focal industry may not influence incentive contracting practices, for diversified firms – those operating in more than one two-digit SIC code – violations both within and outside a single segment become relevant.

replicate the models for the number of environmental, social, and governance vesting metrics as a function of the within-industry cumulative frequencies of environmental, social, and governance violations, separately. The results indicate that the positive association between within-industry ESG violations and ESG metric usage is significant for environmental and social metrics, but not for governance metrics.

Collectively, the results presented in Table 7 indicate that once a critical mass of violators within a specific industry is achieved, the likelihood of adopting non-financial responsibility bonus vesting metrics by non-violating industry members is significantly higher. The association between non-financial industry violations and vesting metric selection is driven by bonus adjustments in response to ESG violations, environmental and social violations in particular, as opposed to other types of non-financial corporate misconduct. These results are consistent with the notion that firms may modify their pay-for-performance policies to incentivize executives on ESG targets and signal commitment to responsible management.

### **3.3 Robustness tests**

The underlying assumption in our tests is that higher incidences of non-financial violations within an industry, by increasing the perceived regulatory scrutiny and reputational risks associated with corporate misconduct by industry members, prompt firms to include non-financial responsibility metrics in their executive bonus plans. An alternative explanation for our results is that firms adjust their bonus plans in response to broader public attention and regulatory action towards corporate non-financial practices, which could impact both the incidence of enforcement cases within the industry and a firm's choice to include non-financial metrics in executive bonus plans. Although we control for incidences of non-financial violations outside a firm's industry in all our models, we run two additional tests to further mitigate this concern. First, we run a placebo test that randomly assigns sample firms to industry-year groups and re-estimate the model in Table 7 – Column II (Panel A) by replacing the actual ESG violation frequencies with randomized

frequencies. We repeat this exercise 1,000 times. Figure 2 – Panel A (Panel B) plots the discrete probability density of the estimated coefficients (t-statistics) of the 1,000 randomized industry-year assignments. The figure shows that the coefficients largely follow a normal distribution centered at zero (mean = 0.0000224; standard deviation = 0.000464). Most importantly, when we compare the randomized coefficients with the actual estimate, in untabulated tests we find that the average placebo coefficient is significantly smaller (at the 1% level) than the coefficient based on the actual within-industry ESG violation frequencies. We obtain similar results when we run an alternative test based on size quartiles and regress the number of ESG vesting metrics on the ESG violation frequencies within the same size quartile as the sample firm.

Moreover, to test whether our findings are affected by differences in enforcement levels across U.S. states, we rerun our models after including state-year fixed effects. Our results remain robust to this alternative model specification. Our findings are also robust to limiting our sample to bonus plans for CEOs and other corporate executives, thereby excluding executives with divisional or other non-corporate responsibilities. Finally, since the distribution of the number of non-financial bonus vesting metrics is highly skewed and with high frequencies of zeros (i.e., almost 80% of sample bonus plans do not include non-financial responsibility metrics), we test the sensitivity of our results to employing a zero-inflated Poisson model and find consistent results.

## 4. Cross-sectional analyses

### 4.1. The role of product market characteristics

In this section, we test the effect of market competition on the documented association between within-industry violation frequencies and firm selection of non-financial responsibility executive bonus vesting metrics. High product substitutability leads to greater product market competition (Shaked and Sutton 1982; Raith 2003). Raith (2003) predicts that higher competition due to greater product substitutability can affect managerial incentives in different ways. When the firm-level demand functions are highly elastic to prices, a firm will pursue aggressive cost-

cutting and pricing strategies to attract more business from its competitors. However, when too many firms in the industry charge lower prices, a firm's market share will shrink, diminishing the marginal benefit of further cost reductions. Moreover, when a firm's products lack differentiation from those of rival companies, corporate reputation and customer loyalty can become crucial revenue drivers. Consequently, firms facing intense competition due to low product differentiation might be more vulnerable to reputational risks and the adverse effects of negative publicity.

We examine the effects of a firm's product market characteristics in Tables 8 and 9 by augmenting equation (1) with the inclusion of the main and interaction effects from three variables aimed at capturing industry competition and product substitutability. *HHIndex* is the Herfindahl-Hirschman industry concentration ratio computed at the two-digit SIC industry classification level. Higher values of *HHIndex* indicate lower industry competition (i.e., lower dispersion of industry sales across firms).<sup>21</sup> *Fluidity* and *Similarity* are the local market fluidity and total market similarity measures developed by Hoberg and Phillips (2010; 2016) and Hoberg et al. (2014). *Fluidity* measures changes in a firm's product space due to changes in product offerings made by rivals. Since this measure is based on changes in other firms' product descriptions, the measure can be considered exogenous to the actions taken by firms (Hoberg et al., 2014). Greater fluidity in a firm's products therefore captures higher competitive threats. *Similarity* measures the sum of the pairwise product similarities between the focal firm and rivals. Greater similarity indicates more overlap in product offering, thus higher competition (Hoberg and Phillips, 2010; 2016). The summary statistics presented in Table 5 – Panel C show that the sample mean values of *HHIndex*, *Fluidity*, and *Similarity* are 0.058, 6.105, and 4.770, respectively. Univariate comparisons in Table 6 – Panel C indicate that firms with executive bonus plans vesting on ESG and other non-financial targets tend to operate in more competitive industries and with lower product differentiation.

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<sup>21</sup> One limitation of the Herfindahl-Hirschman industry concentration ratio is that it puts a heavier weight on large firms. To address this limitation, we follow prior literature and use a square-root transformation of the HHI to capture competition intensity. This alternative measure of competition intensity yields similar results.

Overall, we expect the effect of within-industry violation frequencies on bonus vesting metric adjustments to be stronger for firms operating in such settings.

Table 8 reports the results of these analyses. Consistent with our expectations, both the main effect of industry concentration and the interaction term between within-industry violation frequencies and industry concentration exhibit negative and significant coefficients. These results suggest that, while industry competition increases the ex-ante likelihood of ESG metric usage, it strengthens the sensitivity of executive bonus adjustments to the incidences of violations within an industry. Moreover, the coefficients on the interaction terms with the two proxies for product substitutability are positive and significant. These results confirm the conjecture that firms with lower product differentiation might be more sensitive to the reputational risks linked to neglecting ESG targets in their plans. Table 9 replicates the models for the usage of environmental, social, and governance metrics, separately. The results for the different metrics are generally consistent with the ones in Table 8, but significant for environmental and social metrics only. Taken together, our results of more pronounced bonus adjustments for firms in less concentrated industries and with lower product differentiation suggest that firms choose to incentivize executives on non-financial responsibility metrics following competitive dynamics.

#### **4.2. The role of industry governance pressures**

In this section, we examine the effect of external governance pressures on the association between within-industry violation frequencies and executive bonus vesting metrics. To this end, we expand equation (1) to include main and interaction effects of three different proxies for external governance pressures potentially exercised on the firm. *ESGPeers* measures the proportion of the firm's industry peers (at the two-digit SIC level) that use ESG metrics in their executive annual bonus plans.<sup>22</sup> We include this variable based on earlier work showing substantial peer effects in corporate social responsibility (Cao et al. 2019; Cohen et al. 2023). *ESGProposals*

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<sup>22</sup> We find similar results when we recompute this variable as the proportion of the firm's disclosed compensation peers, rather than overall industry peers, that use ESG metrics in their executive annual bonus plans.

is an indicator variable equal to one if at least one firm in the same industry received an ESG-related shareholder proposal during the year. We include this variable based on the evidence in Chen et al. (2020) that shareholders' proposals represent an important mechanism through which institutional investors influence portfolio firms' corporate responsibility policies. Our measure is based on the notion that shareholders concerned about heightened industry-wide ESG risk will voice their concerns by making proposals aimed at improving a firm's ESG standing, particularly if private discussions with top management fail (e.g., McCahery et al. 2016). Data on shareholder proposals are from the ISS's Voting Analytics tape. Finally, *ESGMedia* captures the media attention towards ESG violations within the industry. We construct this variable by first counting the mentions of each firm's violation events in all major U.S. newspapers and business press on Factiva. To avoid coverage unrelated to firm violations, we require a concurrent reference to both the violating firm's and prosecuting agency's name in the full text search of all articles included in these sources. We then aggregate the media counts for each industry and year in our sample and compute the proportion of violating firms within the industry that are covered by the press. Table 5 – Panel D reports descriptive statistics on our proxies for external governance pressure. Approximately 11% of sample firms' industry peers use ESG metrics in their executive annual bonus plans. The most common metrics used by industry peers are social metrics, followed by governance and environmental metrics. ESG-related proposals are very common, with most sample firms (about 94%) witnessing at least one proposal in their industries. Most proposals are governance related, followed by social and environmental proposals. Finally, the sample mean (median) value of *ESGMedia* is 0.300 (0.273), suggesting that about one-third of the ESG violations within the industry get covered by the press. Univariate comparisons in Table 6 – Panel D indicate that firms with executive bonus plans vesting on ESG and other non-financial responsibility targets tend to operate in industries facing significantly higher external governance pressures compared to firms that do not incorporate non-financial metrics. Specifically, firms that

include at least one non-financial responsibility metric are concentrated in industries with more ESG-based compensation, industries with more intense ESG-related shareholder activism, and industries in which ESG violations receive greater scrutiny by the media.

Table 10 reports the results from estimating the models. Across all specifications, the main effects of our proxies for external governance pressures are positive and significant. Moreover, and consistent with our expectations, the interaction terms between within-industry violation frequencies and the three external governance proxies are also positive and significant. These results suggest that peer compensation practices, shareholder activism, and media scrutiny all contribute to increasing the perceived economic and reputational costs linked to neglecting ESG metrics in executive incentive plans. We find similar effects in Table 11 where we replicate the models for the use of environmental, social, and governance metrics, separately.

## 5. Conclusions

This study investigates whether firms respond to industry-specific non-financial regulatory scrutiny and reputational risks by incorporating non-financial vesting metrics in executive annual bonus plans. We measure industry-specific risks as the frequency of non-financial violations of federal and state regulations within the industry and propose that firms integrate non-financial responsibility metrics in executive incentive plans to mitigate negative reputational spillover effects from violating firms, signal their commitment to responsible management, and lower their own risk of similar misconduct. Using a large sample of S&P1500 firms over 2006-2019, our results reveal a significant positive association between within-industry non-financial violations and the inclusion of non-financial responsibility metrics in executive bonus plans. The effect is driven by bonus adjustments in response to ESG violations, as opposed to other types of non-financial corporate misconduct. These findings are in line with the prediction that firms adjust their pay-for-performance policies to incentivize executives on responsibility targets and signal commitment to responsible management. We further find that

the documented association is more pronounced for firms facing stronger competition and lower product differentiation and that external governance pressures, such as industry peer compensation practices, shareholder activism, and media scrutiny, all contribute to strengthening the effect of within-industry violations. Taken together, these results suggest that neglecting ESG metrics can translate in higher economic and reputational costs for firms operating in more competitive industries and subject to stronger external governance pressures. Our study contributes to the compensation literature in several ways. First, we add to the nascent literature on the determinants of ESG vesting metrics usage (e.g., Cohen et al. 2023; Flammer et al. 2019) by documenting that industry-specific risks represent an important consideration in the choice to include such metrics in executive incentive plans. Second, we document how competitive pressures influence the design of annual bonus schemes. Finally, we find evidence supporting the notion that increased regulatory scrutiny and reputational risks within an industry can affect incentive design choices, beyond within-industry compensation benchmarking practices.

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**Table 1**  
**Sample of corporate non-financial violations**

The table presents the number of corporate non-financial federal and state violations by S&P1500 firms between 2000 and 2019, along with the number of unique firms involved in the violations, the proportion of cases under federal agencies and the average monetary penalty amounts (in millions). Corporate non-financial violations come from the Violation Tracker database. ESG violations are the violation cases Violation Tracker categorizes as 'environmental', 'employee-safety', 'other employment', and 'government-contracting' violations. Other non-financial violations are the violation cases Violation Tracker categorizes as 'competition' and 'consumer-protection' violations.

Corporate Non-financial Violations – S&P1500					
Violation Type	N	%	# Firms	% Federal	Penalty (\$m)
ESG:		<u>90.27%</u>			
- 'E' = Environmental	7,801	20.33%	553	29.73%	4.32
- 'S' = Employee-Safety	23,359	60.88%	656	98.43%	0.24
- 'S' = Other Employment	2,962	7.72%	562	93.25%	0.46
- 'G' = Government-Contracting	516	1.34%	161	45.54%	42.20
Other Non-Financial:	3,503	<u>9.13%</u>			
- Competition	423	1.10%	220	46.10%	30.40
- Consumer-protection	3,080	8.03%	273	8.64%	22.50
<u>Sample Violations</u>	<u>38,141</u>				
Excluded:	229	<u>0.60%</u>			
- Healthcare	168	0.44%	52	57.74%	105.00
- Unclassified	61	0.16%	35	19.67%	12.50
All Violations	<u>38,370</u>	<u>100%</u>	<u>867</u>		

**Table 2**  
**Non-financial bonus vesting metrics**

The table presents the number and proportions of non-financial vesting metrics in sample executive annual bonus plans. Sample for this table includes 16,819 extrapolated non-financial metrics in 14,371 executive bonus plans in 2,252 firm-year observations pertaining to 566 distinct S&P1500 firms with non-missing executive bonus vesting and compensation details on Incentive Lab and ExecuComp between 2006 and 2019.

Non-financial Vesting Metrics – S&P1500					
Metric Type	N	%	# Plans	%	# Firm-Years
<b>ESG Metrics:</b>					
<b>Environmental:</b>	<u>1,563</u>	<u>9.29%</u>	<u>1,445</u>	<u>10.05%</u>	<u>1,498</u>
- Generic	1,131	6.72%	1,069	7.44%	
- Energy Savings	216	1.28%	166	1.15%	
- Compliance	216	1.28%	210	1.46%	
<b>Social:</b>	<u>6,610</u>	<u>39.30%</u>	<u>5,359</u>	37.29%	<u>1,170</u>
- Employee Safety	3,714	22.08%	2,786	19.39%	
- Employee Training & Retention	1,865	11.09%	1,677	11.67%	
- Workforce Diversity	676	4.02%	551	3.83%	
- Social & Ethics	355	2.11%	345	2.40%	
<b>Governance:</b>	<u>1,358</u>	<u>8.07%</u>	<u>1,209</u>	8.41%	<u>354</u>
- Compliance	885	5.26%	745	5.18%	
- Risk Management	294	1.75%	292	2.03%	
- Investor Relations	179	1.06%	172	1.20%	
<b>Other Non-Financial Metrics:</b>					
<b>Competition:</b>	<u>3,420</u>	<u>20.33%</u>	<u>2,946</u>	20.50%	<u>735</u>
- Product Mix	2,305	13.70%	1,942	13.51%	
- Product Quality	840	4.99%	769	5.35%	
- Product Pricing	275	1.64%	235	1.63%	
<b>Consumer:</b>	<u>3,868</u>	<u>23.00%</u>	<u>3,413</u>	23.75%	<u>726</u>
- Customer Satisfaction	2,064	12.27%	1,789	12.45%	
- Customer Service Quality	750	4.46%	664	4.62%	
- Customer Management	535	3.18%	509	3.54%	
- Customer Life Value	519	3.09%	451	3.14%	
<b>All Metrics</b>	<u>16,819</u>	<u>100.00%</u>	<u>14,371</u>	<u>100.00%</u>	<u>2,252</u>

**Table 3**  
**Non-financial bonus vesting metrics: frequencies by year and industry group**

The table presents the proportion of sample executive annual bonus plans with non-financial vesting metrics between 2006 and 2019. The proportion of plans using distinct non-financial metrics do not sum to the aggregate proportions since most plans can include more than one metric belonging to different non-financial categories. Sample for this table includes 51,636 annual bonus plans pertaining to 12,967 executives in 1,246 distinct S&P1500 firms (equivalent to 10,463 firm-year observations) operating in 61 distinct two-digit SIC codes with non-missing executive bonus vesting and compensation details on Incentive Lab and ExecuComp between 2006 and 2019.

<b>Panel A: % bonus plans with non-financial vesting metrics – by year</b>							
Sample Years	N	ESG Metrics	E Metrics	S Metrics	G Metrics	Other Metrics	All Metrics
2006	681	0.120	0.029	0.098	0.023	0.117	0.184
2007	747	0.118	0.029	0.087	0.027	0.116	0.197
2008	763	0.117	0.034	0.087	0.026	0.117	0.189
2009	701	0.133	0.027	0.106	0.027	0.128	0.205
2010	719	0.135	0.033	0.104	0.032	0.135	0.211
2011	736	0.140	0.027	0.114	0.029	0.148	0.221
2012	757	0.143	0.034	0.112	0.026	0.139	0.214
2013	777	0.134	0.033	0.107	0.028	0.115	0.201
2014	815	0.147	0.029	0.114	0.040	0.126	0.218
2015	793	0.164	0.034	0.126	0.047	0.142	0.240
2016	750	0.141	0.040	0.109	0.041	0.132	0.215
2017	777	0.158	0.046	0.118	0.044	0.117	0.221
2018	734	0.169	0.044	0.128	0.044	0.125	0.236
2019	713	0.189	0.048	0.154	0.036	0.139	0.261
All Years	10,463	0.144	0.035	0.112	0.034	0.128	0.215

<b>Panel B: % bonus plans with non-financial vesting metrics – by industry group</b>							
Industry Group (2-digit SIC)	N	ESG Metrics	E Metrics	S Metrics	G Metrics	Other Metrics	All Metrics
Mining (10-12, 14)	90	0.522	0.322	0.422	0.000	0.144	0.578
Oil & Gas (13)	311	0.444	0.238	0.357	0.023	0.299	0.547
Constructions (15-17)	157	0.255	0.013	0.178	0.083	0.166	0.401
Manufacturing (20-39)	4,293	0.107	0.022	0.076	0.029	0.094	0.165
Utilities (40-49)	1,132	0.339	0.129	0.300	0.041	0.258	0.419
Wholesale Trade (50-51)	289	0.080	0.003	0.076	0.017	0.107	0.152
Retail Trade (52-59)	760	0.047	0.001	0.045	0.004	0.174	0.197
Financial Services (60-69)	1,937	0.112	0.005	0.072	0.057	0.091	0.168
Other Services (70-89)	1,494	0.106	0.007	0.088	0.029	0.118	0.177
All Industries	10,463	0.144	0.035	0.112	0.034	0.128	0.215

**Table 4**  
**Non-financial corporate violations: frequencies by year and industry group**

The table presents within-industry frequencies of non-financial corporate violations across our sample of S&P1500 firms between 2006 and 2019. Panel A reports average annual frequencies by year. Average annual frequencies are computed as the ratio of the number of firms recording non-financial violations in the year over the total number of firms in the same two-digit SIC code, averaged across all two-digit SIC codes in S&P1500 for that year. Panel B reports frequencies by industry group. Sample for this table includes 1,246 distinct S&P1500 firms (equivalent to 10,463 firm-year observations) operating in 61 distinct two-digit SIC codes with non-missing executive bonus vesting and compensation details on Incentive Lab and ExecuComp between 2006 and 2019. Sample to compute within-industry violations include 28,943 non-financial violations involving 835 unique firms between 2006 and 2019.

**Panel A: Average within-industry frequencies - by year**

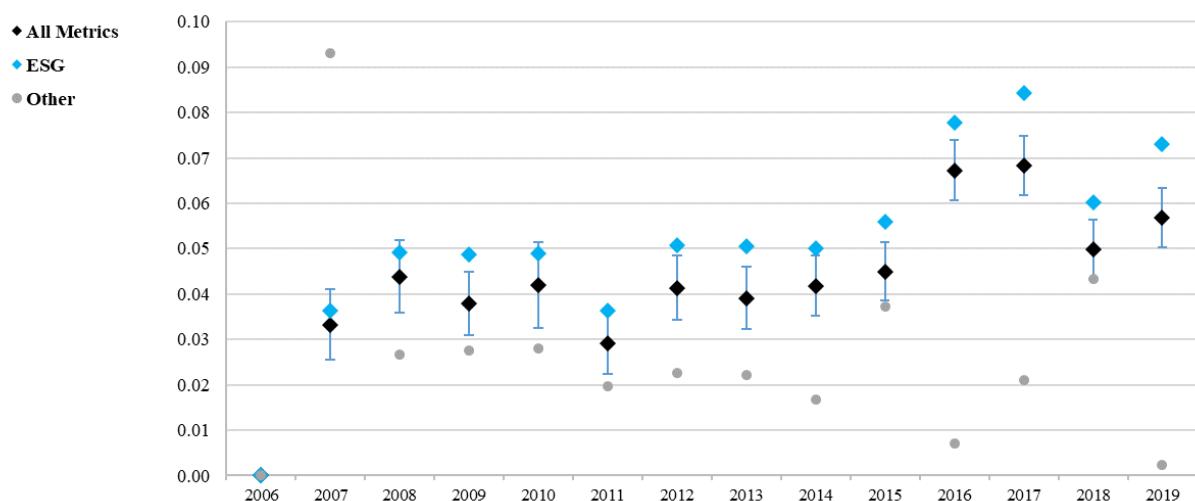
Sample Years	N	ESG Violations	E Violations	S Violations	G Violations	Other Violations	All Violations
2006	681	0.330	0.163	0.236	0.016	0.065	0.361
2007	747	0.301	0.169	0.220	0.015	0.070	0.337
2008	763	0.307	0.142	0.240	0.014	0.052	0.336
2009	701	0.320	0.158	0.237	0.014	0.078	0.368
2010	719	0.317	0.146	0.246	0.017	0.075	0.355
2011	736	0.323	0.160	0.261	0.019	0.069	0.349
2012	757	0.338	0.165	0.273	0.028	0.070	0.379
2013	777	0.358	0.151	0.301	0.023	0.058	0.387
2014	815	0.348	0.164	0.275	0.031	0.072	0.390
2015	793	0.337	0.174	0.265	0.020	0.088	0.383
2016	750	0.372	0.155	0.313	0.020	0.088	0.416
2017	777	0.371	0.179	0.297	0.014	0.088	0.421
2018	734	0.356	0.157	0.316	0.018	0.075	0.401
2019	713	0.380	0.160	0.337	0.024	0.074	0.422
All Years	10,463	0.340	0.160	0.273	0.020	0.073	0.379

**Panel B: Average within-industry frequencies - by industry group**

Industry Group (2-digit SIC)	N	ESG Violations	E Violations	S Violations	G Violations	Other Violations	All Violations
Mining (10-12, 14)	90	0.778	0.456	0.756	0.000	0.011	0.778
Oil & Gas (13)	311	0.531	0.389	0.270	0.029	0.026	0.534
Constructions (15-17)	157	0.605	0.293	0.452	0.013	0.064	0.631
Manufacturing (20-39)	4,293	0.380	0.189	0.301	0.019	0.026	0.392
Utilities (40-49)	1,132	0.572	0.339	0.455	0.010	0.153	0.600
Wholesale Trade (50-51)	289	0.439	0.111	0.388	0.059	0.055	0.460
Retail Trade (52-59)	760	0.524	0.189	0.471	0.028	0.082	0.538
Financial Services (60-69)	1,937	0.071	0.013	0.056	0.008	0.166	0.210
Other Services (70-89)	1,494	0.192	0.047	0.165	0.032	0.040	0.215
All Industries	10,463	0.340	0.160	0.273	0.020	0.073	0.379

**Figure 1**  
**Usage of non-financial bonus vesting metrics following violation years**

The figure plots average yearly coefficients from firm fixed-effect logit models estimating the likelihood of having non-financial vesting metrics in executive annual bonus plans in a year as function of prior year's within-industry frequencies of non-financial corporate violations. Within-industry frequencies are computed as the ratio of the number of S&P1500 firms recording non-financial violations in the year over the total number of S&P1500 firms in the same two-digit SIC code. The figure plots the estimated likelihood of having non-financial vesting metrics in a plan as a function of prior year's within-industry non-financial violations, along with the estimated likelihoods of having ESG and other non-financial vesting metrics as a function of prior year's frequencies of ESG and other non-financial violations, respectively. Sample for this table includes 30,022 annual bonus plans pertaining to 9,668 executives in 1,081 non-violating S&P1500 firms (operating in 58 distinct two-digit SIC codes) with non-missing executive bonus vesting and compensation details on Incentive Lab and ExecuComp between 2006 and 2019. Sample to compute within-industry violations include 28,943 non-financial violations involving 835 unique firms between 2006 and 2019.



**Table 5**  
**Summary statistics of sample executive, firm, and industry characteristics**

The table presents summary statistics on sample executive, firm, and industry characteristics. Panel A reports summary statistics on executive title, tenure at the firm, and bonus expected payout. Panel B reports summary statistics on the firm characteristics used as controls in our models. Panel C reports summary statistics on our proxies for product market competitiveness. Panel D reports summary statistics on our proxies for external governance pressures. Sample for this table includes 13,085 annual bonus plans pertaining to 4,886 unique executives in 589 distinct non-violating S&P1500 firms (operating in 56 distinct two-digit SIC codes) with non-missing executive bonus vesting formulas and compensation details, firm, and industry characteristics between 2006 and 2019.

<b>Panel A:</b>						
<b>Executive:</b>	N	Mean	SD	Q1	Median	Q3
CEO <sub>t</sub>	13,085	0.203	--	--	--	--
Non-CEO Corp <sub>t</sub>	13,085	0.496	--	--	--	--
Non-CEO Other <sub>t</sub>	13,085	0.301	--	--	--	--
Tenure <sub>t</sub>	13,085	7.239	7.094	2.000	5.000	10.000
%ExpPayout <sub>t</sub>	13,085	0.202	0.146	0.119	0.177	0.244
<b>Panel B:</b>						
<b>Firm:</b>	N	Mean	SD	Q1	Median	Q3
Size <sub>t-1</sub>	13,085	8.503	1.199	7.711	8.384	9.191
BM <sub>t-1</sub>	13,085	0.391	0.306	0.196	0.322	0.520
R&D <sub>t-1</sub>	13,085	0.075	0.089	0.002	0.039	0.121
Capital <sub>t-1</sub>	13,085	0.188	0.195	0.055	0.119	0.246
Leverage <sub>t-1</sub>	13,085	0.544	0.235	0.379	0.543	0.689
ROA <sub>t-1</sub>	13,085	0.067	0.075	0.029	0.065	0.109
StockReturns <sub>t-1</sub>	13,085	0.133	0.355	-0.081	0.099	0.300
SD(StockReturns) <sub>t-1</sub>	13,085	0.086	0.041	0.057	0.077	0.105
Diversified <sub>t-1</sub>	13,085	0.643	--	--	--	--
BoardSize <sub>t-1</sub>	13,085	9.379	2.011	8.000	9.000	11.000
% OutDirs <sub>t-1</sub>	13,085	0.800	0.101	0.750	0.818	0.889
% InstOwn <sub>t-1</sub>	13,085	0.243	0.117	0.154	0.235	0.318
% OtherBoards <sub>t-1</sub>	13,085	0.247	0.171	0.111	0.231	0.364
<b>Panel C:</b>						
<b>Product Market:</b>	N	Mean	SD	Q1	Median	Q3
HHIndex <sub>t-1</sub>	13,085	0.058	0.063	0.029	0.037	0.060
Fluidity <sub>t-1</sub>	13,085	6.105	3.007	3.887	5.603	7.717
Similarity <sub>t-1</sub>	13,085	4.770	9.197	1.176	1.885	3.652
<b>Panel D:</b>						
<b>External Governance:</b>	N	Mean	SD	Q1	Median	Q3
ESG-Peers <sub>t-1</sub>	13,085	0.112	0.130	0.026	0.073	0.134
E-Peers <sub>t-1</sub>	13,085	0.022	0.065	0.000	0.000	0.014
S-Peers <sub>t-1</sub>	13,085	0.085	0.111	0.014	0.056	0.105
G-Peers <sub>t-1</sub>	13,085	0.033	0.048	0.000	0.020	0.043
ESG-Proposals <sub>t-1</sub>	13,085	0.940	--	--	--	--
E-Proposals <sub>t-1</sub>	13,085	0.610	--	--	--	--
S-Proposals <sub>t-1</sub>	13,085	0.854	--	--	--	--
G-Proposals <sub>t-1</sub>	13,085	0.873	--	--	--	--
ESG-Media <sub>t-1</sub>	13,085	0.300	0.251	0.100	0.273	0.462
E-Media <sub>t-1</sub>	13,085	0.240	0.311	0.000	0.000	0.500
S-Media <sub>t-1</sub>	13,085	0.247	0.249	0.000	0.200	0.333
G-Media <sub>t-1</sub>	13,085	0.307	0.453	0.000	0.000	1.000

**Table 6**  
**Univariate analyses of executive, firm, and industry characteristics**

The table presents results of univariate analyses comparing bonus grants without non-financial metrics (column (4)) to grants with ESG metrics (column (1)), grants with other non-financial metrics (column (2)), and grants with ESG and/or other non-financial metrics (column (3)), separately. \*\*\*, \*\*, \* indicate significance levels at 0.01, 0.05, 0.10, respectively, of two-tailed t-tests for differences in means. Sample for this table includes 13,085 bonus plans pertaining to 4,886 unique executives in 589 distinct non-violating S&P1500 firms with non-missing executive bonus vesting formulas, compensation details, and firm characteristics between 2006 and 2019. All variables are defined in the text.

	ESG Metrics	Other Metrics	All Metrics	None
N	1,126	1,295	1,978	11,107
<b>Panel A:</b>				
<b>Executive:</b>				
CEO <sub>t</sub>	0.201	0.195	0.198	0.203
Non-CEO Corp <sub>t</sub>	0.485	0.434 ***	0.470 **	0.501
Non-CEO Other <sub>t</sub>	0.314	0.371 ***	0.332 ***	0.296
Tenure <sub>t</sub>	6.358 ***	6.222 ***	6.456 ***	7.378
%ExpPayout <sub>t</sub>	0.183 ***	0.175 ***	0.179 ***	0.206
<b>Panel B:</b>				
<b>Firm:</b>				
Size <sub>t-1</sub>	8.781 ***	8.813 ***	8.757 ***	8.457
BM <sub>t-1</sub>	0.456 ***	0.414 ***	0.426 ***	0.385
R&D <sub>t-1</sub>	0.066 ***	0.081 ***	0.078	0.075
Capital <sub>t-1</sub>	0.297 ***	0.267 ***	0.260 ***	0.176
Leverage <sub>t-1</sub>	0.580 ***	0.563 ***	0.568 ***	0.539
ROA <sub>t-1</sub>	0.057 ***	0.068	0.064 *	0.068
StockReturns <sub>t-1</sub>	0.096 ***	0.125	0.113 ***	0.137
SD(StockReturns) <sub>t-1</sub>	0.081 ***	0.086	0.084 ***	0.087
Diversified <sub>t-1</sub>	0.625 **	0.567 ***	0.575 ***	0.656
BoardSize <sub>t-1</sub>	9.982 ***	9.678 ***	9.701 ***	9.322
% OutDir <sub>t-1</sub>	0.823 ***	0.807 ***	0.808 ***	0.799
% InstOwn <sub>t-1</sub>	0.257 ***	0.235 *	0.249 **	0.242
% OtherBoards <sub>t-1</sub>	0.255 *	0.271 ***	0.260 ***	0.245
<b>Panel C:</b>				
<b>Product Market:</b>				
HHIndex <sub>t-1</sub>	0.040 ***	0.049 ***	0.047 ***	0.060
Fluidity <sub>t-1</sub>	7.006 ***	6.579 ***	6.744 ***	5.991
Similarity <sub>t-1</sub>	10.209 ***	5.648 ***	7.832 ***	4.225
<b>Panel D:</b>				
<b>External Governance:</b>				
ESG-Peers <sub>t-1</sub>	0.233 ***	0.172 ***	0.182 ***	0.100
E-Peers <sub>t-1</sub>	0.079 ***	0.053 ***	0.055 ***	0.016
S-Peers <sub>t-1</sub>	0.179 ***	0.133 ***	0.139 ***	0.075
G-Peers <sub>t-1</sub>	0.055 ***	0.037 ***	0.046 ***	0.030
ESG-Proposals <sub>t-1</sub>	0.964 ***	0.996 ***	0.977 ***	0.933
E-Proposals <sub>t-1</sub>	0.663 ***	0.683 ***	0.666 ***	0.601
S-Proposals <sub>t-1</sub>	0.924 ***	0.914 ***	0.904 ***	0.845
G-Proposals <sub>t-1</sub>	0.926 ***	0.917 ***	0.915 ***	0.865
ESG-Media <sub>t-1</sub>	0.370 ***	0.334 ***	0.336 ***	0.293
E-Media <sub>t-1</sub>	0.365 ***	0.299 ***	0.311 ***	0.227
S-Media <sub>t-1</sub>	0.256	0.271 ***	0.255	0.245
G-Media <sub>t-1</sub>	0.302	0.263 ***	0.284 **	0.312

**Table 7**  
**Industry non-financial violations and bonus vesting metrics**

The table presents results from OLS models that regress the natural log of the number of non-financial vesting metrics in executive annual bonus formulas on the within-industry cumulative frequencies of non-financial violations, executive characteristics, and firm-level controls. Panel A – Column I estimates the number of non-financial metrics as a function of all non-financial violations. Panel A - Column II and Column III estimate the number of ESG and other non-financial vesting metrics as a function of the within-industry cumulative frequencies of ESG and other non-financial violations, respectively. Panel B - Columns I-III replicate the models for the number of environmental, social, and governance vesting metrics as a function of the within-industry cumulative frequencies of environmental, social, and governance violations, separately. Sample for this table includes 13,085 bonus plans pertaining to 4,886 unique executives in 589 distinct S&P1500 firms (operating in 56 distinct two-digit SIC codes) with non-missing executive bonus vesting formulas, compensation details and firm characteristics between 2006 and 2019. All models include firm and year fixed effects and report t-statistics in parentheses based on clustered standard errors at the executive level. \*\*\*, \*\*, \* indicate significance levels at 0.01, 0.05, 0.10, respectively. All variables are defined in the text.

**Panel A: Number of non-financial vesting metrics**

	I Ln(Non-Financial Metrics +1)		II Ln(ESG Metrics +1)		III Ln(Other Metrics +1)	
Industry Violations:						
$\Sigma(\text{Non-Financial Violations})_{t-1}$	0.022 ( 3.59)	***	--		--	
$\Sigma(\text{ESG Violations})_{t-1}$	--		0.028 ( 5.00)	***	--	
$\Sigma(\text{Other Violations})_{t-1}$	--		--		0.017 ( 1.08)	
$\Sigma(\text{Outside-Ind Violations})_{t-1}$	-0.079 (-0.85)		0.063 ( 0.74)		-0.275 (-0.87)	
Executive:						
CEO <sub>t</sub>	-0.008 (-1.08)		0.002 ( 0.48)		-0.011 (-2.01)	**
Non-CEO Corp <sub>t</sub>	-0.007 (-1.25)		0.002 ( 0.40)		-0.010 (-2.27)	**
Non-CEO Other <sub>t</sub>	--		--		--	
Ln(Tenure) <sub>t</sub>	-0.003 (-0.86)		-0.002 (-0.84)		-0.001 (-0.55)	
%ExpPayout <sub>t</sub>	-0.109 (-5.82)	***	-0.056 (-3.78)	***	-0.061 (-4.51)	***
Firm:						
Size <sub>t-1</sub>	-0.039 (-4.04)	***	-0.019 (-2.49)	**	-0.027 (-4.13)	***
BM <sub>t-1</sub>	-0.003 (-0.12)		-0.019 (-0.94)		0.001 ( 0.04)	
R&D <sub>t-1</sub>	-0.601 (-5.26)	***	-0.242 (-3.14)	***	-0.427 (-3.82)	***
Capex <sub>t-1</sub>	0.080 ( 0.85)		0.270 ( 4.34)	***	-0.126 (-1.64)	
Leverage <sub>t-1</sub>	-0.010 (-0.32)		-0.089 (-4.15)	***	0.054 ( 2.28)	**
ROA <sub>t-1</sub>	-0.030 (-0.37)		0.003 ( 0.06)		-0.045 (-0.72)	
StockReturns <sub>t-1</sub>	-0.000 (-0.02)		-0.008 (-1.29)		0.005 ( 0.86)	
SD(StockReturns) <sub>t-1</sub>	-0.349 (-4.04)	***	-0.131 (-2.18)	**	-0.185 (-2.71)	***
Diversified <sub>t-1</sub>	-0.035 (-2.45)	**	-0.043 (-3.78)	***	0.000 ( 0.04)	
Ln(BoardSize) <sub>t-1</sub>	0.003 ( 0.09)		-0.041 (-1.69)	*	0.044 ( 2.09)	**
% OutDirs <sub>t-1</sub>	0.029 ( 0.54)		0.102 ( 2.85)	***	-0.014 (-0.33)	
% InstOwn <sub>t-1</sub>	0.122 ( 3.51)	***	0.149 ( 5.63)	***	-0.004 (-0.18)	
% OtherBoards <sub>t-1</sub>	0.016 ( 0.63)		0.028 ( 1.38)		0.001 ( 0.03)	
Firm FE	YES		YES		YES	
Year FE	YES		YES		YES	
N	13,085		13,085		13,085	
Adj. R <sup>2</sup>	0.625		0.604		0.563	

**Table 7 – cont'd**

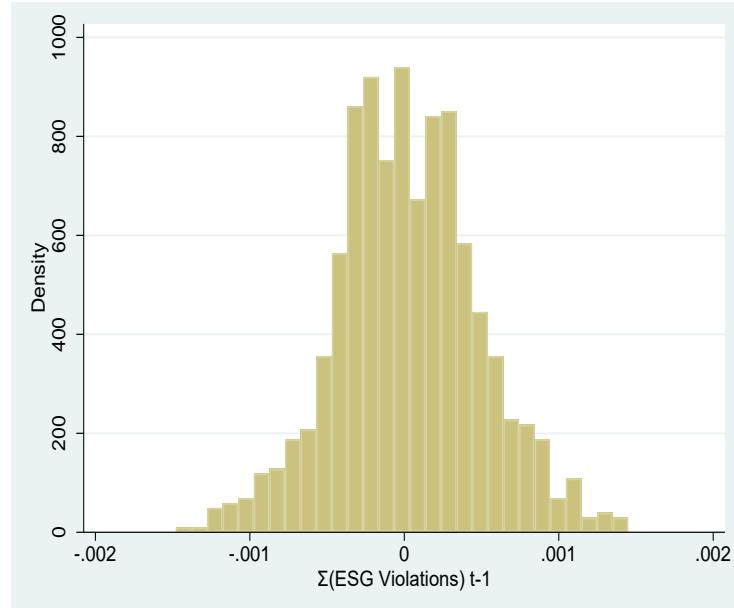
**Panel B: Number of ESG vesting metrics**

	I Ln(E Metrics +1)			II Ln(S Metrics +1)			III Ln(G Metrics +1)		
Industry Violations:									
$\Sigma(E \text{ Violations})_{t-1}$	0.023	(4.84)	***	--	0.015	(3.14)	***	--	--
$\Sigma(S \text{ Violations})_{t-1}$	--			--	--			--	--
$\Sigma(G \text{ Violations})_{t-1}$	--			--				-0.013	(-1.24)
$\Sigma(\text{Outside-Ind Violations})_{t-1}$	0.030	(0.85)		-0.102	(-1.11)			-0.081	(-0.12)
Executive:									
CEO <sub>t</sub>	0.000	(0.12)		0.003	(0.60)		0.001	(0.39)	
Non-CEO Corp <sub>t</sub>	-0.001	(-0.36)		-0.000	(-0.03)		0.003	(1.85)	*
Non-CEO Other <sub>t</sub>	--			--			--		
Ln(Tenure) <sub>t</sub>	-0.000	(-0.38)		-0.001	(-0.57)		-0.001	(-0.47)	
%ExpPayout <sub>t</sub>	-0.000	(-0.03)		-0.036	(-3.45)	***	-0.030	(-3.67)	***
Firm:									
Size <sub>t-1</sub>	-0.010	(-3.81)	***	-0.012	(-2.17)	**	-0.000	(-0.05)	
BM <sub>t-1</sub>	-0.017	(-1.68)	*	-0.010	(-0.64)		0.006	(0.74)	
R&D <sub>t-1</sub>	-0.033	(-1.35)		-0.123	(-1.66)	*	-0.098	(-2.15)	**
Capex <sub>t-1</sub>	-0.042	(-2.33)	**	0.228	(3.80)	***	0.068	(2.21)	**
Leverage <sub>t-1</sub>	-0.032	(-3.37)	***	-0.031	(-2.00)	**	-0.023	(-2.09)	**
ROA <sub>t-1</sub>	-0.033	(-1.32)		0.004	(0.11)		0.028	(0.98)	
StockReturns <sub>t-1</sub>	-0.000	(-0.11)		0.004	(1.02)		-0.013	(-3.31)	***
SD(StockReturns) <sub>t-1</sub>	-0.004	(-0.25)		-0.106	(-2.26)	**	-0.013	(-0.38)	
Diversified <sub>t-1</sub>	-0.007	(-1.35)		-0.021	(-2.36)	**	-0.016	(-2.31)	**
Ln(BoardSize) <sub>t-1</sub>	0.000	(0.01)		-0.029	(-1.61)		-0.013	(-0.88)	
% OutDirs <sub>t-1</sub>	0.012	(0.99)		0.121	(3.82)	***	-0.005	(-0.44)	
% InstOwn <sub>t-1</sub>	0.008	(1.03)		0.097	(4.42)	***	0.051	(3.62)	***
% OtherBoards <sub>t-1</sub>	0.025	(3.34)	***	0.008	(0.47)		-0.001	(-0.10)	
Firm FE	YES			YES			YES		
Year FE	YES			YES			YES		
N	13,085			13,085			13,085		
Adj. R <sup>2</sup>	0.548			0.605			0.497		

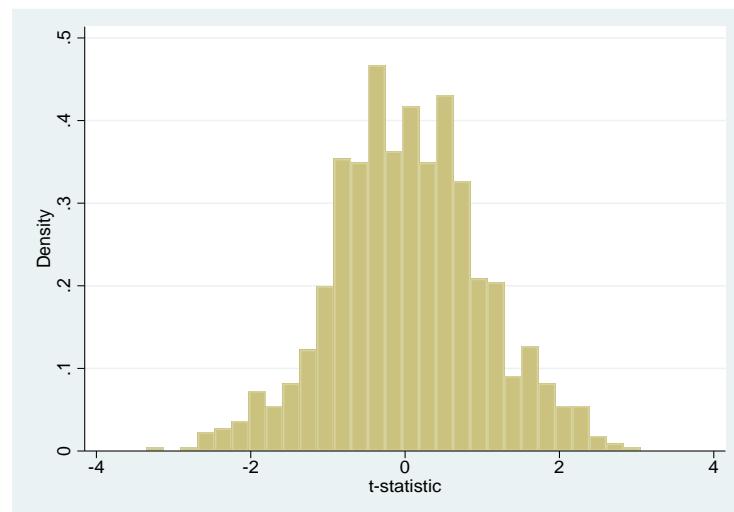
**Figure 2**  
**Test for industry effects: results from placebo tests**

This figure displays the discrete probability density of the coefficients (Figure 2A) and the t-statistics (Figure 2B) from 1,000 regressions of the number of ESG metrics in executive annual bonus contracts on the frequency of placebo within-industry violations. For each industry-year group, we randomly select a pseudo-industry-year group and re-estimate the model in Table 7 - Panel A by replacing our independent variable with placebo ESG violations. We repeat this procedure 1000 times. The horizontal (vertical) axis in Figure 2A represents the coefficients from 1,000 regressions (the probability density of the estimated coefficients). The horizontal (vertical) axis in Figure 2B represents the coefficients from 1,000 regressions (the probability density of the estimated t-statistics).

**Figure 2A: The discrete probability density of the coefficients from 1,000 placebo regressions**



**Figure 2B: The discrete probability density of the t-statistics from 1,000 placebo regressions**



**Table 8**  
**ESG violations and bonus vesting metrics: the effect of product market characteristics**

The table presents results from OLS models that test the effect of industry and product characteristics on the association between the number of ESG vesting metrics in executive annual bonus formulas and the within-industry cumulative frequencies of ESG violations. *HHIndex* is the Herfindahl-Hirschman industry concentration ratio at the two-digit SIC industry classification level. *Fluidity* and *Similarity* are the local market fluidity and total market similarity measures developed by Hoberg and Phillips (2010; 2016) and Hoberg et al. (2014). Sample for this table includes 13,085 bonus plans pertaining to 4,886 unique executives in 589 distinct S&P1500 firms (operating in 56 distinct two-digit SIC codes) with non-missing executive bonus vesting formulas, compensation details and firm characteristics between 2006 and 2019. All models include firm and year fixed effects and report t-statistics in parentheses based on clustered standard errors at the executive level. \*\*\*, \*\*, \* indicate significance levels at 0.01, 0.05, 0.10, respectively. All variables are defined in the text.

	I	II	III
	Ln(ESG Metrics +1)	Ln(ESG Metrics +1)	Ln(ESG Metrics +1)
Industry Violations:			
$\Sigma(\text{ESG Violations})_{t-1}$	0.039 ( 6.25) ***	--	--
$\Sigma(\text{ESG Violations})_{t-1} * \text{HHIndex}_{t-1}$	-0.176 (-6.53) ***		
$\Sigma(\text{ESG Violations})_{t-1}$	--	0.031 ( 5.58) ***	--
$\Sigma(\text{ESG Violations})_{t-1} * \text{Fluidity}_{t-1}$	--	0.003 ( 4.82) ***	
$\Sigma(\text{ESG Violations})_{t-1}$	--	--	0.031 ( 5.44) ***
$\Sigma(\text{ESG Violations})_{t-1} * \text{Similarity}_{t-1}$	--		0.002 ( 3.21) ***
$\Sigma(\text{Outside-Ind Violations})_{t-1}$	0.186 ( 2.12) **	0.089 ( 1.07)	0.096 ( 1.13)
Industry and product:			
$\text{HHIndex}_{t-1}$	-0.905 ( 4.22) ***	--	--
$\text{Fluidity}_{t-1}$	--	-0.004 (-2.51) **	--
$\text{Similarity}_{t-1}$	--	--	-0.004 (-2.15) **
Executive:			
$\text{CEO}_t$	0.002 ( 0.39)	0.002 ( 0.46)	0.002 ( 0.44)
$\text{Non-CEO Corp}_t$	0.001 ( 0.33)	0.001 ( 0.33)	0.001 ( 0.37)
$\text{Non-CEO Other}_t$	--	--	--
$\text{Ln(Tenure)}_t$	-0.001 (-0.63)	-0.002 (-0.77)	-0.002 (-0.76)
$\% \text{ExpPayout}_t$	-0.059 (-4.03) ***	-0.054 (-3.64) ***	-0.054 (-3.67) ***
Firm:			
$\text{Size}_{t-1}$	-0.022 (-2.94) ***	-0.021 (-2.89) **	-0.019 (-2.61) ***
$\text{BM}_{t-1}$	-0.022 (-1.08)	-0.031 (-1.65) *	-0.027 (-1.45)
$\text{R&D}_{t-1}$	-0.264 (-3.54) ***	-0.207 (-2.73) ***	-0.228 (-3.04) ***
$\text{Capex}_{t-1}$	0.277 ( 4.71) ***	0.250 ( 3.97) ***	0.255 ( 4.17) ***
$\text{Leverage}_{t-1}$	-0.081 (-3.89) ***	-0.106 (-5.06) ***	-0.094 (-4.50) ***
$\text{ROA}_{t-1}$	-0.001 (-0.02)	-0.004 (-0.08)	-0.033 (-0.67)
$\text{StockReturns}_{t-1}$	-0.010 (-1.63)	-0.006 (-0.99)	-0.005 (-0.82)
$\text{SD(StockReturns)}_{t-1}$	-0.094 (-1.55)	-0.101 (-1.68) *	-0.127 (-2.12) **
$\text{Diversified}_{t-1}$	-0.038 (-3.29) ***	-0.038 (-3.30) ***	-0.038 (-3.26) ***
$\text{Ln(BoardSize)}_{t-1}$	-0.039 (-1.62)	-0.029 (-1.23)	-0.037 (-1.53)
$\% \text{OutDirs}_{t-1}$	0.114 ( 3.23) ***	0.100 ( 2.86) ***	0.077 ( 2.28) **
$\% \text{InstOwn}_{t-1}$	0.132 ( 5.23) ***	0.138 ( 5.23) ***	0.147 ( 5.58) ***
$\% \text{OtherBoards}_{t-1}$	0.033 ( 1.71) *	0.033 ( 1.68) *	0.026 ( 1.33)
Firm FE	YES	YES	YES
Year FE	YES	YES	YES
N	13,085	13,085	13,085
Adj. R <sup>2</sup>	0.610	0.608	0.606

**Table 9**  
**The effect of product market characteristics: results by ESG violation and metric types**

The table replicates the models in Table 8 for the number of environmental, social, and governance vesting metrics as a function of the within-industry cumulative frequencies of environmental, social, and governance violations, separately, and our proxies for product market characteristics. *HHIndex* is the Herfindahl-Hirschman industry concentration ratio at the two-digit SIC industry classification level. *Fluidity* and *Similarity* are the local market fluidity and total market similarity measures developed by Hoberg and Phillips (2010; 2016) and Hoberg et al. (2014). Sample for this table includes 13,085 bonus plans pertaining to 4,886 unique executives in 589 distinct S&P1500 firms (operating in 56 distinct two-digit SIC codes) with non-missing executive bonus vesting formulas, compensation details and firm characteristics between 2006 and 2019. All models include firm and year fixed effects and report t-statistics in parentheses based on clustered standard errors at the executive level. \*\*\*, \*\*, \* indicate significance levels at 0.01, 0.05, 0.10, respectively. All variables are defined in the text.

**Panel A: Effect of industry diversification**

	I Ln(E Metrics +1)		II Ln(S Metrics +1)		III Ln(G Metrics +1)	
Industry Violations:						
$\Sigma(E \text{ Violations})_{t-1}$	0.027 ( 4.95)	***		--		--
$\Sigma(E \text{ Violations})_{t-1} * \text{HHIndex}_{t-1}$	-0.100 (-4.78)	***				
$\Sigma(S \text{ Violations})_{t-1}$	--		0.028 ( 4.86)	***		--
$\Sigma(S \text{ Violations})_{t-1} * \text{HHIndex}_{t-1}$	--		-0.164 (-5.62)	***		
$\Sigma(G \text{ Violations})_{t-1}$	--		--		-0.017 (-1.17)	
$\Sigma(G \text{ Violations})_{t-1} * \text{HHIndex}_{t-1}$	--				0.043 ( 0.97)	
$\Sigma(\text{Outside-Ind Violations})_{t-1}$	0.093 ( 2.03)	**	0.038 ( 0.41)		-0.166 (-0.26)	
Industry and product:						
HHIndex <sub>t-1</sub>	-0.381 (-2.66)	***	-0.599 (-3.84)	***	-0.139 (-2.72)	***
Fluidity <sub>t-1</sub>	--		--		--	
Similarity <sub>t-1</sub>	--		--		--	
Executive:						
CEO <sub>t</sub>	0.000 ( 0.02)		0.002 ( 0.53)		0.001 ( 0.38)	
Non-CEO Corp <sub>t</sub>	-0.001 (-0.47)		-0.000 (-0.10)		0.003 ( 1.82)	*
Non-CEO Other <sub>t</sub>	--		--		--	
Ln(Tenure) <sub>t</sub>	-0.000 (-0.17)		-0.001 (-0.34)		-0.001 (-0.44)	
%ExpPayout <sub>t</sub>	-0.001 (-0.20)		-0.039 (-3.70)	***	-0.030 (-3.71)	***
Firm:						
Size <sub>t-1</sub>	-0.011 (-4.38)	***	-0.014 (-2.44)	**	-0.001 (-0.14)	
BM <sub>t-1</sub>	-0.019 (-1.85)	*	-0.012 (-0.78)		0.004 ( 0.57)	
R&D <sub>t-1</sub>	-0.040 (-1.72)	*	-0.143 (-1.94)	*	-0.095 (-2.09)	**
Capex <sub>t-1</sub>	-0.037 (-2.11)	**	0.238 ( 4.14)	***	0.069 ( 2.24)	**
Leverage <sub>t-1</sub>	-0.030 (-3.24)	***	-0.027 (-1.84)	*	-0.023 (-2.11)	**
ROA <sub>t-1</sub>	-0.037 (-1.59)		-0.002 (-0.06)		0.029 ( 1.04)	
StockReturns <sub>t-1</sub>	-0.001 (-0.23)		0.002 ( 0.66)		-0.013 (-3.32)	***
SD(StockReturns) <sub>t-1</sub>	0.011 ( 0.60)		-0.076 (-1.60)		-0.012 (-0.35)	
Diversified <sub>t-1</sub>	-0.005 (-1.01)		-0.018 (-1.94)	*	-0.016 (-2.30)	**
Ln(BoardSize) <sub>t-1</sub>	0.000 ( 0.03)		-0.027 (-1.49)		-0.013 (-0.89)	
% OutDirs <sub>t-1</sub>	0.017 ( 1.36)		0.130 ( 4.13)	***	-0.005 (-0.44)	
% InstOwn <sub>t-1</sub>	-0.001 (-0.17)		0.086 ( 4.10)	***	0.049 ( 3.55)	***
% OtherBoards <sub>t-1</sub>	0.027 ( 3.85)	***	0.012 ( 0.72)		0.000 ( 0.01)	
Firm FE	YES		YES		YES	
Year FE	YES		YES		YES	
N	13,085		13,085		13,085	
Adj. R <sup>2</sup>	0.555		0.610		0.498	

**Table 9 -cont'd**

<b>Panel B: Effect of market fluidity</b>								
	I		II		III			
	Ln(E Metrics +1)		Ln(S Metrics +1)		Ln(G Metrics +1)			
Industry Violations:								
$\Sigma(E \text{ Violations})_{t-1}$	0.023	( 5.31)	***	--	--	--		
$\Sigma(E \text{ Violations})_{t-1} * \text{Fluidity}_{t-1}$	0.002	( 2.78)	***					
$\Sigma(S \text{ Violations})_{t-1}$	--			0.021	( 3.99)	***		
$\Sigma(S \text{ Violations})_{t-1} * \text{Fluidity}_{t-1}$	--			0.003	( 3.97)	***		
$\Sigma(G \text{ Violations})_{t-1}$	--			--				
$\Sigma(G \text{ Violations})_{t-1} * \text{Fluidity}_{t-1}$	--				-0.020	(-1.61)		
$\Sigma(\text{Outside-Ind Violations})_{t-1}$	0.057	( 1.56)		-0.072	(-0.80)	0.006	( 2.17)	
						**		
Industry and product:								
HHIndex <sub>t-1</sub>	--			--	--	--		
Fluidity <sub>t-1</sub>	-0.002	(-2.55)	***	-0.000	(-0.21)	-0.003	(-2.67)	
Similarity <sub>t-1</sub>	--			--		--		
Executive:								
CEO <sub>t</sub>	0.000	( 0.13)		0.002	( 0.58)	0.001	( 0.32)	
Non-CEO Corp <sub>t</sub>	-0.001	(-0.40)		-0.000	(-0.09)	0.003	( 1.74)	
Non-CEO Other <sub>t</sub>	--			--		--		
Ln(Tenure) <sub>t</sub>	-0.000	(-0.40)		-0.001	(-0.43)	-0.001	(-0.46)	
%ExpPayout <sub>t</sub>	0.001	( 0.12)		-0.035	(-3.38)	***	-0.029	(-3.63)
						***		
Firm:								
Size <sub>t-1</sub>	-0.010	(-3.80)	***	-0.015	(-2.52)	**	-0.000	(-0.12)
BM <sub>t-1</sub>	-0.020	(-2.14)	**	-0.019	(-1.36)		0.004	( 0.58)
R&D <sub>t-1</sub>	-0.020	(-0.76)		-0.101	(-1.39)		-0.098	(-2.14)
Capex <sub>t-1</sub>	-0.048	(-2.63)	***	0.217	( 3.53)	***	0.063	( 2.16)
Leverage <sub>t-1</sub>	-0.037	(-3.96)	***	-0.044	(-2.91)	***	-0.026	(-2.48)
ROA <sub>t-1</sub>	-0.037	(-1.53)		-0.001	(-0.04)		0.024	( 0.89)
StockReturns <sub>t-1</sub>	0.000	( 0.07)		0.005	( 1.33)		-0.013	(-3.34)
SD(StockReturns) <sub>t-1</sub>	0.015	( 0.86)		-0.096	(-2.05)	**	-0.007	(-0.21)
Diversified <sub>t-1</sub>	-0.005	(-1.03)		-0.019	(-2.00)	**	-0.015	(-2.14)
						**		
Ln(BoardSize) <sub>t-1</sub>	0.003	( 0.38)		-0.020	(-1.14)		-0.009	(-0.59)
% OutDirs <sub>t-1</sub>	0.010	( 0.82)		0.121	( 3.90)	***	-0.007	(-0.58)
% InstOwn <sub>t-1</sub>	0.004	( 0.53)		0.090	( 4.11)	***	0.049	( 3.51)
% OtherBoards <sub>t-1</sub>	0.028	( 3.74)	***	0.010	( 0.60)		0.000	( 0.02)
						***		
Firm FE		YES		YES		YES		
Year FE		YES		YES		YES		
N		13,085		13,085		13,085		
Adj. R <sup>2</sup>		0.553		0.608		0.499		

**Table 9 -cont'd**

**Panel C: Effect of product similarity**

	I		II		III	
	Ln(E Metrics +1)		Ln(S Metrics +1)		Ln(G Metrics +1)	
<b>Industry Violations:</b>						
$\Sigma(E \text{ Violations})_{t-1}$	0.024	( 5.09)	***	--	--	--
$\Sigma(E \text{ Violations})_{t-1} * \text{Similarity}_{t-1}$	0.001	( 3.43)	***			
$\Sigma(S \text{ Violations})_{t-1}$	--			0.024	( 4.17)	***
$\Sigma(S \text{ Violations})_{t-1} * \text{Similarity}_{t-1}$	--			0.003	( 3.64)	***
$\Sigma(G \text{ Violations})_{t-1}$	--			--		0.003 ( 0.42)
$\Sigma(G \text{ Violations})_{t-1} * \text{Similarity}_{t-1}$	--			--		0.004 ( 1.17)
$\Sigma(\text{Outside-Ind Violations})_{t-1}$	0.044	( 1.18)		-0.071	(-0.78)	0.694 ( 1.50)
<b>Industry and product:</b>						
HHIndex <sub>t-1</sub>	--		--	--	--	--
Fluidity <sub>t-1</sub>	--		--	--	--	--
Similarity <sub>t-1</sub>	-0.003	(-4.55)	***	-0.004	(-4.47)	***
<b>Executive:</b>						
CEO <sub>t</sub>	0.000	( 0.16)		0.003	( 0.63)	0.000 ( 0.17)
Non-CEO Corp <sub>t</sub>	-0.001	(-0.29)		0.000	( 0.00)	0.003 ( 1.61)
Non-CEO Other <sub>t</sub>	--		--	--	--	--
Ln(Tenure) <sub>t</sub>	-0.000	(-0.43)		-0.001	(-0.47)	-0.000 (-0.33)
%ExpPayout <sub>t</sub>	0.001	( 0.09)		-0.035	(-3.35)	***
<b>Firm:</b>						
Size <sub>t-1</sub>	-0.009	(-3.06)	***	-0.010	(-1.77)	*
BM <sub>t-1</sub>	-0.017	(-1.96)	*	-0.014	(-1.02)	-0.000 (-0.01)
R&D <sub>t-1</sub>	-0.035	(-1.37)		-0.116	(-1.57)	-0.090 (-2.06)
Capex <sub>t-1</sub>	-0.044	(-2.43)	**	0.214	( 3.54)	***
Leverage <sub>t-1</sub>	-0.033	(-3.67)	***	-0.035	(-2.38)	**
ROA <sub>t-1</sub>	-0.044	(-1.91)	*	-0.021	(-0.65)	0.010 ( 0.42)
StockReturns <sub>t-1</sub>	0.000	( 0.10)		0.006	( 1.46)	-0.012 (-3.17)
SD(StockReturns) <sub>t-1</sub>	0.002	( 0.10)		-0.101	(-2.14)	**
Diversified <sub>t-1</sub>	-0.004	(-0.74)		-0.016	(-1.78)	*
						-0.016 (-2.33)
Ln(BoardSize) <sub>t-1</sub>	0.003	( 0.44)		-0.022	(-1.25)	-0.016 (-1.09)
% OutDirs <sub>t-1</sub>	0.003	( 0.23)		0.101	( 3.39)	***
% InstOwn <sub>t-1</sub>	0.008	( 1.02)		0.095	( 4.31)	***
% OtherBoards <sub>t-1</sub>	0.023	( 3.03)	***	0.003	( 0.17)	0.003 ( 0.33)
Firm FE		YES		YES		YES
Year FE		YES		YES		YES
N		13,085		13,085		13,085
Adj. R <sup>2</sup>		0.552		0.609		0.501

**Table 10**  
**ESG violations and bonus vesting metrics: the effect of industry governance pressures**

The table presents results from OLS models that test the effect of external governance pressures on the association between the number of ESG vesting metrics in executive annual bonus formulas and the within-industry cumulative frequencies of ESG violations. *ESGPeers* measures the proportion of industry peers that use ESG metrics in their executive annual bonus formulas. *ESGProposals* is an indicator variable equal to one if at least one firm in the industry was subject to an ESG-related shareholder proposal, zero otherwise. *ESGMedia* measures the proportion of industry peers involved in ESG violations that are covered by the press. Sample for this table includes 13,085 bonus plans pertaining to 4,886 unique executives in 589 distinct S&P1500 firms (operating in 56 distinct two-digit SIC codes) with non-missing executive bonus vesting formulas, compensation details and firm characteristics between 2006 and 2019. All models include firm and year fixed effects and report t-statistics in parentheses based on clustered standard errors at the executive level. \*\*\*, \*\*, \* indicate significance levels at 0.01, 0.05, 0.10, respectively. All variables are defined in the text.

	I			II			III		
	Ln(ESG Metrics +1)			Ln(ESG Metrics +1)			Ln(ESG Metrics +1)		
<b>Industry Violations:</b>									
$\Sigma(\text{ESG Violations})_{t-1}$	0.009	( 1.90)	*		--			--	
$\Sigma(\text{ESG Violations})_{t-1} * \text{ESGPeers}_{t-1}$	0.084	( 7.08)	***						
$\Sigma(\text{ESG Violations})_{t-1}$	--			0.018	( 2.97)	***		--	
$\Sigma(\text{ESG Violations})_{t-1} * \text{ESGProposals}_{t-1}$	--			0.010	( 2.58)	***			
$\Sigma(\text{ESG Violations})_{t-1}$	--			--			0.025	( 4.89)	***
$\Sigma(\text{ESG Violations})_{t-1} * \text{ESGMedia}_{t-1}$	--						0.029	( 5.82)	***
$\Sigma(\text{Outside-Ind Violations})_{t-1}$	0.040	( 0.47)		0.067	( 0.78)		0.030	( 0.35)	
<b>Governance Pressures:</b>									
$\text{ESGPeers}_{t-1}$	0.082	( 1.92)	*	--			--		
$\text{ESGProposals}_{t-1}$	--			0.002	( 0.24)	*	--		
$\text{ESGMedia}_{t-1}$	--			--			0.024	( 2.92)	***
<b>Executive:</b>									
$\text{CEO}_t$	0.002	( 0.50)		0.002	( 0.46)		0.003	( 0.54)	
$\text{Non-CEO Corp}_t$	0.002	( 0.51)		0.002	( 0.40)		0.002	( 0.47)	
$\text{Non-CEO Other}_t$	--			--			--		
$\text{Ln(Tenure)}_t$	-0.002	(-0.78)		-0.002	(-0.81)		-0.002	(-0.90)	
$\% \text{ExpPayout}_t$	-0.050	(-3.43)	***	-0.056	(-3.80)	***	-0.057	(-3.84)	***
<b>Firm:</b>									
$\text{Size}_{t-1}$	-0.022	(-3.07)	***	-0.019	(-2.53)	**	-0.022	(-2.95)	***
$\text{BM}_{t-1}$	-0.031	(-1.61)		-0.019	(-0.95)		-0.019	(-0.96)	
$\text{R&D}_{t-1}$	-0.184	(-2.49)	**	-0.243	(-3.15)	***	-0.226	(-2.94)	***
$\text{Capex}_{t-1}$	0.207	( 3.37)	***	0.275	( 4.45)	***	0.245	( 3.97)	***
$\text{Leverage}_{t-1}$	-0.078	(-3.70)	***	-0.089	(-4.20)	***	-0.087	(-4.11)	***
$\text{ROA}_{t-1}$	0.003	( 0.05)		0.002	( 0.05)		-0.002	(-0.03)	
$\text{StockReturns}_{t-1}$	-0.006	(-1.07)		-0.008	(-1.24)		-0.004	(-0.70)	
$\text{SD}(\text{StockReturns})_{t-1}$	-0.156	(-2.63)	***	-0.136	(-2.27)	**	-0.141	(-2.36)	**
$\text{Diversified}_{t-1}$	-0.035	(-3.13)	***	-0.043	(-3.77)	***	-0.043	(-3.78)	***
$\text{Ln(BoardSize)}_{t-1}$	-0.036	(-1.51)		-0.040	(-1.66)	*	-0.039	(-1.58)	
$\% \text{OutDirs}_{t-1}$	0.105	( 3.06)	***	0.102	( 2.87)	***	0.102	( 2.89)	***
$\% \text{InstOwn}_{t-1}$	0.116	( 4.49)	***	0.148	( 5.61)	***	0.144	( 5.46)	***
$\% \text{OtherBoards}_{t-1}$	0.031	( 1.66)	*	0.027	( 1.35)		0.025	( 1.28)	
<b>Firm FE</b>	YES			YES			YES		
<b>Year FE</b>	YES			YES			YES		
<b>N</b>	13,085			13,085			13,085		
<b>Adj. R<sup>2</sup></b>	0.613			0.604			0.606		

**Table 11**  
**The effect of industry governance pressures: results by ESG violation and metric types**

The table replicates the models in Table 10 for the number of environmental, social, and governance vesting metrics as a function of the within-industry cumulative frequencies of environmental, social, and governance violations, separately, and our proxies for external governance pressures. *EPeers*, *SPeers*, and *GPeers* measure the proportion of industry peers that use environmental, social, and governance metrics in their executive annual bonus formulas, respectively. *EProposals*, *SProposals*, and *GProposals* indicate whether at least one firm in the industry was subject to an environmental-, social-, and governance-related shareholder proposal, respectively. *EMedia*, *SMedia* and *GMedia* measure the proportion of industry peers involved in environmental, social, and governance violations that are covered by the press, respectively. Sample for this table includes 13,085 bonus plans pertaining to 4,886 unique executives in 589 distinct S&P1500 firms (operating in 56 distinct two-digit SIC codes) with non-missing executive bonus vesting formulas, compensation details and firm characteristics between 2006 and 2019. All models include firm and year fixed effects and report t-statistics in parentheses based on clustered standard errors at the executive level. \*\*\*, \*\*, \* indicate significance levels at 0.01, 0.05, 0.10, respectively. All variables are defined in the text.

	Panel A: Effect of industry compensation peers		
	I Ln(E Metrics +1)	II Ln(S Metrics +1)	III Ln(G Metrics +1)
<b>Industry Violations:</b>			
$\Sigma(E \text{ Violations})_{t-1}$	0.012 ( 4.34) ***	--	--
$\Sigma(E \text{ Violations})_{t-1} * E\text{-Peers}_{t-1}$	0.047 ( 2.95) ***		
$\Sigma(S \text{ Violations})_{t-1}$	--	0.005 ( 1.09)	--
$\Sigma(S \text{ Violations})_{t-1} * S\text{-Peers}_{t-1}$	--	0.091 ( 5.33) ***	
$\Sigma(G \text{ Violations})_{t-1}$	--	--	-0.009 (-0.72)
$\Sigma(G \text{ Violations})_{t-1} * G\text{-Peers}_{t-1}$	--		-0.039 (-1.31)
$\Sigma(\text{Outside-Ind Violations})_{t-1}$	-0.002 (-0.06)	-0.056 (-0.63)	-0.011 (-0.02)
<b>Governance Pressures:</b>			
E-Peers <sub>t-1</sub>	0.152 ( 1.74) *	--	--
S-Peers <sub>t-1</sub>	--	0.087 ( 2.14) **	--
G-Peers <sub>t-1</sub>	--	--	0.067 ( 1.35)
<b>Executive:</b>			
CEO <sub>t</sub>	0.000 ( 0.11)	0.003 ( 0.64)	0.001 ( 0.39)
Non-CEO Corp <sub>t</sub>	-0.001 (-0.36)	0.000 ( 0.10)	0.003 ( 1.85) *
Non-CEO Other <sub>t</sub>	--	--	--
Ln(Tenure) <sub>t</sub>	-0.000 (-0.48)	-0.001 (-0.45)	-0.001 (-0.51)
%ExpPayout <sub>t</sub>	0.000 ( 0.05)	-0.031 (-3.01) ***	-0.029 (-3.66) ***
<b>Firm:</b>			
Size <sub>t-1</sub>	-0.011 (-4.34) ***	-0.014 (-2.50) **	-0.001 (-0.04)
BM <sub>t-1</sub>	-0.020 (-1.96) **	-0.015 (-1.04)	0.006 ( 0.77)
R&D <sub>t-1</sub>	-0.020 (-0.91)	-0.081 (-1.11)	-0.091 (-1.98) **
Capex <sub>t-1</sub>	-0.052 (-2.76) ***	0.178 ( 3.09) ***	0.069 ( 2.23) **
Leverage <sub>t-1</sub>	-0.031 (-3.31) ***	-0.022 (-1.49)	-0.023 (-2.13) **
ROA <sub>t-1</sub>	-0.033 (-1.38)	0.009 ( 0.26)	0.028 ( 1.00)
StockReturns <sub>t-1</sub>	0.000 ( 0.01)	0.005 ( 1.21)	-0.013 (-3.32) ***
SD(StockReturns) <sub>t-1</sub>	0.001 ( 0.09)	-0.128 (-2.78) ***	-0.013 (-0.38)
Diversified <sub>t-1</sub>	-0.006 (-1.24)	-0.016 (-1.67) *	-0.016 (-2.32) **
Ln(BoardSize) <sub>t-1</sub>	0.001 ( 0.12)	-0.026 (-1.47)	-0.013 (-0.89)
% OutDirs <sub>t-1</sub>	0.009 ( 0.75)	0.122 ( 4.02) ***	-0.005 (-0.44)
% InstOwn <sub>t-1</sub>	0.005 ( 0.68)	0.073 ( 3.34) ***	0.051 ( 3.71) ***
% OtherBoards <sub>t-1</sub>	0.025 ( 3.46) ***	0.013 ( 0.78)	-0.001 (-0.14)
Firm FE	YES	YES	YES
Year FE	YES	YES	YES
N	13,085	13,085	13,085
Adj. R <sup>2</sup>	0.559	0.614	0.498

**Table 11 – cont'd**

<b>Panel B: Effect of industry shareholder proposals</b>						
	I		II		III	
	Ln(E Metrics +1)		Ln(S Metrics +1)		Ln(G Metrics +1)	
Industry Violations:						
$\Sigma(E \text{ Violations})_{t-1}$	0.020	( 4.74)	***	--	--	--
$\Sigma(E \text{ Violations})_{t-1} * E\text{-Proposals}_{t-1}$	0.005	( 3.07)	***	--	-	--
$\Sigma(S \text{ Violations})_{t-1}$	--		0.010	( 2.18)	**	--
$\Sigma(S \text{ Violations})_{t-1} * S\text{-Proposals}_{t-1}$	--		0.008	( 3.27)	***	--
$\Sigma(G \text{ Violations})_{t-1}$	--		--		-0.018	(-1.70)
$\Sigma(G \text{ Violations})_{t-1} * G\text{-Proposals}_{t-1}$	--		--		0.007	( 2.16)
$\Sigma(\text{Outside-Ind Violations})_{t-1}$	0.041	(1.14)		-0.076	(-0.82)	-0.062
Governance Pressures:						
E-Proposals <sub>t-1</sub>	-0.004	(-2.29)	**	--	--	--
S-Proposals <sub>t-1</sub>	--		0.007	( 1.19)	--	--
G-Proposals <sub>t-1</sub>	--		--		-0.003	(-1.08)
Executive:						
CEO <sub>t</sub>	0.000	( 0.18)		0.002	( 0.59)	0.001
Non-CEO Corp <sub>t</sub>	-0.001	(-0.30)		-0.000	(-0.02)	0.003
Non-CEO Other <sub>t</sub>	--		--		--	--
Ln(Tenure) <sub>t</sub>	-0.000	(-0.42)		-0.001	( 0.50)	-0.001
%ExpPayout <sub>t</sub>	-0.001	(-0.08)		-0.037	(-3.55)	***
Firm:						
Size <sub>t-1</sub>	-0.010	(-3.82)	***	-0.013	(-2.31)	**
BM <sub>t-1</sub>	-0.017	(-1.67)	*	-0.010	(-0.67)	0.006
R&D <sub>t-1</sub>	-0.028	(-1.17)		-0.127	(-1.72)	*
Capex <sub>t-1</sub>	-0.044	(-2.42)	**	0.227	( 3.80)	***
Leverage <sub>t-1</sub>	-0.032	(-3.41)	***	-0.032	(-2.10)	**
ROA <sub>t-1</sub>	-0.031	(-1.25)		0.005	( 0.12)	0.027
StockReturns <sub>t-1</sub>	-0.000	(-0.10)		0.004	( 1.12)	-0.013
SD(StockReturns) <sub>t-1</sub>	-0.002	(-0.14)		-0.112	(-2.40)	**
Diversified <sub>t-1</sub>	-0.007	(-1.44)		-0.021	(-2.36)	**
Ln(BoardSize) <sub>t-1</sub>	0.000	( 0.02)		-0.030	(-1.68)	*
% OutDirs <sub>t-1</sub>	0.011	( 0.88)		0.120	( 3.78)	***
% InstOwn <sub>t-1</sub>	0.008	( 1.05)		0.095	( 4.33)	***
% OtherBoards <sub>t-1</sub>	0.026	( 3.47)	***	0.008	( 0.47)	-0.001
Firm FE		YES		YES		YES
Year FE		YES		YES		YES
N		13,085		13,085		13,085
Adj. R <sup>2</sup>		0.549		0.606		0.498

**Table 11 – cont'd**

Panel C: Effect of industry media coverage						
	I		II		III	
	Ln(E Metrics +1)		Ln(S Metrics +1)		Ln(G Metrics +1)	
Industry Violations:						
$\Sigma(E \text{ Violations})_{t-1}$	0.017	( 4.67)	***	--	--	--
$\Sigma(E \text{ Violations})_{t-1} * E\text{-Media}_{t-1}$	0.018	( 4.99)	***	--	-	--
$\Sigma(S \text{ Violations})_{t-1}$	--		0.014	( 3.09)	***	--
$\Sigma(S \text{ Violations})_{t-1} * S\text{-Media}_{t-1}$	--		0.012	( 2.62)	***	--
$\Sigma(G \text{ Violations})_{t-1}$	--		--		-0.059	(-4.17)
$\Sigma(G \text{ Violations})_{t-1} * G\text{-Media}_{t-1}$	--		--		0.070	( 4.78)
$\Sigma(\text{Outside-Ind Violations})_{t-1}$	0.001	( 0.02)		-0.115	(-1.25)	-0.488
Governance Pressures:						
E-Media <sub>t-1</sub>	-0.000	(-0.18)		--	--	--
S-Media <sub>t-1</sub>	--		0.005	( 0.81)	--	--
G-Media <sub>t-1</sub>	--		--		-0.001	(-0.37)
Executive:						
CEO <sub>t</sub>	0.000	( 0.10)		0.003	( 0.64)	0.001
Non-CEO Corp <sub>t</sub>	-0.001	(-0.39)		0.000	( 0.02)	0.004
Non-CEO Other <sub>t</sub>	--		--		--	--
Ln(Tenure) <sub>t</sub>	-0.000	(-0.32)		-0.001	(-0.58)	-0.001
%ExpPayout <sub>t</sub>	-0.001	(-0.16)		-0.036	(-3.45)	***
Firm:						
Size <sub>t-1</sub>	-0.012	(-4.28)	***	-0.013	(-2.27)	**
BM <sub>t-1</sub>	-0.018	(-1.84)	*	-0.010	(-0.66)	0.007
R&D <sub>t-1</sub>	-0.038	(-1.54)		-0.112	(-1.51)	-0.105
Capex <sub>t-1</sub>	-0.051	(-2.69)	***	0.225	( 3.76)	***
Leverage <sub>t-1</sub>	-0.034	(-3.61)	***	-0.029	(-1.92)	*
ROA <sub>t-1</sub>	-0.036	(-1.43)		0.005	( 0.13)	0.022
StockReturns <sub>t-1</sub>	0.001	( 0.49)		0.004	( 1.14)	-0.013
SD(StockReturns) <sub>t-1</sub>	-0.005	(-0.29)		-0.105	(-2.24)	**
Diversified <sub>t-1</sub>	-0.007	(-1.35)		-0.021	(-2.36)	**
Ln(BoardSize) <sub>t-1</sub>	-0.000	(-0.01)		-0.028	(-1.58)	-0.014
% OutDirs <sub>t-1</sub>	0.014	( 1.16)		0.123	( 3.86)	***
% InstOwn <sub>t-1</sub>	0.004	( 0.55)		0.097	( 4.40)	***
% OtherBoards <sub>t-1</sub>	0.026	( 3.54)	***	0.007	( 0.42)	-0.002
Firm FE		YES		YES		YES
Year FE		YES		YES		YES
N		13,085		13,085		13,085
Adj. R <sup>2</sup>		0.552		0.606		0.500