

Does ESG-linked Executive Compensation Improve Responsible Sourcing?

by

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Author's Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

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Abstract

With the rising importance of firms' environmental, social, and governance (ESG) performance, an increasing number of firms have adopted ESG-linked compensation that ties managers' compensation to the firms' ESG performance. Responsible sourcing is an important dimension of firms' ESG engagement. In this thesis, I investigate whether firms' adoption of ESG-linked compensation improves their responsible sourcing. To construct my sample, I identify customer-supplier relationships between 2010 and 2020 from FactSet Revere, and firms' use of ESG-linked compensation from ISS Incentive Lab. Using a staggered difference-in-difference design, I find limited evidence that customer firms' adoption of ESG-linked compensation affects supplier firms' ESG performance, regardless of the length of customer-supplier relationships. Cross-sectionally, I find some weak evidence that customer firms' adoption of ESG compensation leads to improved ESG performance amongst their large suppliers, suppliers with greater market share, and customers in the manufacturing industries. However, customer firms do not exhibit a greater tendency to terminate their low-ESG performance suppliers. My study extends the ESG literature by examining the effect of ESG-linked compensation on responsible sourcing, a specific dimension that is part of firms' overall ESG performance. My findings imply that stakeholders need to find alternative ways to promote responsible sourcing practices due to the limited effect of customer firms' ESG-linked compensation on supplier firms' ESG performance.

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Chapter 1

Introduction

In recent years, firms are placing an increasing amount of emphasis on environment, social, and governance (ESG) aspects along the supply chain, often known as responsible sourcing.¹ Prior literature documents that suppliers' ESG is important to customers' supplier selection (Dai, Liang, & Ng, 2021; Darendeli, Fiechter, Hitz, & Lehmann, 2022) and financial risk (Chen, Karim, & Tao, 2021), making suppliers' ESG performance a non-trivial consideration by customers in a customer-supplier relationship. There has been the expectation society-wide that customer firms should be more responsible in their sourcing. How can firms more effectively motivate their managers to improve ESG along their supply chains? Given the increasing trend of firms implementing ESG-linked compensation that explicitly ties part of executives' pay to a firm's ESG performance (Cohen, Kadach, Ormazabal, & Reichelstein, 2022; Hong, 2017; Philipova, 2020), this thesis examines whether customer firms' use of ESG-linked executive compensation improves their responsible sourcing, as revealed by their supplier firms' ESG performance.^{2 3}

Responsible sourcing is an essential component in firms' overall ESG performance. Anecdotally, public medias increasingly hold firms accountable for irresponsible sourcing (Albergotti, 2019; Cowley, 2018; Smith, 2016). For example, Foxconn, one of Apple's major suppliers, sparked public outcries following a series of suicide cases involving its assembly line workers (Merchant, 2017). Firms' sourcing practices are also captured by commercial ESG databases. For example, Refinitiv reports whether firms have environmental and human rights

¹ Scholarly work in this area use phrases *corporate social responsibility (CSR)* and *ESG* interchangeably due to their overlap (Gillan, Koch, & Starks, 2021). For simplicity, I use *ESG* throughout this paper.

² For example, some well-known firms such as Apple and Chipotle have generated headlines for adopting this pay structure for the first time in 2021 (Lucas, 2021; E. Rosenbaum, 2021).

³ Supplier firms may also have their own ESG-linked executive compensation, which potentially affects their ESG performance. This study focuses on the effect stemming from customer firms that are in addition to any existing incentives at supplier firms.

criteria in supplier selection or monitoring processes (Refinitiv, 2022). Extant empirical studies on suppliers' ESG primarily find that customer firms take supplier firms' ESG performance into consideration when choosing which supplier to work with, including the initiations and terminations of customer-supplier relationships (Dai et al., 2021; Darendeli et al., 2022). These examples suggest that responsible sourcing is gaining importance among the general public, practitioners, and researchers.

The most distinguishing feature of ESG-linked executive compensation is the explicit link between firms' ESG performance and managers' financial outcome, which likely increases the prominence and priority of ESG initiatives on firms' agenda. So far, a prevailing assumption is that because executives receive stock-based compensation, they are motivated to mitigate risks that can be detrimental to firm value, such as reputation risk transferred from suppliers. This suggests that executives have incentives to work with suppliers with good ESG performance. However, anecdotal evidence in firms' proxy statements suggests that shareholders are partially driving the trend by demanding ESG-linked compensation.⁴ Firms' recent move alludes to the concern that existing incentives, such as stock-based compensation that implicitly ties executives' pay to firms' ESG performance through stock price, fail to sufficiently motivate executives' effort in this regard.

As responsible sourcing is a non-trivial component of firms' broad ESG effort, firms take suppliers' ESG performance into consideration when selecting their supply partners (Govindan, Shankar, & Kannan, 2018). ESG-linked compensation could allow managers' effort in improving responsible sourcing to work in their financial interest, therefore better aligning managers' and firms' interest. I hypothesize that supplier firms' ESG performance improves after their customer

⁴ See Appendix 3 for an excerpt from the proxy statement of Centerpoint Energy Inc. (2021)

firms adopt ESG-linked executive compensation, relative to supplier firms whose customer firms do not use ESG-linked compensation. The underlying rationale is that, as actions taken by parties in a customer-supplier relationship are not unilateral, there may be cases where customer firms could exert pressure on their suppliers (Dai et al., 2021), and the effectiveness of the pressure should be affected by their bargaining power. In addition to testing my baseline hypothesis, I also conduct conditioning analyses based on supplier firms' relative bargaining power proxied by their market shares and the length of customer-supplier relationships. Therefore, I hypothesize that 1) the effect of customer firms' ESG-linked compensation on supplier firms' ESG performance is weaker when supplier firms have stronger bargaining power such as the power proxied by their greater market share, and 2) the effect is stronger when customer firms have stronger bargaining power such as the power proxied by the length of customer-supplier relationships.

To test my hypotheses, I start with U.S. customer and supplier firms covered by FactSet Revere between 2010 and 2020. For each customer-supplier-year combination, I search for keywords related to customer firms' use of ESG-linked executive compensation in ISS Incentive Lab, a database that collects executive compensation information from firms' proxy statements filed with the SEC. Other variables are collected from Execucomp, Refinitiv, and Compustat. As a validation of my measures against prior literature, I first model the determinants of firms' use of ESG-linked executive compensation. For testing my main hypothesis, I use a staggered difference-in-difference model to test the effect of customers' ESG-linked compensation on suppliers' ESG performance. I then conduct a series of robustness checks and additional tests to analyze the mechanisms underlying the relation between ESG-linked compensation and supplier firms' ESG performance using alternative empirical models and proxies. Endogeneity is a concern in my setting since firms' adoption of ESG-linked compensation is not exogenous, and it could be

affected by firms' prior ESG performance and other financial characteristics. As a remedy, I use a two-stage least square approach and include the inverse Mills ratio derived from the determinant model of firms' use of ESG-linked compensation in additional test.

According to the univariate analysis, around 14% of customer firm-years and 7% supplier firm-years in my sample adopt ESG-linked executive compensation. In pairwise correlation analysis, I find that for both customer firms and supplier firms, those having greater assets and higher ESG performance in the previous year are more likely to adopt ESG-linked executive compensation. I conduct multivariate regression analyses with multiple models. In the baseline model, I find that supplier firms' ESG scores increase after customer firms' adoption of ESG-linked compensation. But after controlling for supplier size, the results on my baseline hypothesis (H1) are largely insignificant. When I divide my sample into terciles based on supplier firms' total assets, I find a significantly positive effect of customer firms' ESG-linked compensation on their supplier firms' ESG performance. However, the effect is mostly driven by supplier firms' size, since the effect becomes insignificant after controlling for supplier firms' total assets. Overall, the empirical test results are inconsistent with my H1. I also test my conditioning hypotheses (H2a and H2b) to examine whether this effect differs by supplier firms' market share and the length of customer-supplier relationships, which can affect their relative bargaining power in a customer-supplier relationship. I find that the effect of customer firms' ESG-linked compensation is slightly more positive on supplier firms' ESG performance for suppliers with a large market share, contrary to my H2a. I also find that the length of customer-supplier relationships does not moderate the effect of customer firms' adoption of ESG-linked compensation on supplier firms' ESG performance, inconsistent with my H2b.

I conduct a series of robustness checks and additional tests. I find that following customer

firms' adoption of ESG-linked compensation, supplier firms with both high and low ESG scores do not significantly differ from each other in terms of facing a relationship termination after adoption. I then test the potential mechanisms through which customer firms can improve their responsible sourcing. The results show that continuing and terminated supplier firms' ESG performance does not differ significantly. Further, new suppliers' ESG performance does not differ significantly between before and after customer firms' adoption of ESG-linked compensation. I conduct industry analysis to examine whether adoption of ESG-linked compensation affects firms differently depending on their industry membership. I find that for customer firms in manufacturing industries, their adoption of ESG-linked compensation has a significantly positive effect on supplier firms' ESG performance. However, this effect is insignificant regardless of whether a customer firm is in a consumer-facing industry. I also use propensity score matching, entropy balancing, and two-stage least squares approach with the inverse Mills ratio included to address self-selection concerns in my setting. These tests are important because firms' decisions to adopt ESG-linked compensation are not random, whose underlying considerations may also affect their sourcing practices. Tests using the three approaches yield insignificant results. Further, I replace the dependent variable – overall ESG scores with environmental and social pillar scores and reconduct my main tests. The coefficients on the key variables remain statistically insignificant throughout these tests. Last but most surprisingly, I find that after adopting ESG-linked compensation, customer firms are not more likely (and even less likely) to implement policies related to responsible sourcing and supply chain management at their own firms. This finding echoes the main results and implies that ESG-linked compensation fails to adequately motivate managers to devote resources to responsible sourcing.

Overall, my results show consistent evidence that the effect of customer firms' ESG-linked

compensation on their supplier firms' ESG performance is limited. And notably, firm size is one of the drivers behind supplier firms' ESG performance. Surprisingly, despite the increasing adoption of ESG-linked compensation by firms in the recent decade, the results point to the conclusion that such move fails to improve firms' responsible sourcing.

I contribute to the literature in a few ways. First, prior studies find that ESG-linked executive compensation improves firms' own overall ESG performance (Derchi, Zoni, & Dossi, 2021; Flammer, Hong, & Minor, 2019; Maas, 2018; Merriman & Sen, 2012; Radu & Smaili, 2021). My study extends this literature by examining a new form of financial incentives that can potentially improve ESG performance of firms' supply partners beyond the focal firm.⁵ Specifically, my research aims to provide first-hand insight into the effect of ESG-linked compensation on one important aspect of focal firms' ESG performance, namely, focal firms' responsible sourcing, by examining the effect of their executives' ESG-linked compensation incentives on their suppliers' ESG performance. My finding suggests that despite the push for better responsible sourcing from stakeholders society-wide, such as consumers, medias, and regulators, linking executive compensation to firms' own ESG performance has limited effect. Second, prior studies (Ikram, Li, & Minor, 2019; Maas, 2018; Radu & Smaili, 2021) do not adequately control for the determinants of firms' use of ESG-linked compensation. This leaves the results open to concerns over self-selection, since firms' decision to implement ESG-linked compensation is not exogenous. I extend the literature by implementing a staggered difference-in-difference design, in addition to propensity score matching and entropy balancing in testing my hypotheses. Moreover, my thesis opens up future research opportunities on the relation between

⁵ While it is possible to gain insights into how customers may influence suppliers' ESG performance based on the results (e.g., higher suppliers' ESG score or termination of relationship with low-ESG suppliers), this study does not intend to make causal claims on specific mechanisms.

corporate ESG engagement and firm value. Given my findings that ESG-linked compensation does not improve firms' responsible sourcing and even reduces firms' likelihood to implement policies related to responsible sourcing, future studies may investigate ESG-linked compensation more closely to gain better understanding on firms' motivations and this compensation scheme's other impact.

In addition, my study is important for understanding how ESG-linked compensation affects firm behaviour along the supply chain for various groups of stakeholders such as shareholders, investors, and regulators. As suppliers' ESG exposes customer firms to reputation risk, firms need to assure shareholders that their executive pay provides effective incentives for managers to manage firms' exposure to ESG risk along the supply chain. My study shows that ESG-linked compensation has limited effect in mitigating ESG issues in sourcing despite its increasing use, and highlights its limitations in improving firms' responsible sourcing. More importantly, this would motivate corporate managers and procurement teams to find better alternatives to improve firms' responsible sourcing, such as stronger incentives. Further, investors may be interested in this study. Recent findings suggest that many ESG funds fail to achieve their financial and ESG objectives, raising concerns over corporate greenwashing (Raghunandan & Rajgopal, 2021). This study provides another piece of evidence in line with these findings, and prompts investors to rethink the funds' portfolio screening strategies. Lastly, the SEC recently voiced concerns pertaining to ESG investment products on the market, such as misleading marketing and the lack of monitoring (United States Securities and Exchange Commission, 2021). My findings may offer regulators a better understanding of firms' ESG incentives, which could improve their oversight over self-proclaimed ESG funds and firms' ESG reporting.

The rest of my thesis is organized as follows: Chapter 2 reviews pertinent literature, Section

3 presents my hypotheses, Section 4 outlines my research design, Section 5 presents empirical tests, Section 6 presents additional tests. Lastly, Section 7 concludes this study.

Chapter 2

Literature Review

2.1 Introduction

This chapter reviews prior literature that is relevant to my thesis. Section 2.2 reviews ESG literature and responsible sourcing in the context of customer-supplier relationships. It also discusses firms' potential motivation behind responsible sourcing. Section 2.3 discusses prior literature on ESG-linked executive compensation, which is the main focus of my thesis. This section reviews firms' motivation for adopting ESG-linked compensation, as well as its effect. Section 2.4 concludes this chapter.

2.2 ESG and Responsible Sourcing

Since Milton Friedman's (1970) claim that "the social responsibility of business is to increase its profits" (p. 17), researchers have investigated firms' motivations for ESG engagements that seemingly contradict the objective function of profit maximization. One motivation is ESG's potential positive effect on firm value. In a literature review article, Beurden and Gossling (2008) document that firms' ESG engagement has a mixed effect on firm value, with some studies finding a positive effect while some observing no effect. One strand of the literature takes a risk mitigation view and argues that ESG helps preserve firm value. Godfrey et al. (2009) draw the analogy of insurance and argue that firms accrue goodwill through ESG effort. Under this view, firms' ESG initiatives are among a variety of risk mitigation efforts to reduce their exposure to idiosyncratic risk, so that firms are penalized less upon the occurrence of negative events. They document that firms with greater ESG engagement suffer less from firm-specific negative events, such as lawsuits and regulatory sanctions. Similarly, Rahman et al. (2022) find that corporate citizenship reputation, such as high ESG performance, reduces the investors' negative reaction to firms' accounting

restatement news. Beyond firm-specific negative events, ESG engagement also shields firms from economy-wide negative events, such as financial crisis. During the 2008-2009 financial crisis, firms' ESG performance (referred to as *social capital*) engenders trust between firms and shareholders, allowing firms with a high level of investor trust to enjoy higher stock returns and better access to financing (Lins, Servaes, & Tamayo, 2017). These examples are consistent with the notion of insurance and suggest that ESG engagement affords firms a buffer against catastrophic events. In fact, this strategy implies a positive impact on firms' long-term profitability, despite its short-term costs.

Among a variety of ESG initiatives undertaken by firms, responsible sourcing is a subset and refers to "the compliance of suppliers with environmental and social standards" (Zarei, Rasti-Barzoki, & Moon, 2020, p. 1). It is sometimes known as green supply chain, sustainable farming, and fair trade in some industries. Responsible sourcing not only protects firms' reputation by reducing the risk of negative publicity and consumer boycotts, but also enhances firms' reputation (Govindan et al., 2018; Hoejmose, Roehrich, & Grosvold, 2014; Homburg, Stierl, & Bornemann, 2013). In a survey of managers at small and medium-sized enterprises in the UK, respondents report pressure from their customers on both environmental and social performance (Baden, Harwood, & Woodward, 2009). In addition to acknowledging the importance of environmental and social engagement, some managers point out that ESG strengths are firms' competitive advantages and a tool to access more business opportunities, because an increasing number of firms impose ESG requirements when choosing their suppliers. This makes ESG initiatives a necessity to overcome the barrier of entry. In return, responsible sourcing enhances customer loyalty (Homburg et al., 2013).

On the contrary, irresponsible sourcing hurts firms' reputation, and firms can pay a hefty

price for it (Hoejmose et al., 2014; Seuring & Müller, 2008; Yawar & Seuring, 2017). Consistent with responsible sourcing being a risk mitigation strategy used by customers, suppliers with low ESG performance face a decline in business, such as reductions in new contracts and new customers (Darendeli et al., 2022). Moreover, the market seems to price suppliers' poor ESG performance in customers' stock valuation (Chen et al., 2021). End consumers are concerned about responsible sourcing, such as environmental impact, treatment of animals, and issues related to human rights (Dolan, 2005). For retail firms, consumers are powerful as they make the ultimate purchasing choices of firms' end products, which directly determine firms' revenue. Consumers in aggregate also possess the power of boycotting, an extreme and collective measure that imposes substantial cost on firms involved (Guo, Lee, & Swinney, 2016).

Overall, this literature suggests that corporate ESG performance is playing an increasingly vital role in value creation and business success. More importantly, ESG engagement enhances firm value. Despite the importance of responsible sourcing among the various ESG initiatives, prior accounting literature has limited discussion on how firms motivate their executives to improve responsible sourcing, and more importantly, the effect. My study attempts to bridge this gap.

2.3 ESG-linked Executive Compensation

ESG-linked executive compensation, also known as ESG/CSR-contingent pay, is a pay scheme that ties part of executives' compensation to firms' ESG performance. U.S. public firms are required to file proxy statements on an annual basis in which they discuss compensation contracts of top executives and directors in detail. Some firms disclose ESG metrics in top executives' and director's compensation contracts. The existing literature on ESG-linked executive compensation primarily relies on agency theory. Agency theory argues that the separation of

ownership and control can lead to inefficient contracting, under which managers fail to work in shareholders' best interest (Grossman & Hart, 1980; Jensen & Meckling, 1976). Extending agency theory to include other stakeholders in addition to shareholders, some studies examine the determinants of firms' use of ESG-linked compensation (e.g., industry membership), the criteria involved (e.g., time horizon and use of hard numbers), and how it affects firms' own ESG performance (Berrone & Gomez-Mejia, 2009; Habib & Bhuiyan, 2017; Ikram et al., 2019; Z. (Frank) Li & Thibodeau, 2019; Maas, 2018; Maas & Rosendaal, 2016; Radu & Smaili, 2021). This stream of the literature argues that ESG-linked compensation motivates managers' devotion to corporate ESG engagement through greater monetary incentives and improves contracting efficiency (Berrone & Gomez-Mejia, 2009; Ikram et al., 2019; Maas, 2018; Maas & Rosendaal, 2016; Radu & Smaili, 2021).

Prior studies generally find a positive effect of ESG-linked executive compensation on firms' future ESG performance (Berrone & Gomez-Mejia, 2009; Ikram et al., 2019; Maas, 2018; Radu & Smaili, 2021). However, among these studies, some do not adequately control for the determinants of firms' use of ESG-linked compensation. This leads to the concern that changes in firms' ESG performance could be driven by firm characteristics that also affect firms' likelihood to implement ESG-linked compensation. For example, Radu and Smaili (2021) model the effect of ESG committee on firms' propensity to offer ESG-linked compensation. Their model does not control for firms' prior ESG performance, lending support to the alternative explanation that firms with pre-existing good ESG performance are more willing to showcase their ESG accomplishments. Maas's (2018) model does not control for other components in managers' compensation packages, leading to the concern that other components, such as stock compensation, might be the incentive behind firms' ESG effort.

A related question is why firms use ESG-linked compensation despite stock-based compensation being a common tool to align managers' interest with that of shareholders.⁶ It is worth noting that financial performance is noisy, making it an imperfect measure of managers' ESG effort (Flammer et al., 2019; Ikram et al., 2019). Moreover, ESG projects require a long-term orientation and do not generate positive cash flow in the short run (Flammer et al., 2019). As a result, managers may have insufficient incentives to exert effort in ESG with stock-based compensation only, which potentially leads to firms' underinvestment in ESG and exposes firms to greater ESG risk. ESG-linked compensation and stock-based compensation could work in tandem and improve contracting efficiency by better aligning shareholders' and managers' interest.

2.4 Conclusions

This chapter reviews relevant literature on corporate ESG, responsible sourcing, and ESG-linked executive compensation. Section 2.2 discusses the rising importance of corporate ESG engagement and the associated benefits and costs. This section also discusses how responsible sourcing contributes to firms' overall ESG engagement. Section 2.3 discusses ESG-linked executive compensation, a compensation approach that is being increasingly adopted by firms. This section also discusses firms' motivation and the potential determinants of firms' adoption of ESG-linked compensation, and how it affects firms' ESG performance.

Extant literature mostly focuses either on firms' responsible sourcing behaviours and their adoption of ESG-linked executive compensation as separate domains, or on the effect of ESG-linked executive compensation on firms' own overall ESG performance. However, there has been little discussion on how ESG-linked executive compensation affects their sourcing behaviours in

⁶ Firms may also link executive compensation to non-financial performance measures in a broader sense, such as customer retention rates. This paper focuses on ESG-linked criteria exclusively, some of which may overlap with non-financial measures, such as customer satisfaction and employee safety.

particular. My thesis attempts to extend the discussions by investigating how customer firms' adoption of ESG-linked compensation affects their suppliers' ESG performance.

Chapter 3

Hypothesis Development

3.1 Introduction

In Chapter 3, I develop hypotheses in this thesis. In Section 3.2, I discuss how customer firms' adoption of ESG-linked compensation can affect their responsible sourcing behaviours, as reflected by their supplier firms' ESG performance. In Section 3.3, I discuss how supplier firms' bargaining power can potentially affect the relationship between customer firms' adoption of ESG-linked compensation and their suppliers' ESG performance. Section 3.4 summarizes the hypotheses and concludes the chapter.

3.2 ESG-linked Executive Compensation on Suppliers' ESG Performance (H1)

In this section, I discuss how ESG-linked executive compensation of a customer firm can affect its suppliers' ESG performance.

Firms' ESG engagement can help build social capital and serve as a risk mitigation mechanism, which preserves firm value. As discussed previously, firms gain social capital and trust through good ESG performance (Godfrey et al., 2009; Lins et al., 2017). ESG-linked compensation can incentivize managers through monetary compensation contingent on a firm's ESG performance. From an agency theory perspective, as a firm adopts ESG-linked executive compensation, part of its manager's compensation becomes a function of the firm's ESG performance.⁷ Consistent with this conjecture, prior literature generally finds a positive relationship between the use of ESG-linked compensation and firms' own overall ESG performance (Ikram et al., 2019; Maas, 2018; Maas & Rosendaal, 2016).

Responsible sourcing is among the various ESG initiatives that firms can undertake, and

⁷ A firm's ESG performance can also affect its stock price (e.g., ESG scandals), and hence affecting the manager's stock-based compensation. However, this is implicit compared to explicitly contracting on firms' ESG performance.

can be improved by adopting ESG-linked compensation. With the rising importance of responsible sourcing, firms are more exposed to risks from their upstream suppliers' ESG scandals. As ESG engagements offer firms an insurance-like buffer that mitigates future risk (Godfrey et al., 2009; Lins et al., 2017), with ESG-linked compensation, managers have stronger incentives to build this buffer by improving responsible sourcing. More importantly, the general public demands firms' responsible sourcing. For example, there has been an increasing demand for firms' Scope 3 emissions disclosure, which includes the emissions discharged by their upstream suppliers.⁸ The SEC recently proposed standardized climate-related disclosure rules, signalling its emphasis on and attention to suppliers' ESG performance in the near future.⁹

ESG performance along a firm's supply chain is gaining importance among both practitioners and academics. Commercial databases (e.g., Bloomberg) provide ESG metrics on firms' suppliers, making responsible sourcing more salient in investment decision-making. Given that suppliers are an important consideration when assessing a firm's ESG performance (Govindan et al., 2018), managers' effort in improving responsible sourcing potentially translates into better firm ESG performance, which works in managers' financial interest.¹⁰ Customer firms can improve responsible sourcing via multiple ways. First, firms can raise their ESG performance requirement prior to commencing a business relationship with a new supplier. For example, customers can require certification of ESG standard compliance at a supplier firm. Alternatively, customers can screen potential suppliers based on their past ESG performance. Second, diligent monitoring of suppliers' ESG performance during the course of a customer-supplier relationship

⁸ Scope 3 emissions refer to emissions that come from outside of the organization, but indirectly affected by the organization in its value chain (e.g., purchased goods and services) (United States Environmental Protection Agency, n.d., p. 3).

⁹ See <https://www.sec.gov/news/press-release/2022-46>.

¹⁰ While firms can undertake other ESG initiatives either simultaneously or as a substitute for responsible sourcing, the substitutive relationship is beyond the scope of this study.

can help maintain a portfolio of responsible suppliers. Through active monitoring, customers are better able to uncover and resolve ESG concerns at their supplier firms in a timely manner. In case of ESG-related issues that cannot be addressed, customers may choose to terminate their business relationship with the supplier in question to mitigate further risk.¹¹

The arguments above suggest that after customer firms adopt ESG-linked executive compensation plans, their supplier firms' ESG performance should increase. I state my hypotheses in alternative form as follows:

H1: Relative to customer firms that do not use ESG-linked executive compensation, customer firms that adopt ESG-linked executive compensation experience an increase in their supplier firms' ESG performance following the adoption.

My predictions in H1 may not hold due to several possible reasons. ESG-linked compensation is a broad term covering multiple ESG-related issues in addition to responsible sourcing, such as employee safety, workforce diversity, and corporate philanthropy. Under traditional agency theory, firms use financial metrics and goals that are clearly defined (such as earnings per share) to motivate managers. ESG-linked compensation, however, does not have metrics that are as clear and standardized. For example, the discussions on ESG-linked compensation disclosed in firms' proxy statements (examples in Appendix 3) mostly mention the existence of ESG metrics without elaborating on the details. For instance, Apple's proxy statement (Apple Inc., 2022) states that managers' ESG-tied portion of compensation depends on their actions taken to improve "accessibility, education, environment, inclusion and diversity, privacy, and supplier responsibility, and key community initiatives" (p. 39). A potential concern is that this list encompasses several broad areas in the scope of ESG, but fails to establish clear thresholds or

¹¹ In additional analyses, I test the mechanisms mentioned in the discussion of H1.

expectations to hold managers accountable. For example, from Apple's disclosure, it remains unclear how much improvement in supplier responsibility constitutes good ESG performance, the details of its key community initiatives, and the weights of each component in the overall evaluation. As a consequence, the lack of clear directions might disincentivize managers to work on vague topics. In comparison, compensation schemes incorporating conventional financial metrics, such as sales growth or EPS, allow expectations to be clearly defined and communicated prior to the assessment periods, such as a 5% sales growth or a positive EPS. This potentially enables managers to better plan ahead and exert effort accordingly.

Moreover, conventional agency theory may not be fully applicable to ESG-linked compensation. As investors, shareholders purchase public companies' shares to seek financial returns. The shareholders elect a board of directors, who set up performance-based incentives that tie managers' compensation to certain business performance metrics. The underlying assumption is that managers may not have innate motivation to exert effort in shareholders' interest (Jensen & Meckling, 1976). But with performance-based incentives, the managers have greater incentives to work hard in the shareholders' best interest, since the managers receive financial compensation in return for good performance. This helps align managers' and shareholders' financial interest. However, there are two considerations that potentially complicate the applicability of agency theory in the context of ESG-linked compensation. First, ESG may not be important enough to shareholders. It is worth noting that corporate ESG activities differ from firms' normal profit-generating activities in that the former may not yield the highest financial returns. In spite of the calls from multiple stakeholders to hold managers accountable for firms' ESG performance, it is likely that this objective has to give way to objectives with higher priority, such as profit generation for shareholders. In this case, because managers are not required to act in the interest of non-

shareholder stakeholders, there is little agency problem between managers and shareholders. Consequently, ESG-linked compensation is not expected to serve as means of motivation. Second and relatedly, the stakeholders of corporate ESG activities include but go beyond shareholders. Specifically, ESG engagement targets the environment and society more than the firms' shareholders, bringing potential benefits to a broader group of stakeholders. This is inconsistent with the assumption in agency theory that managers are not innately motivated to act in owners' best interest. Instead, managers may already be innately motivated to improve firms' ESG performance even in the absence of financial compensation tied to ESG. This means that an explicit ESG-linked compensation may not increase managers' effort in ESG, leading to a lack of observed improvements in firms' ESG performance.

It is also possible that the actual amount of compensation affected by firms' ESG performance is too trivial to have a material impact on managers' behaviours. Under the current disclosure requirements, firms are not obliged to report managers' compensation that is linked to individual metrics, and very few firms disclose the percentage of managers' compensation tied to firms' ESG performance. Even among firms that do, the at-risk portion is small compared to managers' total compensation. For example, according to Apple's proxy statement (Apple Inc., 2022), in 2021, CEO Tim Cook received \$12 million in cash incentives that were subject to a 10% upward or downward adjustment based on Apple's ESG criteria. This means that the total dollar amount that is tied to ESG is \$1.2 million, accounting for only 1.2% of his total compensation of \$98.7 million. Given the small proportion of ESG-linked compensation out of managers' total compensation, it is quite possible that the monetary incentives are too weak to motivate corporate managers and translate into real effort in ESG activities.

In addition, ESG projects are often long-term oriented, requiring upfront investments that

will increase firm value in the long term (Flammer et al., 2019). This lack of clarity in metrics combined with the long payback period could lead managers to focus on ESG-related areas that are urgent or most likely to experience improvements at their own firms. They might assign low priority to responsible sourcing and pay less attention to suppliers' ESG practice.

Supplier firms could have no incentives to improve their ESG performance. Firms have incentives to exert effort in a subset of ESG initiatives that are observable, while ignoring those that are unobservable (Wu, Zhang, & Xie, 2020). There have been critiques that firms turn ESG into a box-ticking compliance game (Baden et al., 2009). Specifically, as a customer provides a supplier with explicit ESG demand, the supplier may limit its ESG effort to only those required by its customer for the sole purpose of securing the contract. This could create a ceiling for its ESG expectations. When a customer attempts to push its supplier for better ESG performance, it is possible that the customer offers a list of explicit ESG requirements as a guideline. It could be the case that some, or even all of these requirements are already satisfied by the supplier. In this case, the supplier would not have sufficient incentives to improve its own ESG performance, showing no change in their behaviours. Empirically, this will reduce the chance of observing a change in this particular supplier firm's ESG performance following the customer firm's adoption of ESG-linked executive compensation, making the result of H1 statistically insignificant.

Another possibility is that customers have insufficient incentives to push suppliers with low ESG risk for better ESG performance. For example, some suppliers may have pre-existing high ESG performance prior to customer's adoption of ESG-linked compensation, suggesting less room or need for future improvement in ESG. Allocating resources to squeezing extra ESG performance at these supplier firms may incur high opportunity cost for the customers because the resources could have been spent on other projects. This could further diminish customers' need

for pushing these suppliers for improvement in ESG. In empirical tests, these unincentivized customers and suppliers in the full sample may cause the results of H1 to be muted.

3.3 Suppliers' Bargaining Power on the Relationship between ESG-linked Executive Compensation and Suppliers' ESG Performance (H2a/H2b)

3.3.1 Supplier Firms' Market Share

There are other considerations that potentially moderate the relationship between customer firm's use of ESG-linked executive compensation and suppliers' ESG performance. As discussed earlier, some suppliers may have strong bargaining power (Dai et al., 2021) resulting from large market share or lengthy customer-supplier relationships.

Suppliers' bargaining power can stem from having a large market share. Bauer et al. (2018) document that when a supplier firm reports internal control weaknesses, its market share reduces the likelihood of customer relationship terminations, implying that market share gives firms bargaining power in a customer-supplier relationship. Having a supplier firm dominating the market reduces the redundancy in a customer's supplier pool and increases the customer's economic dependence on a handful of suppliers, making it difficult for a customer to find alternative sources for specialized products. Under resource dependence theory, a customer's lack of resources reduces its power in customer-supplier relationships, making it difficult to impose ESG standards on suppliers. With limited ability to both push the supplier for better ESG performance and find alternative suppliers, the customer can face substantial challenges to improve its responsible sourcing. On the contrary, suppliers with a low market share are more likely to accommodate customers' demand in the interest of retaining customers, because it is easy for the customers to switch to different suppliers. Empirically, this suggests that when a supplier has a larger market share, the relation between customer firms' use of ESG-linked executive

compensation and supplier firms' ESG performance is weaker. I state my H2a in the alternative form.

H2a: The impact of customer firms' use of ESG-linked executive compensation on supplier firms' ESG performance is weaker (stronger) when supplier firms have a larger (smaller) market share.

The opposite is also possible. One can also argue that when a firm has a higher market share, it can face higher cost of negative publicity due to stakeholders' attention. Trying to avoid costly reputation damages, these firms could take a proactive approach in working with their suppliers to address ESG concerns, such as accommodating customer firms' request to improve their ESG performance. This suggests that when a supplier's market share is greater, supplier firms' ESG performance is stronger.

3.3.2 The Length of Customer-supplier Relationships

The duration of customer-supplier relationships can also affect the two parties' bargaining power (D. T. Brown, Fee, & Thomas, 2009; Krolikowski & Yuan, 2017). A long-lasting business relationship between a customer firm and a supplier firm makes both parties reliant on each other. The mutual dependence could foster a strong economic tie that potentially puts one or more parties in a vulnerable position.

On the one hand, the customer firm may have greater bargaining power in a long-lasting relationship with a supplier (D. T. Brown et al., 2009). In the context of responsible sourcing, the customer firm may have certain expectations that might result in burden on the supplier firm. For instance, if a customer firm is concerned about Scope 3 emissions from its supplier, it might ask the supplier firm to implement energy-efficient albeit costly production techniques. To the supplier firm, the long-lasting relationship with the customer might cause the supplier firm to be more willing to accommodate its customer's request, as losing the long-time customer could jeopardize

its business. The customer firm, knowing its supplier is concerned about losing a long-time customer, has greater bargaining power in this case because it would have a higher chance of the supplier firm comply with the demands. In addition, specific investments are another prominent example discussed in prior literature (Chu, Tian, & Wang, 2019). It refers to investments that have no salvage value outside of this business relationship. An example is machinery purposely built for manufacturing specialized products. Chu et al. (2019) document that suppliers often make relationship-specific investments. Because of the equipment's nature, the investing party would suffer financial loss if the other party exits the business relationship. If a longer customer-supplier relationship affords customer firms greater bargaining power, I expect that after customer firms adopt ESG-linked compensation, their relationship duration enhances its effect on supplier firms' ESG performance. I state my H2b in the alternative form.

H2b: The impact of customer firms' use of ESG-linked executive compensation on supplier firms' ESG performance is stronger (weaker) when a customer-supplier relationship is longer (shorter).

On the other hand, a long-lasting customer-supplier relationship could afford the supplier greater bargaining power due to the customer's reliance. To the customer firm, the long-time supplier could be the one possessing efficient or specialized techniques that no other rivals can compete. The loss of the supplier could be detrimental to the customer firm, since searching for a replacement supplier might be costly and difficult. Following a customer firm's adoption of ESG-linked compensation, the customer firm may demand the supplier to increase its ESG engagement. The longer relationship may enable the supplier firm to be more resistant to its customer's requests. Empirically, longer customer-supplier duration weakens the effect of customer firms' adoption of ESG-linked compensation on supplier firms' ESG performance.

In summary, the duration of customer-supplier relationships may affect the effect of

customer firms' adoption of ESG-linked compensation on supplier firms' ESG performance.

3.4 Conclusions

In Chapter 3, I raise two sets of hypotheses that will be discussed further in subsequent chapters. My main hypothesis (H1) predicts a positive relationship of customer firms' adoption of ESG-linked compensation on their supplier firms' ESG performance. My conditioning hypotheses (H2a/H2b) focus on supplier firms' bargaining power, which stems from supplier firms' market share, and the length of customer-supplier relationships. In the first conditioning hypothesis (H2a), I predict that the effect of customer firms' adoption of ESG-linked compensation on supplier firms' ESG performance is weaker when supplier firms' market share is larger. In the second conditioning hypothesis (H2b), I predict that the effect of customer firms' adoption of ESG-linked compensation on supplier firms' ESG performance is stronger with longer customer-supplier relationships.

Chapter 4

Sample Selection and Research Design

4.1 Introduction

Chapter 4 presents my sample selection and research design used to test the hypotheses discussed in Chapter 3. In Section 4.2, I discuss the databases used and steps taken to construct my sample. In Section 4.3, I discuss the empirical approaches, including statistical models used in testing my hypotheses. Lastly, in Section 4.4, I summarize and conclude this chapter.

4.2 Sample Selection

Table 1, Panel A outlines my sample selection steps. To construct my sample of customer firms, I start with 176,266 U.S. customer and supplier firm-years covered by FactSet Revere between 2010 and 2020. FactSet Revere records customer-supplier relationships disclosed by either firm.¹² Customers and suppliers need to be U.S. publicly listed non-ADR firms since these firms are required to disclose information on executive compensation in proxy statements. I choose U.S. firms because they are subject to more stringent disclosure requirements. I then delete 28,246 observations not covered by Compustat, which records the required financial statement data. Consistent with prior literature, I further exclude 48,576 observations with either 1) customer or supplier in financial or regulated industries or 2) having missing financial statement data.

My empirical analysis requires executive compensation data as control variables from Execucomp, which covers S&P 1500 firms. This step reduces my sample by 48,950 observations. I collect data on customer firms' use of ESG-linked executive compensation from ISS Incentive Lab. Incentive Lab collects firms' performance metrics used in executive compensation, as disclosed in the *Compensation Discussion and Analysis* (CD&A) section in firms' proxy

¹² FactSet Revere Relationships records four primary business relationships between two organizations, including customers, suppliers, competitors, and partners.

statements filed with the SEC. Using preconstructed Incentive Lab data allows me to reduce the possibility of having false positives and improve accuracy in my sample.¹³ Compared to textual analysis and hand collection, this approach maximizes my sample size without introducing unnecessary noise that could jeopardize my empirical analyses. I then search for ESG keywords in firms' performance metrics used in executive compensation, consistent with prior literature (Flammer et al., 2019; Ikram et al., 2019; Maas, 2018; Maas & Rosendaal, 2016).¹⁴ This data merging step requires firms to have non-missing CIK, and results in a reduction of 566 observations in my sample.

Finally, I collect ESG measures from Refinitiv. Refinitiv screens firms annually based on a variety of criteria under environmental, social, and governance categories. Both positive and negative screenings are used to evaluate each firm's strengths and controversies, which are subsequently tallied up to derive three pillar scores – environmental, social, and governance. Additionally, Refinitiv calculates an overall ESG score for each firm. Refinitiv ESG database expands its coverage over time, and has a reasonably good coverage for U.S public firms. After deleting 19,215 observations due to missing ESG scores, my final sample contains 30,713 observations with 1,065 unique customer firms and 1,005 unique supplier firms. Out of the 1,065 unique customer firms, 359 are S&P 500 constituents, suggesting that approximately one third of customer firms in my sample are large firms. Among these firms, 208 customer firms and 168 supplier firms have ESG-linked executive compensation, respectively. Out of these 208 adopters, 99 are S&P 500 constituents, suggesting that roughly half of them are large firms.

¹³ Firms often mention ESG keywords in proxy statements that are unrelated to executive compensation. This increases the chance of erroneously labelling firms as having ESG-linked executive compensation. Based on my previous tests, running textual analysis on proxy statements is prone to errors due to the difficulty for the algorithm to precisely locate the start and end of CD&A section.

¹⁴ Appendix 2 lists the keywords used in this step.

I construct a pooled sample for all customer-supplier firm-years with a five-year window requirement.¹⁵ Each five-year window consists of five consecutive years from the second year prior to adopting ESG-linked compensation to the second year after adoption. This approach allows me to design a staggered difference-in-difference test by comparing the pre- and post-adoption supplier ESG performance for the treatment group, i.e., firms that adopted ESG-linked compensation in the sample period, relative to the control group, i.e., firms that never adopted ESG-linked compensation in the sample period. Like Brown et al. (2017), I align the pre- and post-periods of the control group with the pre- and post-adoption years of the treatment group based on rolling five-year windows.

Table 1, Panel B and Figure 1 present the trend analysis of customer firms' adoption of ESG-linked compensation by year. According to Table 1, Panel B, 2010 sees the highest number of customer firms that adopt ESG-linked compensation in my sample, followed by 2015. The rest of the adopting firms in my sample have their transitions spread out throughout my sample window. The curve in Figure 1 shows a smoothly increasing trend – customer firms' adoption of ESG-linked compensation in my sample was gradually increasing up to a total of 20% of my sample firms by 2020.

4.3 Empirical Tests

4.3.1 Empirical Model – Customer Firms' Likelihood of Adopting ESG-linked Compensation

Because my sample does not perfectly overlap with prior literature (e.g., Maas (2018) uses S&P 500 firms), it is possible that firms in my sample have different incentives behind their decisions to adopt ESG-linked compensation. This difference could potentially further alter firms' incentives of responsible sourcing practices.

¹⁵ For clarity, a visual summary of this technique is included in Appendix 4.

Another set of control variables especially pertinent to my study is the individual components in executive compensation. As discussed previously, previous studies generally do not control for these individual components (Ikram et al., 2019; Maas, 2018; Radu & Smaili, 2021), with the exception of Flammer et al. (2019). Prior to firms' adoption of ESG-linked compensation, managers are indirectly motivated to exert effort in ESG. For example, corporate scandals can cause stock price to drop, which reduces the value of managers' stock option holdings. In comparison, ESG-linked compensation gives managers more direct incentives to improve ESG, which reduces the need for indirect motivation on ESG in the form of stock compensation. Moreover, ESG-linked compensation could expose managers to greater uncertainty over their future payoff. As compensation risk increases, managers may offset their risk by demanding more fixed pay (Gipper, 2021). In my empirical analysis, I follow Flammer et al. (2019) and include the proportion of salaries, bonus, and equity-based pay scaled by total compensation to control for shifts in executives' pay mix.

Following prior literature in ESG, executive compensation and supply chain management, I first regress customer firms' likelihood to adopt ESG-linked compensation on firm characteristics as a validation.¹⁶

$$\begin{aligned}
 ESGcomp_t^c = & \beta_0 + \beta_1 ESGscore_{t-1}^c + \beta_2 PayMix_{t-1}^c + \beta_3 ROA_{t-1}^c + \beta_4 SalesGrowth_{t-1}^c \\
 & + \beta_5 TobinQ_{t-1}^c + \beta_6 DE_{t-1}^c + \beta_7 Assets_{t-1}^c + \beta_8 R\&D_{t-1}^c + FE
 \end{aligned}
 \tag{1}$$

$ESGcomp_t^c$ is an indicator variable that equals to one, if a customer firm uses ESG-linked compensation in the sample period, and zero otherwise. To account for the possibility that firms with pre-existing high ESG performance are more likely to adopt ESG-linked compensation, I

¹⁶ See Appendix 1, Panel A for a list of variables and their definitions.

include firms' ESG score from the year immediately preceding the adoption of ESG-linked compensation. The reverse is also possible, because firms with poor ESG performance could have greater incentives to exert effort in ESG. $PayMix_{t-1}^c$ consists of the proportion of salaries, bonuses, stock-based compensation, and total compensation respectively, to control for the differences in firms' compensation practice that potentially affects their likelihood to add ESG criteria.

Consistent with prior literature, I include a group of control variables that are potentially correlated with customer firms' decision to implement ESG-linked compensation.¹⁷ ROA_{t-1}^c is a firm's return on assets in the previous year. This controls for profitability since firms with high profitability are likely to have more resources at their disposal, enabling them to implement more ESG projects. In the same spirit, I control for firms' sales growth over the previous year in alternative specifications. Tobin's Q controls for firms' market value. DE_{t-1}^c is the debt-to-equity ratio of a firm in the previous year. It is possible that highly levered firms have more stringent covenants imposed by lenders, limiting their choices to spend excess capital. $Assets_{t-1}^c$ is the natural log of total assets. Lastly, FE denotes year- and customer industry-fixed effects that could correlate with firms' implementation of ESG-linked compensation. Firms are increasingly using compensation consultants in setting executive compensation (Armstrong, Ittner, & Larcker, 2012; Cadman, Carter, & Hillegeist, 2010; Cho, Hwang, Hyun, & Shin, 2020; Murphy & Sandino, 2020). Compensation consultants possess expertise in the laws governing executive compensation, as well as an understanding of compensation practices tailored to firm-specific scenarios (Cadman et al., 2010). Additionally, their access to superior and proprietary information about compensation practices affords them an edge in providing peer firms' pay practices (Armstrong et al., 2012; Cadman et al., 2010). In my empirical tests, I control for compensation consultant fixed effects.

¹⁷ See Dai et al. (2021), Darendeli et al. (2022), and Flammer et al. (2019).

Standard errors are clustered at customer-firm levels.

4.3.2 Empirical Models – Customer Firms’ Adoption of ESG-linked Compensation and Supplier Firms’ ESG Performance

For my main tests of H1, I use a staggered difference-in-difference design. The model is as follows:¹⁸

$$\begin{aligned}
 ESGscore_t^s = & b_0 + b_1 ESGcomp_t^c + b_2 POSTn^c + b_3 ESGcomp_t^c * POSTn^c + b_4 ESGcomp_t^s \\
 & + b_5 ESGscore_t^c + X^c + X^s + FE
 \end{aligned}
 \tag{2}$$

The dependent variable $ESGscore_t^s$ is a supplier’s ESG score in year t . $ESGcomp_t^c$ is an indicator variable that equals to one if the customer firm has ever used ESG-linked compensation in the sample period (treated), and zero otherwise (control).¹⁹ $POSTn$ is a group of three indicator variables with n (0, 1, and 2) denoting the number of year after the customer firm adopts ESG-linked executive compensation. This variable equals to one for years corresponding to the event year denoted by n (adoption year and each of the two years after adoption), and zero for the first and second years prior to adoption.²⁰ The difference-in-difference estimator, $ESGcomp_t^c * POSTn^c$, captures the incremental effect of the customer firm’s use of ESG-linked compensation after its adoption on the supplier firm’s future ESG performance from the year of adoption to the third year following adoption. If H1 holds, I expect a positive coefficient on $ESGcomp_t^c * POSTn^c$. $ESGcomp_t^s$ denotes a supplier’s use of ESG-linked compensation. This variable is important because improvements in a supplier’s ESG performance may be driven by its own compensation

¹⁸ Appendix 1, Panel A lists the variables included in X^c and X^s .

¹⁹ While firms could start using ESG-linked compensation and then stop offering it later, it is unlikely given the trend in corporate ESG engagement.

²⁰ For example, $n=0$ denotes the year of adoption, $n=1$ denotes the first year following the year of adoption, and $n=2$ denotes the second year following the year of adoption. For an observation representing one year after adoption, $POST0$ equals to zero, $POST1$ equals one, and $POST2$ equals to zero.

policy instead of the customer's influence. $ESGscore_t^c$ is a customer's ESG score in year t . It proxies for the implicit incentives that motivate managers at a customer firm to embrace responsible sourcing, which are independent of ESG-linked components. For example, managers might be pro-ESG and have concerns for their own reputation. X^c and X^s are groups of customer-level and supplier-level control variables as previously defined, respectively.

Equation 2 includes all control variables used in Equation 1. I also control for year- and customer industry-fixed effects, and clusters standard errors at customer-firm level. It is worth pointing out that including CEO compensation at customer firms helps alleviate the concern that incentives provided in non-ESG-linked compensation components are driving the results. If it is ESG-linked components that are incentivizing customer firms to improve their responsible sourcing practice, I expect a positive coefficient on $ESGcomp_{it}^c * POSTn^c$ and insignificant coefficients on customer firms' individual compensation components.

To test H2a and H2b, I split the sample at the median of each conditioning variable, and conduct the regression analysis for each subsample. This approach allows me to test my conditioning hypotheses without having to use a three-way interaction design, which would otherwise impose complexity for result interpretation. There are two conditioning variables: 1) supplier firms' market share, and 2) the length of customer-supplier relationships. Following Bauer et al. (2018), I define market share as the proportion of a supplier firm's total sales divided by the sum of total sales among all firms in the same 2-digit SIC group within the same year. As having a larger market share makes a supplier a dominant player in the market and offers it greater bargaining power, customers are less likely to be able to push their suppliers for better ESG performance. H2a predicts a lower coefficient on $ESGcomp_{it}^c * POSTn^c$ for suppliers with a larger market share. H2b predicts a higher coefficient on the interaction term for customer-supplier

pairs with longer business relationships, as specific investments could make supplier firms more likely to accommodate customer firms' push for better ESG performance.

4.4 Conclusions

This chapter presents my sample selection and empirical approaches for testing my hypotheses in this thesis. Equation 1 models customer firms' likelihood of adopting ESG-linked compensation. Equation 2 tests my main hypothesis (H1) and conditioning hypotheses (H1a and H2b).

Chapter 5

Empirical Analyses

5.1 Introduction

Chapter 5 presents and discusses the results of empirical analyses for testing my hypotheses. Section 5.2 presents univariate analysis results. Section 5.3 presents multivariate analysis results, including tests of my main hypothesis (H1) and two conditioning hypotheses (H2a/H2b). Section 5.4 concludes this chapter.

5.2 Univariate Analysis

Table 2 presents descriptive statistics. All continuous variables are winsorized at 1st and 99th percentiles. Among observations in the sample between 2010 and 2020, 14% customer firm-years and 7% supplier firm-years have ESG-linked compensation, which is lower than 32-40% documented in Maas (2018). One possible reason for this discrepancy is the more restrictive sample of only S&P 500 firms in Maas (2018), whereas my sample includes S&P 1500 firms. Compared to S&P 1500 firms, S&P 500 firms are large-cap firms with more resources that potentially allow them to undertake ESG initiatives.²¹ Most firms in my sample are profitable, leveraged, and have positive sales growth. However, these firms have low research and development (R&D) spending. It is worth noting that firms may choose not to separately report R&D expenses due to proprietary cost (Ellis, Fee, & Thomas, 2012; Y. Li, Lin, & Zhang, 2018), such that the reported R&D expense could understate their actual innovation intensity. In terms of CEO's compensation, salary accounts for only 13-16% of CEO's total compensation, while equity contributes to more than half of the compensation package.

Table 3 presents customer-supplier-year level descriptive statistics by customer firms'

²¹ For reference, the mean of log of assets in Maas (2018) is 24.6, compared to 9.70 (8.76) for customers (suppliers) in my sample.

adoption status of ESG-linked compensation. The rightmost two columns present the differences in mean between the two groups and the p-value of t-tests. For customer firms, those adopting ESG-linked compensation have significantly higher ESG scores than non-adopting counterparts. This includes both overall ESG scores and all three individual ESG pillar scores. ESG controversy score (CONTROscore) exhibits the opposite relationship than the rest of the score variables since it is a reverse measure of firms' ESG performance. However, customer firms' use of ESG-linked compensation does not necessarily mean having high ESG suppliers. According to the table, five out of six score categories of supplier firms are higher for customer firms without ESG-linked compensation. This is surprising since my hypotheses argue that customer firms' with ESG-linked compensation have greater incentives to work with high ESG supplier firms. Further tests will help interpreting the relationship between customer firms' adoption of ESG-linked compensation and their supplier firms' ESG performance. As for firms' financial characteristics, adopting firms tend to be larger, have a greater market share, and are more likely to pay their CEOs a high proportion of equity. Compared to non-adopting counterparts, adopting firms exhibit lower profitability, sales growth, financial leverage, and research development expenses.

Firms' adoption of ESG-linked executive compensation exhibits substantial variation across industries. As shown in Table 4, 45% of customer firms in mining and construction industries (SIC code starts with 1) use ESG-linked compensation, compared to other industries. This observation is consistent with Maas and Rosendaal (2016), who find that firms in dirty industries are more likely to have sustainability targets in executive compensation. Firms in transportation industries have the second highest adoption rate of 22%, while services firms have the lowest adoption rate of 10-14%.

Table 5 presents pairwise Pearson and Spearman correlations among key variables. For

both customer and supplier firms, both ESG score and the adoption of ESG-linked compensation are significantly and positively correlated with firm size. This is consistent with the notion that larger firms have more resources to devote to ESG initiatives, which could help improve their ESG performance. Firms' adoption of ESG-linked compensation is positively correlated with the proportion of equity compensation. This suggests that firms adopting ESG-linked compensation also tend to offer their CEOs a larger portion of risky pay. Similarly, customer firms' ESG performance is negatively correlated with the proportion of CEO's salary, consistent with the argument that risky pay helps motivating managers to exert effort in corporate ESG engagement. The negative correlation between customer firms' use of ESG-linked compensation and supplier firms' ESG performance suggests that at the univariate level, customer firms that adopt ESG-linked compensation tend to have low ESG suppliers.

5.3 Multivariate Analysis

5.3.1 Customer Firms' Likelihood of Adopting ESG-linked Compensation

Tables 6-8 present multivariate analyses. H1 predicts that after customer firms adopt ESG-linked compensation, their suppliers' ESG performance increases more than customer firms without ESG-linked compensation.

As a validation against prior literature, I first conduct a logistic regression that models customer firms' likelihood to adopt ESG-linked compensation on firm characteristics, including ESG score, proportion of salary, bonus, and equity, as well as several financial statement variables. This model also includes year, customer industry, and customer compensation consultant fixed-effects. For this model, I include only customer-year observations from the years preceding the adoption of ESG-linked compensation due to potential reverse causality concerns. Table 6 presents the test results. ESG score is positive but insignificant, suggesting that customer firms' pre-existing

ESG performance does not affect their likelihood to adopt ESG-linked compensation. This finding is consistent with Maas (2018), who documents that firms' ESG score has no significant effect on their decision to have ESG targets in executive compensation. The author also warns that a positive association between firms' use of ESG-linked compensation and improvement in ESG performance may not necessarily be a causal relation. The insignificant effect of firms' ESG scores on their likelihood to adopt ESG-linked compensation could be fueled by the prominent use of compensation consultants, as it partially outsources firms' executive compensation to external parties. Other than ESG scores, Table 6 also shows that the coefficients on firms' log assets are significantly positive. In conjunction with the positive correlation between ESG score and log assets from Table 5, this evidence implies that large firms with greater resources have a higher likelihood of adopting ESG-linked compensation.

5.3.2 Main Tests (H1)

H1 argues that customer firms adopting ESG-linked executive compensation have incentives to work with high ESG suppliers, which could manifest as either pushing their current suppliers to improve their ESG performance or replacing existing suppliers with high ESG ones. This suggests a positive effect of ESG-linked compensation following supplier firms' adoption of ESG-linked compensation. Table 7 presents the main results. In the multivariate regression models, each interaction variable $ESGcomp^C * POSTn$ denotes the incremental effect of ESG-linked compensation on suppliers' ESG performance n years after the adoption. It should be noted that this effect is in comparison to the first and second years prior to the adoption of ESG-linked compensation. In the baseline model (Panel A, Column 1) without control variables,²² customer firms' adoption of ESG-linked compensation has a significant positive effect on supplier firms'

²² This specification does not cluster standard errors by year, customer firm industry, and customer firms' compensation consultant as in other columns.

ESG performance both in the year following adoption and the second year after adoption, with the control for year-fixed effects. However, the R-square in this model is small (0.02), underscoring the need to control for firm characteristics.

In Table 7, Columns 2-3 of Panels A (and Columns 1-2 of Panel B), I repeat the tests with supplier firms' (and customer firms') control variables. These tests include year, customer firm industry, and compensation consultant fixed effects. Additionally, I cluster the standard errors by year, customer firm industry, and compensation consultant to account for potential serial correlation. As shown in Panel A, Column 2, once the model controls for supplier firms' own ESG-linked compensation, CEO compensation mix, and financial characteristics (without firm size), the coefficient on the interaction term $ESGcomp^C * POST2$ remains significant and positive, but the other two are no longer significant. The coefficient on $ESGcomp^S$ is significantly positive, consistent with the findings in prior literature (Flammer et al., 2019; Maas, 2018; Radu & Smaili, 2021) that firms' adoption of ESG-linked compensation improves their own ESG performance. In addition to all variables in Panel A, Column 2, Column 3 controls for supplier firms' total assets which is positively correlated with firms' ESG scores.²³ The jump in R-square from 0.25 in Column 2 to 0.552 in Column 3 suggests that supplier firms' size is highly influential. After including supplier firms' total assets, all three interaction terms become insignificant, suggesting that the weakly positive effect of customers' ESG-linked compensation on suppliers' ESG performance observed in Column 2 may be due to supplier firms' size effect. Column 3 also shows that the proportion of CEO's salary and bonus at the supplier firm is negatively associated with supplier firms' ESG performance. However, the proportion of equity compensation is insignificant on supplier firms' ESG performance. This observation is inconsistent with the argument that equity

²³ In untabulated tests, I repeat the analyses with supplier firms' market share instead of total assets. The results remain qualitatively unchanged.

compensation helps align managers' interest with that of shareholders, which contributes to long-term projects such as ESG initiatives.

Panel B, Columns 1 and 2 include both customers' and suppliers' control variables. The comparison between Panel A, Columns 2/3 and Panel B, Columns 1/2 reveals that the inclusion of customer firms' control variables does not increase the R-square by a large amount (0.25 vs 0.26 and 0.552 vs 0.553). This implies that customer firm characteristics have limited impact on their suppliers' ESG performance, which further echoes the weak main results across Panels A and B.

In previous tests, supplier firms' total assets load significantly and positively on their own ESG performance. To increase test power and further investigate the potential effect of supplier firms' size on their ESG performance, I divide the sample into terciles based on supplier firms' total assets, and present the test results in Table 8, Panel A, Columns 1-4. Column 1 (2) includes customer-supplier-year combinations with the supplier firm in the top (bottom) tercile by year and 2-digit SIC code. These two models include key explanatory variables and supplier firm characteristics. The results in Column 1 show that when including supplier firms' control variables only, customer firms' ESG-linked compensation has a 10% significant and positive effect on large supplier firms' ESG performance in the first year, and a 5% significant and positive effect in the second year following adoption. In Column 2, all three interaction variables are insignificant, suggesting that customer firms' adoption of ESG-linked compensation does not affect small supplier firms' ESG performance. Similarly, in Columns 3 and 4 that include both customer firms' and supplier firms' control variables, the effect of customer firms' ESG-linked compensation is positive and marginally significant on supplier firms' ESG performance for the second year after adoption. However, the effect is only present among large suppliers (top tercile) but not small ones (bottom tercile). Again, these results highlight that the size of supplier firms is highly influential.

Because firm size and ESG score are positively correlated, the findings allude to the possibility that customer firms may be switching suppliers after the adoption of ESG-linked compensation. I investigate whether this conjecture holds in additional tests.

Collectively, the main results across nine models in Table 7 and Table 8, Panel A show insignificant to weak results in support of my H1. The reason for the weaker results using full sample in Table 7 can be multifold. First, responsible sourcing is only one component of a firm's overall ESG effort. Firms may have other ESG issues that are more urgent and need to be prioritized over responsible sourcing. For example, a firm may have obsolete equipment that is energy inefficient and causes high emissions. The implementation of ESG-linked compensation could prompt the firm to address ESG concerns at its own plant first. In this case, the weight of responsible sourcing in the firm's overall ESG package could be so minimal that it does not effectively incentivize the CEO to improve ESG along the supply chain. Second, supplier firms' ESG performance is ultimately determined by their own practices. Despite customer firms' wish and push, there might be limited actions that they can take to make a material impact on their suppliers' ESG performance. Third, my sample contains U.S. listed supplier firms only. Compared to suppliers in developing nations, these firms may already have been subject to certain ESG requirements as set out by the government, leaving limited room for further improvement.

5.3.3 Main Tests – Three-way Interactions (H1)

In my previous main test, I conduct separate tests on subsamples constructed using top and bottom terciles from the full sample (Columns 1-4 in Table 8, Panel A). The results show some weak evidence on the effect of customer firms' adoption of ESG-linked compensation on large supplier firms' ESG performance. To further examine the incremental effect of customer firms' ESG-linked compensation adoption on supplier firms' ESG performance, while in the presence of

supplier firms' size effect, I re-conduct my tests using a three-way interaction design. The explanatory variable of interest in my design is $ESGcomp^C * POSTn * Large_supplier$ ($ESGcomp^C * POSTn * Small_supplier$). The first and second parts are defined as previously. The third part $Large_supplier$ ($Small_supplier$) is a dummy variable that equals to one if a supplier firm's total asset is in the top (bottom) tercile of all supplier firms in the same year and 2-digit SIC industry group, and zero otherwise. The interaction term captures the incremental supplier firm size effect in addition to that of customer firms' adoption of ESG-linked compensation.

Table 8, Panel B, Columns 1 and 3 (2 and 4) present the test results incorporating three-way interactions for large (small) supplier firms. Columns 1 and 3 contain large supplier firms with the former including supplier firm controls and the latter including both supplier and customer firm controls. The results show that all three interactions terms of interest are positive but insignificant, suggesting that for a large supplier, customer firms' adoption of ESG-linked compensation does not incrementally contribute to greater supplier firms' ESG performance. The results for small suppliers are presented in Columns 2 and 4. Across both specifications, the three-way interactions remain insignificantly negative. Similar to the previous tests on large suppliers, customer firms' adoption of ESG-linked compensation does not affect small supplier firms' ESG performance either. Overall, the tests using a three-way specification largely echo the previous results in Table 7 and Table 8, Panel A, and suggest that customer firms' adoption of ESG-linked compensation has insignificant impact on their supplier firms' ESG performance, regardless of supplier size.

5.3.4 Conditioning Hypothesis (H2a)

Table 9 presents the analyses of my conditioning hypotheses H2a and H2b. H2a argues that supplier firms' bargaining power could stem from greater market share, as proxied by sales as

a proportion of total sales within the industry. I expect a stronger effect of customer firms' adoption of ESG-linked compensation on suppliers' ESG performance for supplier firms with lower market share, since these supplier firms could be less competitive and therefore less resistant to customers' demand. To test H2a, I create two subsamples based on the median supplier firms' total sales as a proportion of the sum of total sales among all firms within the 2-digit SIC category in the same year.

Table 9, Panel A, Columns 1 (2) presents the test results of the effect on subsamples with supplier firms' market share above (below) median. The results show that for supplier firms with an above-median market share, customer firms' ESG-linked compensation has a significantly positive effect on supplier firms' ESG performance in the year after adoption. In the second year after adoption, the effect becomes marginally significant. In Column 2, however, none of the three interaction variables are significant, suggesting that for supplier firms with a below-median market share, customer firms' adoption of ESG-linked compensation has limited effect on their supplier firms' ESG performance.

The test in Column 3 incorporates a three-way interaction design, where the variables of interest are $ESGcomp^C * POSTn * IndSales^S$ which capture the incremental effect of ESG-linked compensation adoption on top of the effect of supplier firms' market share. The three-way design uses the full sample and therefore contains suppliers of all levels of market shares. The results in Column 3 show that all three three-way interaction terms are insignificant, implying that when including all firms in test, customer firms' ESG-linked compensation adoption has no incremental effect on top of supplier firms' market share.

Overall, the test results suggest that on average, the effect of customer firms' ESG-linked compensation on supplier firms' ESG performance is slightly more positive for suppliers with

greater market share. This is inconsistent with my H2a predictions, but consistent with the argument that supplier firms with a large market share take a proactive approach to address ESG concerns, while the positive influence on their own ESG performance is congruent with what their customers would prefer.

5.3.5 Conditioning Hypothesis (H2b)

H2b argues that supplier firms' bargaining power can also stem from the length of their business relationship with customers. On the one hand, a long customer-supplier relationship can make a supplier firm face a high cost (e.g., lost cash flows, specific investments) of losing its customer, therefore making the supplier more likely to improve its ESG performance upon the customer firm's request. Empirically, this amplifies the effect of customer firms' ESG-linked compensation adoption and makes the supplier firms experience greater increase in their ESG performance. On the other hand, supplier firms in long customer-supplier relationships could have greater bargaining power due to their possession of unique techniques that make it difficult for customer firms to find alternative sourcing solutions.

Panel B, Columns 1-3 in Table 9 present the test results of my H2b. Column 1 (2) conducts the test on the subsample consisting of customer-supplier-year observations with above-median (below-median) length of relationship. The variables of interest are the interaction terms $ESGcomp^C * POSTn$. My H2b predicts a positive coefficient on these interactions for customer-supplier pairs with longer relationships (Column 1). The results in Column 1 show insignificantly negative coefficients on the interactions for the year of adoption and the year after, and an insignificantly positive coefficient on the interaction for the second year after adoption. This suggests that for longer customer-supplier relationships, customer firms' adoption of ESG-linked compensation does not affect supplier firms' ESG performance. In Column 2, all three interaction

terms are insignificantly positive, implying an insignificant effect of ESG-linked compensation on shorter customer-supplier relationships as well.

Column 3 incorporates a three-way interaction design similar to the one in testing my H2a (Panel A, Column 3). The variables of interest in this model are the three-way interaction terms $ESGcomp^C * POST0 * Rel_duration$. These interaction variables capture the incremental effect of customer firms' adoption of ESG-linked compensation on supplier firms' ESG performance in addition to the length of the customer-supplier relationship. Under my H2b, I expect positive coefficients on the three-way interaction terms. The test results reveal a marginally significant and negative coefficient on the interaction for the year after adoption, but insignificant coefficients for the year of adoption and the second year after adoption. This evidence suggests that while the length of customer-supplier relationship directionally weakens the effect of customer firms' adoption of ESG-linked compensation on supplier firms' ESG performance, the effect is largely insignificant.

In summary, the test results in Table 9, Panel B, Columns 1-3 suggest that the length of customer-supplier relationships does not affect the relationship between customer firms' adoption of ESG-linked compensation and supplier firms' ESG performance. The evidence is inconsistent with my H2b.

5.4 Conclusions

This chapter presents multivariate tests of my main hypothesis (H1) and conditioning hypotheses (H2a/H2b). In summary, the test results show that customer firms' adoption of ESG-linked compensation does not affect supplier firms' ESG performance. As for my conditioning hypotheses (H2a/H2b), supplier firms' market share has some weakly positive effect on the effect of customer firms' adoption of ESG-linked compensation on supplier firms' ESG performance.

Meanwhile, the length of customer-supplier relationships does not significantly affect the effect of customer firms' adoption of ESG-linked compensation on supplier firms' ESG performance.

Chapter 6

Additional Tests

6.1 Introduction

In Chapter 6, I conduct a series of additional tests to explore the channel of customer firms' responsible sourcing and address the validity concerns that may exist in my empirical analysis in Chapter 5. For example, change in a supplier firm's ESG performance may not be a result of their customer firms' adoption of ESG-linked compensation. I first test the likelihood of customer-supplier relationship terminations following the revelation of supplier firms' ESG scores. I then compare the ESG performance between existing and new suppliers. To address omitted correlated variable concerns, I replicate my main tests using propensity score matching and entropy balancing. To test whether ESG-linked compensation adoption affects firms that are more sensitive to responsible sourcing, I also replicate my main tests after splitting my full sample based on customer firms' consumer facing status. Finally, I replicate my main tests using environmental and social pillar scores and alternative dependent variables. Section 6.8 concludes this Chapter.

6.2 Customer-Supplier Relationship Terminations

I conduct additional tests to strengthen the inferences and address the validity threats in my research design. As discussed in previous sections, following the implementation of ESG-linked compensation, customer firms may choose to replace low ESG supplier firms with high ESG counterparts. In a related study, Darendeli et al. (2022) find that when supplier firms start receiving ESG scores, those with low ratings are more likely to face a decline in business, consistent with ESG-motivated customer-supplier relationship turnovers. I conduct a subsample test to examine whether customer firms pursue this route following the adoption of ESG-linked compensation. I split the sample by supplier firms' ESG score into above median and below median groups. The

dependent variable *Rel_lastyear* equals to one if a customer-supplier relationship exists in the current year but does not exist in the following year, and zero if the same customer-supplier pair exists in my sample in the following year. Because my sample period ends in 2020, I exclude all observations in 2020.

Table 10, Panel A presents the logistic regression test results. In Column 1 (2), for supplier firms with above-median (below-median) ESG scores in the full sample, customer firms' adoption of ESG-linked compensation has an insignificant effect on the likelihood of relationship termination from the year of adoption to two years after adoption. Additionally, the pseudo R-squared is small (<5%) across both models, implying that the decision to terminate a customer-supplier relationship is a function of more than just ESG considerations and financial characteristics. The findings do not resonate with Darendeli et al. (2022), who document that customer firms drop suppliers due to low ESG performance. Overall, these results suggest that determinants of customer-supplier relationship terminations go beyond supplier firms' ESG performance.

To further shed light on the potential cause for customer-supplier relationship terminations, I compare the likelihood of terminations by supplier firms' bargaining power using a t-test. I use a subsample consisting of customer-supplier-year observations in which the customer firm has adopted ESG-linked compensation. I then split the sample based on whether the supplier firms' market share exceeds industry median in the year. The test results in Table 10, Panel B reveal that for supplier firms with above-median and below-median market share, their likelihood of being terminated is not significantly different from the other group. This finding complements the results in Panel A, highlighting the multi-faceted nature of decision making beyond ESG dimension in customer-supplier relationships.

6.3 Comparison of Supplier Firms' ESG Scores by Pre- and Post-adoption Statuses

6.3.1 Continuing vs Terminated Suppliers

In a similar spirit as the regression analysis in 6.2, I examine supplier firms' ESG performance and their likelihood to be terminated at customer firm-year level. Specifically, I check whether supplier firms that get terminated perform worse in ESG versus the same customer firm's other suppliers that do not get terminated. If ESG-linked compensation motivates customer firms to improve responsible sourcing, these firms are more likely to replace low ESG suppliers following adoption. This will manifest as a higher likelihood of low ESG suppliers being terminated.

Using a two-sample t-test, for each customer firm-year prior to adopting ESG-linked compensation, I first compare ESG scores of the supplier firms versus the average ESG scores of that customer in the same year by whether their relationship is terminated in the following year. I expect an insignificant difference between the two groups for years prior to ESG-linked compensation adoption, since terminations are less likely to be ESG-driven. The results in Table 11, Panel A reveal that out of 1,078 customer-supplier-year observations in which the customer firms are adopters of ESG-linked compensation but have not yet adopted, continuing suppliers' ESG performance is lower than the average among all suppliers of one customer, while terminated suppliers perform better in ESG than the average. However, this difference is not significantly different between continuing and terminated suppliers. This suggests that prior to customer firms' adoption ESG-linked compensation, continuing and terminated supplier firms have comparable ESG performance, consistent with my conjecture.

I then repeat the t-test for customer-supplier-year observations following customer firms' adoption of ESG-linked compensation. Contrary to the pre-adoption period, given that

terminations of customer-supplier relationships are more likely to be ESG motivated, I expect the terminated suppliers to have lower-than-average ESG scores than continuing suppliers. Table 11, Panel B shows the test results among 2,323 observations in which the customer firms have adopted ESG-linked compensation. In terms of means, continuing suppliers tend to perform marginally worse than other suppliers of the same customer firm, and terminated suppliers slightly overperform compared to the average. However, their ESG performance does not exhibit a statistically significant difference between the two groups.

Overall, the two tests in Table 11, Panels A and B present evidence suggesting that before and after customer firms adopt ESG-linked compensation, the likelihood of their suppliers being terminated does not vary by the adoption. This implies that ESG-linked compensation fails to adequately influence customer firms' responsible sourcing behaviours through the termination of suppliers with poor ESG performance.

6.3.2 New Supplier Firms' ESG Performance Pre- and Post-adoption

Another way firms can improve their responsible sourcing without terminating suppliers with poor ESG performance is by selecting new suppliers with high ESG performance. This is possible since customer firms could gradually shift their business to high ESG suppliers without severing ties with their existing, low ESG suppliers. If this is the case, I expect to observe higher ESG scores among those new suppliers in the post period. This will empirically manifest as higher ESG scores for new suppliers than existing suppliers following customer firms' adoption of ESG-linked compensation. To test this conjecture, I conduct a two-sample t-test to compare the mean difference between new suppliers' ESG scores and the average ESG scores of all suppliers of the same customer-year, before vs after the customer firm's adoption of ESG-linked compensation.

The results in Table 11, Panel C show an insignificant difference in means ($p > 0.1$) between

pre- and post-adoption groups with a total of 1,140 observations. Contrary to my conjecture, customer firms' adoption of ESG-linked compensation does not result in a higher likelihood of selecting higher ESG suppliers. This suggests that attracting new suppliers with high ESG performance is less likely to be one mechanism that potentially drives customer firms' responsible sourcing behaviours.

6.4 Propensity Score Matching

As discussed earlier in this thesis, firms' decision to adopt ESG-linked compensation is voluntary, which leads to the concern that some unobservable factors could be driving their adoption decisions. Propensity score matching (P. R. Rosenbaum & Rubin, 1983; Shipman, Swanquist, & Whited, 2017) creates treatment-control pairs to help alleviate this concern. It works by first regressing the treatment dummy variable (ESG-linked compensation adoption in my study) on the variables that potentially affect the endogenous treatment status, while calculating a propensity score. It then matches a treated firm to an untreated firm with similar propensity scores, such that these two firms differ in their treatment status, but are otherwise highly similar in other characteristics. This technique allows me to create a subsample consisting of adopting and non-adopting firm pairs that are similar in their industry and financial characteristics. In my study, it could help mitigating the concern that certain uncontrolled variables, other than ESG-linked compensation, were driving customer firms' supplier selection decisions.

To generate a propensity score matched sample, I match adopting and non-adopting customer firms using a caliper of 0.03 without replacement on the following variables: customer firms' ESG score, the proportions of each of the CEO's salary, bonus, and equity to total compensation, total assets, leverage, ROA, sales growth, Tobin's Q, R&D expenses, 2-digit SIC, and year. Specifying a caliper instead of taking all matches with the closest propensity score strikes

a balance between the resulting sample size and match quality. This step yields 5,858 observations consisting of equal number of observations of the adopting and non-adopting customer-supplier-year observations. Table 12, Panel A shows the mean distribution of the variables after propensity score matching. According to the table, eight out of ten variables still differ significantly ($p < 0.01$) after matching, suggesting that propensity score matching still yields a sample consisting of significant divergence between the treated and control groups. It is important that the test results be interpreted in conjunction with other sensitivity checks.

I then run the main regression analysis on the propensity score matched sample. Table 12, Panel B presents the test results. All interaction variables are positive but insignificant in Columns 1-4, implying that customer firms' ESG-linked compensation does not have a significant effect on their supplier firms' ESG performance. These results align with my main tests results and do not support my H1.

6.5 Entropy Balancing

Similar to propensity score matching, entropy balancing is another technique to address endogeneity concerns in empirical accounting research (Hainmueller, 2012; Hainmueller & Xu, 2013; J. L. McMullin & Schonberger, 2020; J. McMullin & Schonberger, 2022). As discussed in McMullin and Schonberger (2022), entropy balancing works by assigning a weight to each observation in the sample, such that the treated group and control group have highly similar distributions of covariates' moments. By making the two groups similar in their covariates, this would help address the concern that the observed effect is driven by events other than the treatment.

One advantage of entropy balancing over propensity score matching is the former's ability to retain all observations in the sample. As discussed in the previous section, I use a caliper in propensity score matching to ensure match quality. However, observations that cannot be matched

within the specified caliper are discarded, leading to a reduction in the sample size and potentially statistical power. Entropy balancing, on the other hand, assigns a weight to each observation without shrinking the sample. To enhance inferences, I repeat the main analyses using an entropy-balanced sample. Table 13, Panel A shows the distribution of variables after entropy balancing. According to the table, all ten variables have highly similar means across the treated and control groups, suggesting that entropy balancing effectively reduces the divergence on the key variables between the two groups.

Table 13, Panel B presents the test results using entropy balancing. Columns 1-4 show insignificant coefficients on all twelve treatment-post interaction variables, suggesting that customer firms' adoption of ESG-linked compensation has an insignificant effect on supplier firms' ESG performance. These results are in line with my main test results and do not support my H1.

6.6 Main Results with Inverse Mills Ratio

It is worth noting that firms' decision to incorporate ESG-linked criteria in executive compensation may be driven by observable factors that also affect firms' sourcing practice and ESG performance. In the context of this thesis, a statistically significant effect of firms' adoption of ESG-linked compensation could suffer from such bias. This concern suggests a potentially spurious relationship between firms' use of ESG-linked compensation and suppliers' ESG performance. For example, it is possible that firms with pre-existing high ESG performance are more confident and better prepared for this compensation practice. In Flammer et al. (2019) which studies firms' use of ESG-linked compensation on their own ESG performance, the authors use both fixed effects regressions and a two-stage least square (2SLS) model to address the endogeneity concerns.

A two-stage least square approach with inverse Mills ratio helps mitigating selection bias.

This approach gives readers confidence that the observed statistically significant effect of the treatment on the outcome is not driven by selection bias. Although I do not find statistically significant effect of customer firms' adoption of ESG-linked compensation on supplier firms' ESG performance, an additional robustness check helps strengthen my conclusion that linking managers' compensation to ESG metrics fails to achieve its intended purpose. Under this approach, my first stage equation uses a probit model to regress customer firms' likelihood to adopt ESG-linked compensation on firm characteristics (Equation 1) and generate a predicted value for each observation. In this step, I also calculate the inverse Mills ratio as the standard normal density divided by the cumulative density function. In the second stage (Equation 2), I include the inverse Mills ratio as an explanatory variable along with supplier firms' characteristics. A two-stage least squares approach requires an exclusion restriction, such that at least one variable is included in the first stage equation but not in the second stage. With the two stages set up this way, the variable affects sample selection in the first stage, but not the treatment effect in the second stage. To satisfy the exclusion restrictions, I include only customer (supplier) firms' control variables in the first (second) stage. Given that my main analysis fails to find significant effect of adopting ESG-linked compensation on supplier firms' ESG performance, it is plausible that suppliers' ESG performance is mainly driven by their own characteristics.

Table 14 presents the results incorporating the inverse Mills ratio. The three interaction variables are all insignificant with their coefficients being close to zero. These results are consistent with my main results, and further suggest that customer firms' adoption of ESG-linked compensation has insignificant effect on supplier firms' ESG performance.

6.7 Industry Analysis

6.7.1 Customer Firms in Consumer-facing Industries

As mentioned in the introduction, firms' motivation for improving their responsible sourcing can be driven by end-consumer activism. For example, activists launch protests against companies (e.g., Nestle, Apple, and Nike) that are accused of irresponsible sourcing. Instead of targeting directly at supplier firms involved in ESG scandals, these highly visible campaigns aim at customer firms in an attempt to raise awareness and pressure these companies to rectify the issues. One thing in common with these firms targeted by activists is the heavy presence of retail customers (individuals rather than other companies). Specifically, companies such as Nestle and Nike engage heavily in a business-to-consumer sales model, selling their products mainly to individuals rather than companies. Due to the end consumers, those companies' revenues can be vulnerable to consumer activism such as boycotts. In this case, consumer-facing customer firms are more likely to pay attention to responsible sourcing, which could enhance the potential effect of ESG-linked compensation on suppliers' ESG performance. Empirically, I expect to observe more positive coefficients on the interactions of the treatment and post variables in the main regression for customer firms in consumer-facing industries.

Following prior literature (Ellis et al., 2012; Lawson, 1997), I use U.S. Bureau of Economic Analysis input-output table to identify industries in which firms derive most of their revenues from personal consumption expenditures. I then split my sample into two groups depending on whether the customer firm is in a consumer-facing industry and conduct the tests separately. According to Table 15, Panel A, Columns 1-2, separate regression analyses on each of these two groups show that customer firms' adoption of ESG-linked compensation has insignificant effect on supplier firms' ESG performance.

Further, I also test this conjecture using a three-way interaction design. For this test, I create a dummy variable *Consumer_facing* that equals to one for customer firms in consumer-facing

industry, and zero otherwise. The variables of interest are the interactions among treatment status, post, and consumer-facing indicator. If these consumer-facing firms are more concerned about responsible sourcing following their adoption of ESG-linked compensation, I expect to see positive coefficients on the three-way interaction terms. Columns 3-4 reveal that the three-way interaction terms are statistically insignificant across both models. Contrary to my conjecture, the effect of ESG-linked compensation on supplier firms' ESG performance does not appear to be more pronounced among customer firms in consumer-facing industries.

6.7.2 Customer Firms in Manufacturing Industries

Maas & Rosendaal (2016) document that firms in traditionally pollution-heavy industries are more likely to implement ESG-linked executive compensation. This is consistent with the notion that these firms are more proactive in trying to tackle ESG issues. Relatedly, it is possible that some of their effort is directed toward responsible sourcing initiatives. If this is the case, I expect to observe stronger effect of ESG-linked compensation on suppliers' ESG performance for customer firms in industries that tend to generate more pollution.

For this test, I split my sample by customer firms' industry membership into manufacturing firms and non-manufacturing firms, based on their 1-digit SIC code. A customer firm is considered a manufacturing firm if its SIC code starts with 2 or 3, which includes industries such as metal fabrication, industrial machinery manufacturing, and petroleum refining. Non-manufacturing firms include firms with all other 1-digit SIC codes. Table 15, Panel B presents the test results. As shown in Columns 1 and 2, for customer firms in manufacturing industries, their adoption of ESG-linked compensation has a significantly positive effect on supplier firms' ESG performance in the year following adoption. In comparison, this effect is positive but insignificant among non-manufacturing customer firms. This evidence suggests that the effect of customer firms' adoption

of ESG-linked compensation has a stronger effect on suppliers, on average, among customer firms in manufacturing industries.

6.8 ESG Pillar Scores

One critical assumption in this study is that responsible sourcing falls under the ESG umbrella. Specifically, when a firm adopts ESG-linked compensation, its managers ramp up ESG engagement via several channels, including their responsible sourcing practices. In the previous empirical tests, I use firms' overall ESG scores that are pre-calculated by Refinitiv as a weighted average of their environmental, social, and governance performance. One advantage of using overall ESG scores is more holistic evaluation of firms' ESG engagement. This is important because external stakeholders, such as the general public, pay attention to deficiencies and scandals in all three categories. For instance, consumers boycotts target firms accused of using sweatshop labour, deforestation, and making statements that are lacking in inclusiveness. Following customer firms' adoption of ESG-linked compensation, the customer firm would have greater incentives to address its supplier firms' ESG concerns in any of the three categories. In empirical tests, omissions of any of the three categories potentially jeopardize the measures' construct validity.

However, it is possible that customer firms are more concerned about supplier firms' environmental issues than social issues, and vice versa. For instance, certain organizations (e.g., Greenpeace, as in the Nestle case) specifically target firms with environmental deficiencies, while others might focus more on labour relations issues. This implies that some firms may be more exposed to and concerned about the environmental (or social) aspect of responsible sourcing than other aspects. In prior ESG literature (Dai et al., 2021; Darendeli et al., 2022; Demers, Hendrikse, Joos, & Lev, 2021), it is a common practice to use individual environmental, social, and governance scores (also known as pillar scores) in addition to overall scores in tests as a robustness

check. I follow this approach and replicate my main tests using customer and supplier firms' environmental and social pillar scores, separately.

The test results using customer and supplier firms' environmental pillar scores (*ENVscore_S*) as dependent variables are presented in Table 16. In Column 1 that does not control for supplier firms' size, customer firms' adoption of ESG-linked compensation has a significantly positive effect on supplier firms' environmental performance in the second year following adoption. However, in Columns 2-4, the treatment and post interaction terms are positive but insignificant. This suggests that after controlling for supplier firms' characteristics, especially size, customer firms' adoption of ESG-linked compensation no longer has a significant effect on supplier firms' environmental performance. Compared to test results using overall ESG scores, the effect of ESG-linked compensation adoption is slightly more positive when using environmental scores. Notably, the coefficients on all three interaction terms are consistently greater than their counterparts in tests using overall ESG scores. This pattern gives some support to the conjecture that environmental issues are essential in customer firms' responsible sourcing initiatives.

In Table 16, Columns 5-8, I replicate the tests that separate customer firms based on whether they are in the top (bottom) tercile of supplier size. Similar to the approach used in the main test in Chapter 5, this test creates terciles based on supplier firms' total assets for each year and 2-digit SIC group. The results show that the coefficients on the key interaction variables are largely insignificant, except in the year after adoption for large supplier firms (Columns 5 and 7) which are 5% and 10% significant, respectively. This suggests that regardless of supplier firms' size, customer firms' adoption of ESG-linked compensation has weak effect on supplier firms' environmental performance. I also observe the pattern that five out of six coefficients on the interaction terms are more positive than their counterparts in tests using firms' overall ESG scores.

In the second half of this section, I follow the same approach in the previous half and replicate my main tests using customer and supplier firms' social pillar scores. Table 17 presents the test results. Columns 1-4 replicate the main tests and contain customer and supplier firms' control variables. Eleven out of twelve interaction variables are insignificant across all four columns, suggesting that customer firms' adoption of ESG-linked compensation does not affect supplier firms' social performance. However, the effect in the year of adoption is directionally negative. Columns 5-8 separately test the effect of ESG-linked compensation adoption by supplier firms' size. For supplier firms in the top-tercile size groups, their customer firms' adoption of ESG-linked compensation has a positive but insignificant effect on supplier firms' social pillar scores. However, the effect becomes insignificantly negative for supplier firms in the bottom-tercile size groups. Interestingly, compared to the test results using firms' environmental pillar scores, the coefficients on all six interaction variables are more negative when I use firms' social pillar scores. This implies that ESG-linked compensation is more likely to motivate firms' ESG engagement through better environmental performance than social performance.

Combining the separate test results using firms' environmental and social pillar scores, customer firms' adoption of ESG-linked compensation appears to have insignificant (albeit mixed signs) effect on supplier firms' environmental and social performance. Although these findings do not support my H1, they are consistent with the findings in my main tests.

6.9 Alternative Responsible Sourcing Measures

In my main tests, I consistently find that customer firms' ESG-linked compensation does not improve their responsible sourcing. A potential explanation is that these customer firms lack actions to improve their responsible sourcing to begin with, such that there is no effect on supplier firms' ESG performance. In this section, in conjunction with the main tests, I explore the effect of

customer firms' adoption of ESG-linked compensation on their own sourcing practices, as proxied by a series of binary ESG metrics related to responsible sourcing from Refinitiv.²⁴

My empirical analyses and the additional tests so far rely on supplier firms' ESG performance to infer customer firms' improvement in responsible sourcing. An alternative is to look at customer firms' own responsible sourcing practices after adopting ESG-linked compensation, such as additional due diligence in supply management conducted by the customer firms. Refinitiv collects and compiles a list of binary ESG metrics specifically related to responsible sourcing as disclosed by firms, including whether a firm has policies in place to address environmental impact along its supply chain, and whether a firm has human rights criteria when selecting or monitoring its suppliers (Refinitiv, 2022). This approach has both advantages and disadvantages. On the one hand, using these binary ESG metrics as the dependent variables in my models can make the tests cleaner, since the supplier firms' ESG score can be noisy and affected by more than their customer firms. On the other hand, Refinitiv compiles these binary ESG metrics using firms' self-reported actions, which may be subject to biases as firms could have incentives to portray themselves in a positive narrative. Moreover, having responsible sourcing policies in place does not necessarily translate into effective execution, potentially raising construct validity concerns over the measures' ability to capture firms' actual sourcing behaviours. This is of particular concern because these measures better proxy for firms' ESG disclosure rather than ESG performance itself. Given these considerations, I present the tests results as part of additional tests.

Using a logistic model, I repeat the main tests with each of the binary ESG metrics as the dependent variable at customer firm-year level, while controlling for customer firms' characteristics. The observations used in this test are at customer firm-year level. The explanatory

²⁴ Appendix 1, Panel B lists these metrics and their definitions.

variable of interest $ESGcomp^C$ is an indicator variable that equals to one if the customer firm has ESG-linked compensation in that year, and zero if not. Each dependent variable in the list represents an action item (e.g., having environmental criteria when selecting suppliers) that is an example of good responsible sourcing, and each equals to 1 (0) if the firm reports (does not report) having this action item in place. Given my H1 which argues that customer firms are motivated to improve their responsible sourcing after adopting ESG-linked compensation, I expect these firms to have a higher likelihood to implement policies governing responsible sourcing. Empirically, this suggests a positive coefficient on $ESGcomp^C$ in each of the models.

Table 18 presents the test results. Surprisingly, in none of the twelve models is the explanatory variable of interest significantly positive. This evidence suggests that adopting ESG-linked compensation does not make these customer firms more likely to have responsible sourcing policies in place, alluding to the lack of progress later on. Notably, the coefficient is even significantly negative in four out of the twelve columns, suggesting that ESG-linked compensation indeed reduces firms' likelihood to establish policies related to responsible sourcing. Consistent with the discussions in my hypothesis development, the reduction in the likelihood implies that firms may be deprioritizing supply chain related ESG initiatives following the adoption of ESG-linked compensation. Future research can build on this discovery and further study firms' incentives behind corporate ESG engagement.

6.10 Conclusions

Chapter 6 presents the results of robustness checks and additional tests, including customer firms in consumer facing industries, propensity score matching, and entropy balancing. This chapter also includes a model employing two-stage least squares approach and tests using alternative ESG measures. In summary, the test results echo those in Chapter 5 that customer firms'

adoption of ESG-linked compensation does not affect their supplier firms' overall ESG performance. However, tests using supplier firms' environmental score reveal that ESG-linked compensation has some weakly positive effect on supplier firms' environmental performance.

Chapter 7

Conclusion

As one important component in firms' overall environmental, social, and governance (ESG) engagement, responsible sourcing has attracted increased attention from researchers, shareholders, and the general public. Meanwhile, an increasing number of firms are adopting ESG-linked executive compensation that ties their managers' compensation to the firms' own ESG performance. In this thesis, I use customer-supplier-year level observations from 2010 to 2020 and document that customer firms' adoption of ESG-linked compensation has limited improvement in their responsible sourcing. Specifically, I find that compared to pre-adoption years, following customer firms' adoption of ESG-linked compensation, their supplier firms' ESG performance does not exhibit statistically significant improvement. There is weak evidence that among large suppliers, suppliers with greater market share, and customer firms in manufacturing industries, customer firms' adoption of ESG-linked compensation results in higher supplier firms' ESG performance. This is particularly driven by the improved environmental performance of supplier firms. I then conduct a series of robustness checks and additional tests. I find no evidence that customer firms are more likely to terminate their relationships with low ESG suppliers than with high ESG suppliers. Overall, the test results point to the conclusion that ESG-linked compensation has limited effect on firms' responsible sourcing behaviours.

My thesis contributes to the ESG literature by examining the effect of ESG-linked executive compensation on responsible sourcing, a specific component of firms' ESG performance beyond their overall ESG performance. The results shed light on the limitations of this compensation scheme, as it fails to address one of the very specific elements – responsible sourcing, under the ESG umbrella. This thesis also adds to the open dialogue on the relation between ESG

and firm value. Given the insignificant effect of ESG-linked compensation on firms' responsible sourcing, in conjunction with the mixed findings on the relation between ESG and firm value (Van Beurden & Gössling, 2008), future research may focus on firms' motivations behind ESG engagements to gain more insights into firms' trade-off considerations. Firms' stakeholders, including shareholders, regulators, and the general public may also benefit from this study as they look for ways to better motivate corporate managers to engage in socially responsible behaviours. For example, the SEC's recent move to standardize climate-related disclosure signals its focus on suppliers' ESG performance in the near future. More importantly, my thesis has practical implications for managers and procurement teams who wish to improve their ESG performance. Specifically, as supplier firms ESG performance is more of a function of their own effort, managers of customer firms may be less confident about influencing their suppliers' ESG performance through pressure. They may find it easier to start a business relationship with a supplier that already has high ESG performance, rather than trying to influence their suppliers to improve later on. Further, when selecting high ESG suppliers, managers may wish to work with suppliers with ESG-linked executive compensation. Other than this, large supplier firms have more resources to devote to ESG projects and are more likely to have higher ESG performance. This might be a fruitful research area for future scholarly work.

This study has several limitations. First, due to data availability and the more stringent disclosure requirements in the United States, my sample is restricted to non-ADR customer and supplier firms in S&P 1500 index. Despite S&P 1500 index's wide coverage of the U.S. equity market, these firms may not be representative of over-the-counter firms, private firms, and non-U.S. firms. Second, this study relies on ESG scores as a measure of firms' ESG performance, which are subject to noise and not free from biases (Berg, Koelbel, Pavlova, & Rigobon, 2023;

Christensen, Serafeim, & Sikochi, 2022). As a remedy, I replace overall ESG scores with alternative pillar scores in additional tests, as discussed in Section 6.8. Third, this study uses a staggered difference-in-difference design to mitigate the concerns that some unobserved factors, rather than customer firms' adoption of ESG-linked executive compensation, affect supplier firms' ESG performance. However, it is possible that some unidentified omitted variables may have muted the results in the main tests.

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Appendix 1

Definition of Variables

Panel A. Main and Control Variables

Variable	Description	Source
<i>ESGscore</i>	ESG score (between 0 and 1) as reported	Refinitiv Asset4
<i>ENVscore</i>	Environmental score (between 0 and 1) as reported	Refinitiv Asset4
<i>SOCscore</i>	Social score (between 0 and 1) as reported	Refinitiv Asset4
<i>GOVscore</i>	Governance score (between 0 and 1) as reported	Refinitiv Asset4
<i>ESGcomp_t^c</i>	Indicates whether a customer firm has ever used ESG-linked executive compensation (treated) during the sample window	ISS Incentive Lab
<i>ESGcomp_t^s</i>	Indicates whether a supplier firm uses ESG-linked executive compensation in Year <i>t</i>	ISS Incentive Lab
<i>Salary%</i>	Salary received by a CEO during the fiscal year, scaled by total compensation	Execucomp
<i>Bonus%</i>	Bonus received by a CEO during the fiscal year, scaled by total compensation	Execucomp
<i>Equity%</i>	Value of stocks and options received by a CEO during the fiscal year, scaled by total compensation	Execucomp
<i>Consultant</i>	Compensation consultant identifier (used to control for fixed effects)	ISS Incentive Lab
<i>ROA</i>	Net income over total assets at the end of fiscal year	Compustat
<i>SalesGrowth</i>	Percentage growth in sales over the previous year	Compustat
<i>TobinQ</i>	Tobin's Q at the end of fiscal year	Compustat
<i>DE</i>	Debt-to-equity ratio at the end of fiscal year	Compustat
<i>Assets</i>	Log of total assets at the end of fiscal year	Compustat
<i>R&D</i>	Research and development expenses during the fiscal year scaled by total sales	Compustat
<i>IndSale</i>	Total sales scaled by the sum of total sales among all firms within the same 2-digit SIC group within the same year	Compustat
<i>POST_n</i>	Indicator variable of year <i>n</i> (0, 1, or 2) after adopting ESG-linked executive compensation. For example, <i>POST1</i> denotes the year after adoption year. Equals to one if the year corresponds to <i>n</i> years after adoption, and zero otherwise	Incentive Lab
<i>Rel_duration</i>	The length of a customer-supplier relationship in years (uninterrupted)	FactSet Revere
<i>Rel_lastyear</i>	Indicator variable of whether a customer-supplier relationship terminates in the following year. Equals to	FactSet Revere

	one if termination occurs in the following year, and zero if the relationship continues in the following year	
<i>Consumer_facing</i>	Indicator variable of whether a firm is in a consumer facing industry defined as in Ellis et al. (2012). Equals to one if a firm is in a consumer facing industry, and zero otherwise	U.S. Bureau of Economic Analysis
<i>Large_supplier</i>	Indicator variable of whether a supplier's total asset is in the top tercile of all suppliers in the same year and industry. Equals to one if in top tercile, and zero otherwise	Compustat
<i>Small_supplier</i>	Indicator variable of whether a supplier's total asset is in the bottom tercile of all suppliers in the same year and industry. Equals to one if in bottom tercile, and zero otherwise	Compustat

In Equation 1, *PayMix* contains the following variables: *Salary%*, *Bonus%*, *Equity%*.

In Equation 2, X^C contains the following variables: *Assets*, *DE*, *ROA*, *SalesGrowth*, *TobinQ*, *R&D*, *Salary%*, *Bonus%*, *Equity%*.

In Equation 2, X^S contains the following variables: *ESGcomp^S*, *Assets*, *DE*, *ROA*, *SalesGrowth*, *TobinQ*, *R&D*, *Salary%*, *Bonus%*, *Equity%*.

Panel B. Alternative Responsible Sourcing Measures (Refinitiv, 2022)

Variable	Description	Source
<i>HRBreachContractor</i>	Indicator variable of whether “the company reports or shows to be ready to end a partnership with a sourcing partner if human rights criteria are not met”. Equals to one if the firm satisfies the conditions (as determined by Refinitiv), and zero otherwise	Refinitiv
<i>HRContractor</i>	Indicator variable of whether “the company reports or shows to use human rights criteria in the selection or monitoring process of its suppliers or sourcing partners”. Equals to one if the firm satisfies the conditions (as determined by Refinitiv), and zero otherwise	Refinitiv
<i>PolicyChildLabor</i>	Indicator variable of whether “the company has a policy to avoid the use of child labor - actions, programs or initiatives to avoid child labor or the employment of children under legal working age for the company or its suppliers”. Equals to one if the firm satisfies the conditions (as determined by Refinitiv), and zero otherwise	Refinitiv
<i>PolicyForcedLabor</i>	Indicator variable of whether “the company has a policy to avoid the use of forced labor - actions, programs or initiatives to avoid forced or compulsory labor for the company or its suppliers - practices to avoid any work for which people are forced to do against their will”.	Refinitiv

	Equals to one if the firm satisfies the conditions (as determined by Refinitiv), and zero otherwise	
<i>EnvSMManagement</i>	Indicator variable of whether “the company uses environmental criteria (ISO 14000, energy consumption, etc.) in the selection process of its suppliers or sourcing partners - data can also be on existing suppliers who were selected using some environmental criteria”. Equals to one if the firm satisfies the conditions (as determined by Refinitiv), and zero otherwise	Refinitiv
<i>EnvSMMonitoring</i>	Indicator variable of whether “the company conducts surveys of the environmental performance of its suppliers - any evidence that the company monitors its suppliers on environmental issues through surveys, audits, supplier site visits, and questionnaire”. Equals to one if the firm satisfies the conditions (as determined by Refinitiv), and zero otherwise	Refinitiv
<i>EnvSMTermination</i>	Indicator variable of whether “the company reports or shows to be ready to end a partnership with a sourcing partner, if environmental criteria are not met”. Equals to one if the firm satisfies the conditions (as determined by Refinitiv), and zero otherwise	Refinitiv
<i>PolicyEnvSupplier</i>	Indicator variable of whether “the company has a policy to include its supply chain in the company’s efforts to lessen its overall environmental impact - legal compliance data on the supply chain to reduce environmental impact is in scope”. Equals to one if the firm satisfies the conditions (as determined by Refinitiv), and zero otherwise	Refinitiv
<i>PolicyHealthSafety</i>	Indicator variable of whether “the company has a policy to improve employee health & safety in its supply chain - consider if the company describes that it strives to select and/or work with suppliers who apply minimum security standards for their employees”. Equals to one if the firm satisfies the conditions (as determined by Refinitiv), and zero otherwise	Refinitiv
<i>SupplierESGTrain</i>	Indicator variable of whether “the company provides training in environmental, social or governance factors for its suppliers - consider training, programs or any other collaboration with suppliers to improve their ESG performance”. Equals to one if the firm satisfies the conditions (as determined by Refinitiv), and zero otherwise	Refinitiv

<i>SuppHealthSafetyImprov</i>	Indicator variable of whether “the company shows through the use of surveys or measurements that it is improving the level of employee health & safety in its supply chain”. Equals to one if the firm satisfies the conditions (as determined by Refinitiv), and zero otherwise	Refinitiv
<i>SuppHealthSafetyTrain</i>	Indicator variable of whether “the company trains its executives or key employees on employee health & safety in the supply chain - consider if the company provides training on health & safety to its suppliers and/or procurement staff”. Equals to one if the firm satisfies the conditions (as determined by Refinitiv), and zero otherwise	Refinitiv

Appendix 2

Keyword List

I search for the following keywords in proxy statements and read the discussions. I then identify whether the keywords relate to ESG-linked executive compensation.

I follow prior literature (Flammer et al., 2019; Maas, 2018; Radu & Smaili, 2021) and create a list of keywords used to search for the use of ESG-linked compensation in ISS Incentive Lab data.

Keywords
CSR/ESG
Environment
Social
Customer satisfaction
Safety
Satisfaction
Engagement
Diversity
Customer
Consumer
Emission
OSHA
Sustainable
Sustainability
Injury/injuries
Culture

Appendix 3

Examples of Discussions in Proxy Statements

1) Discussions on ESG-linked executive compensation

“WHAT WE HEARD FROM OUR SHAREHOLDERS: Supportive of inclusion of additional ESG measures in incentive plans. HOW WE RESPONDED: Effective in 2021, we introduced a diversity and inclusion negative modifier into the short-term incentive plan design. This modifier will be expanded in the 2022 short-term incentive plan to include supplier diversity objectives. This modifier is a downward-only modifier and can only reduce the potential payout; it cannot increase the short-term incentive plan awards. The structure of this modifier reflects the Company’s belief that advancement of the Company’s diversity, equity and inclusion objectives is an expectation, not a goal to be rewarded.

Beginning in 2022, we introduced a carbon reduction goal as a weighted component of our long-term incentive performance-based awards. This new component measures the progress of our net zero emission and carbon reduction goals and holds leaders accountable for the achievement of these goals.” (Centerpoint Energy Inc., 2021, p. 77)

“While our shareholders were generally pleased with the design of our executive compensation program, and in particular, with the incorporation of ESG metrics into our short-term and long-term incentive programs...We enhanced disclosure around the achievement of the 2021 annual incentive awards and clarified that 60% of the target amount is tied to company financial or operational goals, 10% is tied to the company’s ESG goals, and 30% is tied to individual performance goals.” (Starbucks Corporation, 2022, p. 55)

“Beginning in 2021, the Compensation Committee incorporated the ESG Modifier into the annual cash incentive program. The ESG Modifier is based on a holistic evaluation by the Compensation Committee of key accomplishments and actions taken during the year to advance our Apple values: accessibility, education, environment, inclusion and diversity, privacy, and supplier responsibility, and key community initiatives. The Compensation Committee may choose to apply the ESG Modifier to adjust the payout amounts upwards or downwards by up to 10% or determine not to make any adjustments. The Compensation Committee will not apply the ESG Modifier to increase an annual cash incentive payout above the overall cap of 200% of the total target payout opportunity under the program. The Compensation Committee chose Apple values and key community initiatives as the basis for the ESG Modifier because they represent long-standing, business-relevant environmental, social, and governance principles that reflect Apple’s commitment to promoting values-driven leadership.” (Apple Inc., 2022, pp. 39–40)

“Under this framework, the HRC Committee could exercise discretion to adjust fiscal 2020 financial funding under the PfR program based on quantifiable achievements in (a) employee safety and engagement, (b) operational execution and financial metrics including revenue improvement, liquidity, and progress against our previously announced cost savings and optimization plan, and (c) progress against our strategic pivot to as-a-service. The HRC Committee, with the assistance of management and the HRC Committee’s independent consultant, developed these performance categories as a framework to measure financial, operational, and strategic achievements that were

deemed key drivers of stockholder value for fiscal 2020 and beyond given the business disruption from the COVID-19 pandemic.” (Hewlett Packard Enterprise Company, 2021, p. 72)

2) **Discussions on ESG and supply chain topics**

“Since 1998, Starbucks has been committed to providing an environment where diverse suppliers who meet the requirements for quality, service, and value have an equal opportunity to compete for Starbucks business. By actively seeking a diverse range of suppliers, we support our business, strengthen our supply chain, and invest in the communities we serve. The Starbucks Supplier Diversity and Inclusion program drives inclusion of qualified businesses of all sizes. Starbucks has spent more than \$8 billion with “Tier 1” (direct investment) diverse suppliers since 2000. In fiscal 2021, we spent nearly \$800 million with Tier 1 diverse suppliers, which was 8.9% of the Company’s total spend in the U.S. and Canada.” (Starbucks Corporation, 2022, p. 18)

“Starbucks has also joined the Farm Powered Strategic Alliance as a founding member, which uses food waste from our supply chains to produce low carbon fertilizer that dairy farmers can use to support their regenerative agriculture practices.” (Starbucks Corporation, 2022, p. 21)

“Ethical Sourcing

We hold our supply chain partners to high ethical standards and regularly audit and engage with suppliers to ensure compliance with HPE standards through our Supply Chain Responsibility (“SCR”) program. Our mission is to protect and elevate workers, reduce global and community environmental impact, and benefit our company, business partners, and customers. Through our longstanding SCR program, we assess social and environmental risks in our supply chain and set rigorous standards and targets, including our Foreign Migrant Worker Standard and first-of-its-kind science-based supply chain greenhouse gas emissions reduction goal. While we continue to hone our program and policies to address emerging risks and monitor compliance, we also work to further elevate supply chain social and environmental standards by sharing knowledge and collaborating with our suppliers and industry partners.” (Hewlett Packard Enterprise Company, 2021, p. 8)

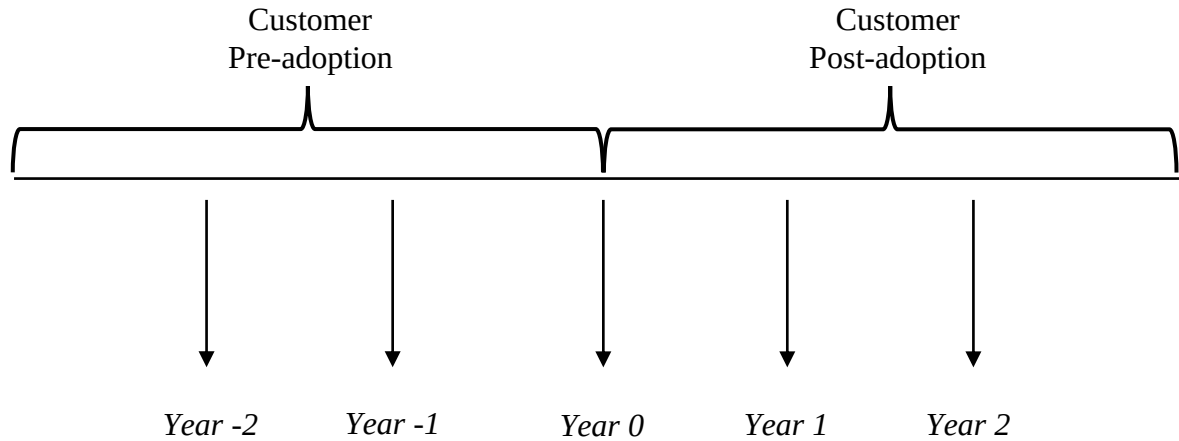
“Audit & Risk Committee - Supply chain ESG matters: Management’s efforts to instill responsible and ethical practices within Target’s supply chain, including vendor human capital and responsible sourcing practices.” (Target Corporation, 2022, p. 12)

Appendix 4

Timeline

Adopting customer firms (treated group):

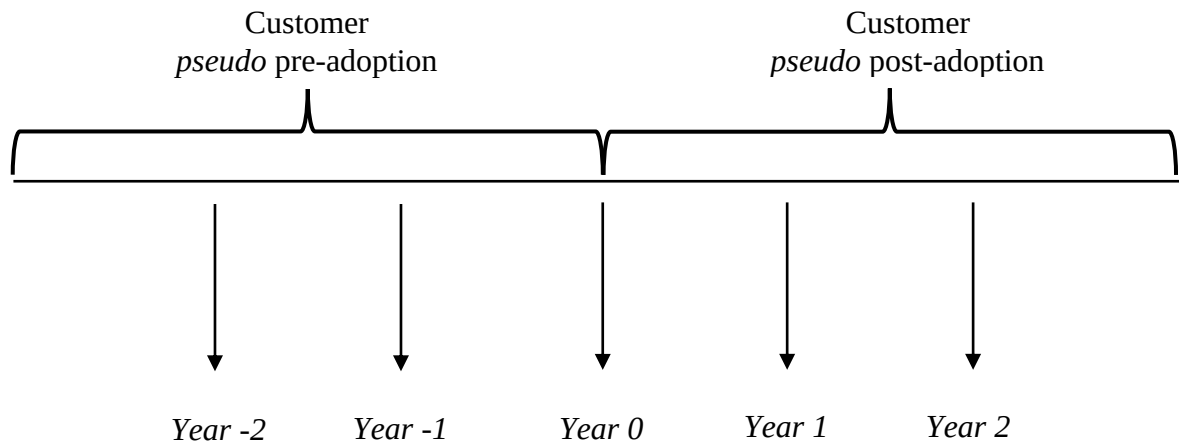
DV: Suppliers' ESG performance, measured each year.



Year 0 is defined as the earliest year a customer firm includes ESG criteria in executive compensation disclosure.

For adopting customer firms, H1 predicts increases in suppliers' ESG score in post-adoption period, compared to non-adopting customer firms.

Non-adopting customer firms (control group) with a rolling window sample:



Non-adopting customer firms never included ESG criteria in executive compensation disclosure during the sample window.

For non-adopting customer firms, H1 predicts no effect resulting from pseudo adoption on suppliers' ESG score in post-adoption period.

Figure 1. Trend of Customer Firms' Adoption of ESG-linked Compensation

Frequency (bars) and the counts on the right axis refer to the number of customer firms adopting ESG-linked compensation in each year. Cumulative frequency (line) and the counts on the left axis refer to the total number of customer firms with ESG-linked compensation in my sample window.

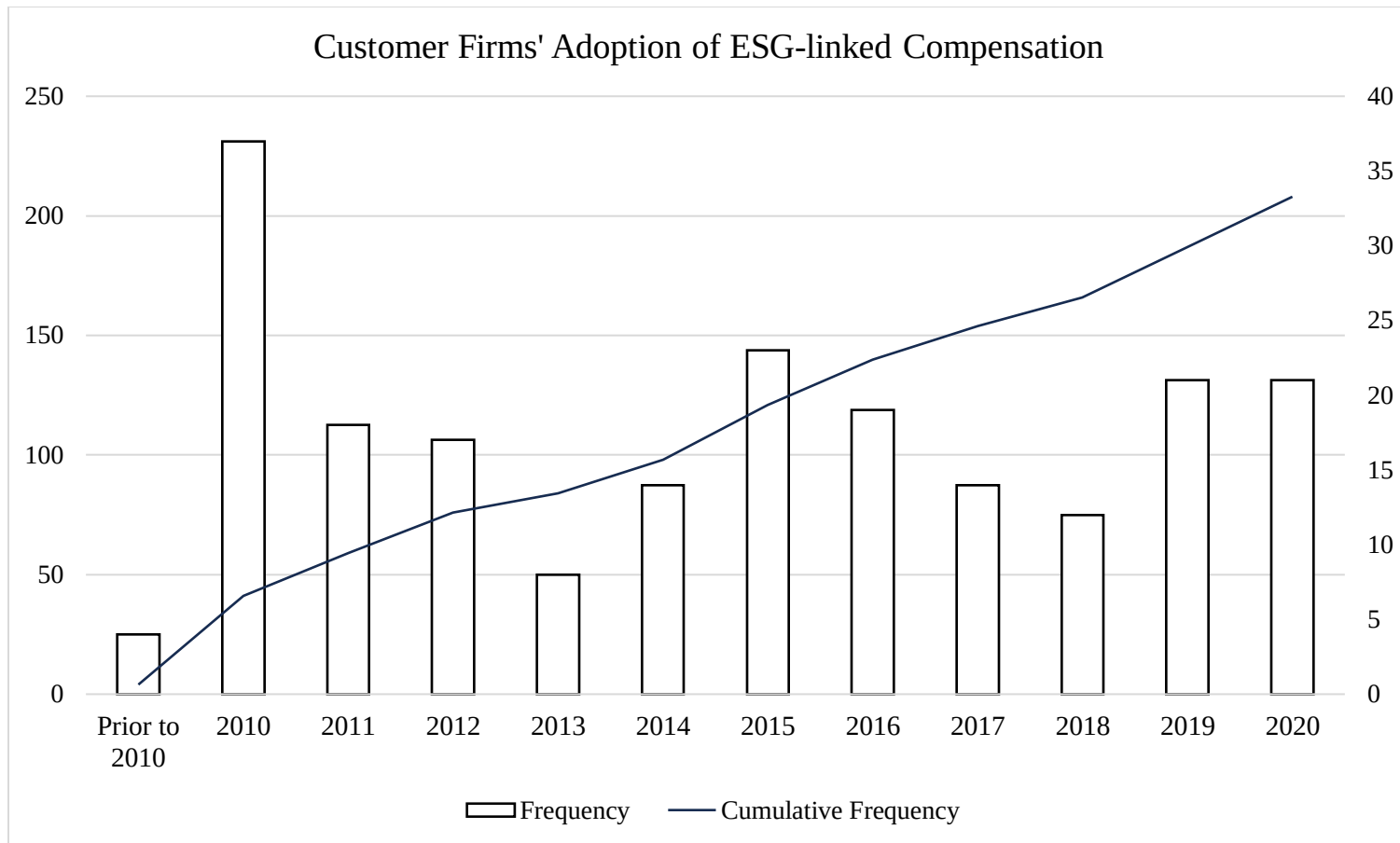


Table 1. Sample Selection**Panel A. Data Collection Steps**

	# Obs	# customers	# suppliers
US customer-supplier-years in FactSet Revere from 2010 to 2020	176,266	4,962	4,241
Less: customer or supplier firm-years not having a GVKEY in Compustat	(28,246)		
	148,020	3,912	3,414
Less: customer or supplier firms in financial or regulated industries	(23,645)		
	124,375	3,362	3,029
Less: customer or supplier firm-years missing total assets in Compustat	(24,931)		
	99,444	2,958	2,753
Less: customer or supplier firm-years not covered by Execucomp	(48,950)		
	50,494	1,327	1,236
Less: customer or supplier firm-years missing a CIK (used by Incentive Lab)	(566)		
	49,928	1,322	1,231
Less: customer or supplier firm-years with missing ESG scores in Refinitiv	(19,215)		
Final Sample	30,713	1,065	1,005
# firms with ESG-linked compensation		208	168

Panel B. Year Distribution

This table presents the year distribution of customer firms' adoption of ESG-linked compensation between 2010 and 2020.

Year	Frequency	Percent
Prior to 2010	4	2%
2010	37	18%
2011	18	9%
2012	17	8%
2013	8	4%
2014	14	7%
2015	23	11%
2016	19	9%
2017	14	7%
2018	12	6%
2019	21	10%
2020	21	10%
Total	208	100%

Table 2. Descriptive Statistics

This table presents selected descriptive statistics covering the full sample.

Variable	N	Mean	Std Dev	P1	P25	Median	P75	P99
ESGscore ^C	108320	0.570	0.193	0.136	0.433	0.605	0.714	0.893
COMBscore ^C	108320	0.497	0.170	0.136	0.377	0.481	0.633	0.859
CONTROscore ^C	108320	0.732	0.361	0.019	0.441	1.000	1.000	1.000
ENVscore ^C	108320	0.496	0.295	0.000	0.228	0.554	0.761	0.946
SOCscore ^C	108320	0.593	0.215	0.144	0.430	0.605	0.773	0.967
GOVscore ^C	108320	0.593	0.205	0.088	0.442	0.622	0.761	0.936
ESGscore ^S	108320	0.447	0.211	0.097	0.274	0.417	0.623	0.892
COMBscore ^S	108320	0.416	0.186	0.093	0.271	0.392	0.551	0.848
CONTROscore ^S	108320	0.872	0.277	0.028	1.000	1.000	1.000	1.000
ENVscore ^S	108320	0.325	0.300	0.000	0.014	0.258	0.596	0.909
SOCscore ^S	108320	0.482	0.234	0.075	0.293	0.458	0.660	0.973
GOVscore ^S	108320	0.493	0.226	0.053	0.312	0.497	0.671	0.930
ESGcomp ^C	108320	0.020	0.140	0.000	0.000	0.000	0.000	1.000
ESGcomp ^S	108320	0.059	0.236	0.000	0.000	0.000	0.000	1.000
ROA ^C	108144	0.061	0.069	-0.171	0.028	0.063	0.096	0.243
TobinQ ^C	108182	2.340	1.341	0.890	1.366	1.953	2.865	7.035
SalesGrowth ^C	108117	0.052	0.148	-0.410	-0.008	0.046	0.098	0.493
DE ^C	100673	6.340	32.526	0.242	1.141	1.915	3.101	101.619
Assets ^C	108320	9.659	1.672	6.068	8.387	9.675	10.873	13.173
IndSale ^C	108320	0.063	0.085	0.000	0.008	0.030	0.084	0.362
R&D ^C	108298	0.041	0.069	0.000	0.000	0.004	0.051	0.309
Salary ^C	108320	0.135	0.124	0.000	0.074	0.103	0.154	0.828
Bonus ^C	108320	0.013	0.050	0.000	0.000	0.000	0.000	0.263
Equity ^C	108320	0.551	0.252	0.000	0.433	0.596	0.719	0.986
Salary ^S	81190	0.157	0.155	0.000	0.080	0.113	0.176	0.983
Bonus ^S	81190	0.012	0.047	0.000	0.000	0.000	0.000	0.268
Equity ^S	81190	0.567	0.248	0.000	0.449	0.615	0.739	0.973
ROA ^S	108139	0.022	0.126	-0.544	-0.005	0.044	0.084	0.258
TobinQ ^S	107911	2.635	2.021	0.821	1.403	1.971	3.030	10.069
SalesGrowth ^S	108049	0.089	0.220	-0.418	-0.018	0.052	0.158	0.968
DE ^S	103852	2.822	5.587	0.129	0.759	1.422	2.597	30.411
Assets ^S	108320	8.201	2.005	4.065	6.763	8.035	9.477	12.681
IndSale ^S	108320	0.031	0.066	0.000	0.001	0.004	0.029	0.337
R&D ^S	108202	0.097	0.176	0.000	0.000	0.033	0.143	1.028

Table 3. Descriptive Statistics by Adoption Status

This table presents selected descriptive statistics by customer firms' adoption status of ESG-linked compensation, where 1 denotes adopting customer-supplier-years and 0 denotes non-adopting customer-supplier-years. The rightmost two columns present the mean differences between the two groups and the p-value of t-test results.

Variable	Customer firm-years with ESG-linked compensation			Customer firm-years without ESG-linked compensation			Difference in means	
	Mean	Median	N	Mean	Median	N	Diff	p-value
ESGscore ^C	0.616	0.633	2160	0.569	0.605	106160	0.047	0.000
COMBscore ^C	0.503	0.499	2160	0.497	0.481	106160	0.006	0.076
CONTROscore ^C	0.636	0.900	2160	0.734	1.000	106160	-0.098	0.000
ENVscore ^C	0.578	0.642	2160	0.494	0.552	106160	0.084	0.000
SOCscore ^C	0.641	0.690	2160	0.592	0.604	106160	0.049	0.000
GOVscore ^C	0.609	0.628	2160	0.593	0.622	106160	0.016	0.000
ESGscore ^S	0.426	0.394	2160	0.447	0.417	106160	-0.021	0.000
COMBscore ^S	0.402	0.381	2160	0.416	0.392	106160	-0.014	0.000
CONTROscore ^S	0.884	1.000	2160	0.872	1.000	106160	0.012	0.047
ENVscore ^S	0.311	0.236	2160	0.325	0.258	106160	-0.014	0.027
SOCscore ^S	0.448	0.422	2160	0.482	0.459	106160	-0.034	0.000
GOVscore ^S	0.489	0.494	2160	0.493	0.497	106160	-0.004	0.420
ESGcomp ^C	1.000	1.000	2160	0.000	0.000	106160	1.000	.
ESGcomp ^S	0.089	0.000	2160	0.059	0.000	106160	0.030	0.000
ROA ^C	0.040	0.044	2150	0.062	0.063	105994	-0.022	0.000
TobinQ ^C	1.779	1.496	2160	2.351	1.972	106022	-0.572	0.000
SalesGrowth ^C	0.011	0.023	2150	0.052	0.047	105967	-0.041	0.000
DE ^C	2.624	1.754	2121	6.420	1.931	98552	-3.796	0.000
Assets ^C	10.396	10.383	2160	9.644	9.662	106160	0.752	0.000
IndSale ^C	0.126	0.038	2160	0.061	0.030	106160	0.065	0.000
R&D ^C	0.025	0.000	2160	0.041	0.004	106138	-0.016	0.000
Salary ^C	0.115	0.091	2160	0.136	0.104	106160	-0.021	0.000
Bonus ^C	0.010	0.000	2160	0.013	0.000	106160	-0.003	0.005
Equity ^C	0.606	0.660	2160	0.550	0.594	106160	0.056	0.000
Salary ^S	0.162	0.120	1612	0.157	0.113	79578	0.005	0.174
Bonus ^S	0.018	0.000	1612	0.012	0.000	79578	0.006	0.000
Equity ^S	0.549	0.594	1612	0.568	0.616	79578	-0.019	0.003
ROA ^S	0.016	0.039	2160	0.022	0.044	105979	-0.006	0.035
TobinQ ^S	2.442	1.739	2152	2.639	1.975	105759	-0.197	0.000
SalesGrowth ^S	0.071	0.046	2154	0.089	0.053	105895	-0.018	0.000
DE ^S	2.614	1.372	2095	2.827	1.423	101757	-0.213	0.084
Assets ^S	8.187	8.047	2160	8.201	8.034	106160	-0.014	0.746
IndSale ^S	0.028	0.004	2160	0.031	0.004	106160	-0.003	0.013
R&D ^S	0.072	0.014	2153	0.098	0.033	106049	-0.026	0.000

Table 4. Industry Distribution of Customer Firms' Adoption of ESG-linked Compensation
This table presents the industry distribution of customer firms' adoption of ESG-linked compensation between 2010 and 2020. Financial and utility firms are excluded.

SIC	Description	ESG-linked Compensation Adoption		
		Yes	No	Total
1	Mining and Construction	37	45	82
		45%	55%	
2	Manufacturing	42	196	238
		18%	82%	
3	Manufacturing	58	288	346
		17%	83%	
4	Transportation (no utilities)	16	57	73
		22%	78%	
5	Wholesale and Retail	23	157	180
		13%	87%	
7	Services	26	161	187
		14%	86%	
8	Services	5	44	49
		10%	90%	
9	Public Administration	1	0	1
		100%	0%	
Total		208	948	1156

Table 5. Pearson and Spearman Correlations

This table presents pairwise Pearson correlation (below diagonal) coefficients, Spearman correlation (above diagonal) coefficients, and p-values among key variables. *, **, and *** indicate statistical significance at 0.1, 0.05, and 0.01 levels, respectively.

	(1) ESGscore ^C	(2) ESGscore ^S	(3) ESGcomp ^C	(4) ESGcomp ^S	(5) Assets ^C	(6) R&D ^C	(7) Salary ^C	(8) Bonus ^C	(9) Equity ^C	(10) Salary ^S	(11) Bonus ^S	(12) Equity ^S	(13) Assets ^S	(14) R&D ^S
1)		-0.155***	0.036***	-0.060***	0.629***	0.248***	-0.442***	-0.067***	0.003	0.108***	0.015***	-0.012***	-0.206***	-0.017***
		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.386	0.000	0.000	0.001	0.000	0.000
2)	-0.161***		-0.014***	0.193***	-0.156***	-0.042***	0.114***	0.018***	0.001***	-0.407***	-0.092***	0.038***	0.722***	-0.047***
	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.759	0.000	0.000	0.000	0.000	0.000
3)	0.034***	-0.014***		0.018***	0.060***	-0.043***	-0.041***	-0.007**	0.032***	0.012***	0.015***	-0.015***	0.001	-0.035***
	0.000	0.000		0.000	0.000	0.000	0.000	0.029	0.000	0.001	0.000	0.000	0.637	0.000
4)	-0.060***	0.202***	0.018***		-0.046***	-0.010***	0.044***	0.008***	-0.023***	-0.114***	-0.031***	0.053***	0.206***	-0.036***
	0.000	0.000	0.000		0.000	0.001	0.000	0.006	0.000	0.000	0.000	0.000	0.000	0.000
5)	0.615***	-0.162***	0.063***	-0.044***		0.240***	-0.483***	-0.036***	-0.105***	0.101***	0.038***	0.001	-0.185***	0.013***
	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.835	0.000	0.000
6)	0.103***	-0.008***	-0.032***	-0.009***	0.065***		-0.306***	-0.063***	-0.023***	-0.006*	-0.005	0.029***	-0.083***	0.205***
	0.000	0.006	0.000	0.002	0.000		0.000	0.000	0.000	0.087	0.132	0.000	0.000	0.000
7)	-0.340***	0.079***	-0.023***	0.023***	-0.290***	-0.078***		0.029***	-0.277***	-0.053***	0.004	0.017***	0.130***	-0.055***
	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.219	0.000	0.000	0.000
8)	-0.100***	0.010***	-0.009***	0.018***	-0.042***	-0.065***	0.055***		0.091***	-0.004	0.016***	-0.031***	0.045***	-0.049***
	0.000	0.001	0.005	0.000	0.000	0.000	0.000		0.000	0.229	0.000	0.000	0.000	0.000
9)	0.027***	-0.004	0.031***	-0.018***	-0.136***	0.021***	-0.433***	-0.034***		-0.026***	-0.006	0.033***	-0.024***	0.077***
	0.000	0.198	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.104	0.000	0.000	0.000
10)	0.045***	-0.273***	0.005	-0.087***	0.021***	0.011***	-0.020***	0.011***	0.014***		0.018***	-0.416***	-0.491***	-0.188***
	0.000	0.000	0.174	0.000	0.000	0.001	0.000	0.002	0.000		0.000	0.000	0.000	0.000
11)	0.005	-0.086***	0.018***	-0.036***	0.019***	-0.008**	0.006*	0.017***	0.000	0.045***		-0.061***	-0.068***	-0.048***
	0.186	0.000	0.000	0.000	0.000	0.031	0.069	0.000	0.927	0.000		0.000	0.000	0.000
12)	0.008**	0.048***	-0.011***	0.057***	0.022***	0.025***	0.015***	-0.033***	-0.003	-0.544***	-0.126***		-0.037***	0.258***
	0.020	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.387	0.000	0.000		0.000	0.000
13)	-0.218***	0.732***	-0.001	0.193***	-0.197***	-0.056***	0.083***	0.041***	-0.010***	-0.244***	-0.055***	-0.073***		-0.162***
	0.000	0.000	0.746	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.000		0.000
14)	0.056***	-0.141***	-0.020***	-0.044***	0.071***	0.271***	-0.040***	-0.031***	0.063***	-0.010***	-0.042***	0.154***	-0.231***	
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	

Table 6. Multivariate Analysis – Customer Firms’ Likelihood of Adopting ESG-linked Compensation

This table presents the test results of customer firms’ characteristics on their likelihood of adopting ESG-linked compensation. The dependent variable equals one if the customer firm adopts ESG-linked compensation, and zero otherwise. The observations are from the pooled sample at customer-year level for the immediate year prior to adoption (or assigned pseudo-adoption in the control sample). *, **, and *** indicate statistical significance at 0.1, 0.05, and 0.01 levels, respectively.

Dependent Variable =	(1) ESGcomp ^C
ESGscore^C	0.875
	(1.22)
Salary% ^C	-1.514
	(-0.94)
Bonus% ^C	0.884
	(0.56)
Equity% ^C	-0.068
	(-0.12)
Assets ^C	0.357***
	(3.18)
ROA ^C	-1.169
	(-0.45)
DE ^C	0.003
	(0.44)
SalesGrowth ^C	0.455
	(0.73)
TobinQ ^C	-0.054
	(-0.35)
R&D ^C	0.131
	(0.05)
Constant	-4.741***
	(-3.22)
Observations	2,178
Pseudo R-squared	0.289
Fixed Effects	
-Year	Yes
-Customer industry	Yes
-Customer comp. consultant	Yes

Table 7. Multivariate Analyses (H1) – Full Sample

This table presents the test results of H1. The dependent variable is supplier firm's ESG score. The observations are from the pooled sample at customer-supplier-year level. *, **, and *** indicate statistical significance at 0.1, 0.05, and 0.01 levels, respectively.

Panel A. Tests Controlling for Supplier Firms' Characteristics

Dependent Variable =	(1) ESGscore ^S	(2) ESGscore ^S	(3) ESGscore ^S
ESGcomp ^C	-0.046*** (-7.17)	-0.017 (-1.36)	-0.007 (-0.76)
POST0	-0.005*** (-2.73)	-0.001 (-1.50)	-0.000 (-0.46)
ESGcomp^C*POST0	0.013 (1.36)	0.007 (0.68)	0.003 (0.30)
POST1	-0.009*** (-4.82)	-0.003 (-1.62)	-0.001 (-0.61)
ESGcomp^C*POST1	0.027*** (2.83)	0.017 (1.19)	0.010 (0.97)
POST2	-0.014*** (-7.26)	-0.004 (-1.48)	-0.001 (-0.46)
ESGcomp^C*POST2	0.037*** (3.82)	0.027** (2.66)	0.011 (1.04)
ESGcomp ^S		0.101*** (8.29)	0.044*** (3.92)
Salary% ^S		-0.403*** (-9.61)	-0.119*** (-5.67)
Bonus% ^S		-0.259*** (-4.57)	-0.154** (-2.34)
Equity% ^S		-0.118*** (-6.62)	0.016 (1.15)
DE ^S		0.002*** (3.49)	-0.000 (-0.41)
ROA ^S		0.624*** (9.86)	0.247*** (6.02)
SalesGrowth ^S		-0.124*** (-8.06)	-0.120*** (-9.49)
TobinQ ^S		-0.004 (-1.67)	0.008*** (3.28)
R&D ^S		0.113** (2.46)	0.057* (1.93)
Assets ^S			0.070*** (27.07)
Constant	0.453*** (464.19)	0.598*** (37.26)	-0.134*** (-4.41)
Model	OLS	OLS	OLS
Observations	108,320	77,775	77,775
R-squared	0.020	0.250	0.552
Fixed Effects			
-Year	Yes	Yes	Yes
-Customer industry	No	Yes	Yes
-Customer comp. consultant	No	Yes	Yes

(Table 7 continued)

Panel B. Tests Controlling for Customer and Supplier Firms' Characteristics

Dependent Variable =	(1) ESGscore ^S	(2) ESGscore ^S
ESGcomp ^C	-0.010 (-0.74)	-0.011 (-1.16)
POST0	0.001 (0.76)	-0.000 (-0.27)
ESGcomp^C*POST0	0.004 (0.36)	0.004 (0.47)
POST1	0.001 (0.66)	-0.000 (-0.45)
ESGcomp^C*POST1	0.014 (0.83)	0.012 (1.19)
POST2	0.001 (0.42)	-0.001 (-0.34)
ESGcomp^C*POST2	0.022 (1.67)	0.014 (1.13)
ESGcomp ^S	0.097*** (7.68)	0.043*** (3.86)
Salary% ^S	-0.390*** (-9.13)	-0.119*** (-5.39)
Bonus% ^S	-0.258*** (-4.45)	-0.157*** (-2.35)
Equity% ^S	-0.110*** (-6.40)	0.017 (1.19)
DE ^S	0.002*** (3.73)	-0.000 (-0.14)
ROA ^S	0.627*** (9.92)	0.247*** (6.01)
SalesGrowth ^S	-0.126*** (-7.91)	-0.121*** (-8.84)
TobinQ ^S	-0.005 (-1.80)	0.008*** (3.58)
R&D ^S	0.130** (2.66)	0.055* (1.88)
Assets ^S		0.070*** (26.47)
ESGscore ^C	-0.044** (-2.93)	-0.005 (-0.27)
Salary% ^C	-0.009 (-0.50)	0.007 (0.53)
Bonus% ^C	0.007 (0.15)	-0.013 (-0.49)
Equity% ^C	-0.004 (-0.28)	-0.004 (-0.53)
Assets ^C	-0.011** (-2.73)	0.002 (1.17)
DE ^C	0.000 (1.65)	-0.000 (-0.59)
ROA ^C	-0.040 (-0.82)	0.026 (1.39)

(Table 7, Panel B continued)

SalesGrowth ^C	0.012 (0.74)	0.006 (0.51)
TobinQ ^C	0.002 (0.64)	-0.002* (-2.08)
R&D ^C	-0.019 (-0.63)	0.071*** (3.51)
Constant	0.725*** (18.84)	-0.149*** (-4.08)
Model	OLS	OLS
Observations	72,200	72,200
R-squared	0.261	0.553
Fixed Effects		
-Year	Yes	Yes
-Customer industry	Yes	Yes
-Customer comp. consultant	Yes	Yes

Table 8. Multivariate Analyses (H1) – Sample Split by Supplier Firms' Size

This table presents the test results of H1. The dependent variable is supplier firm's ESG score. The observations are from the pooled sample at customer-supplier-year level. *, **, and *** indicate statistical significance at 0.1, 0.05, and 0.01 levels, respectively.

Panel A. Two-way Interactions

Dependent Variable =	(1) Top tercile supplier asset ESGscore ^S	(2) Bottom tercile supplier asset ESGscore ^S	(3) Top tercile supplier asset ESGscore ^S	(4) Bottom tercile supplier asset ESGscore ^S
ESGcomp ^C	-0.026** (-2.87)	0.001 (0.06)	-0.029** (-3.17)	-0.004 (-0.28)
POST0	-0.001 (-0.50)	-0.000 (-0.09)	-0.000 (-0.13)	0.000 (0.09)
ESGcomp^C*POST0	0.013 (1.17)	-0.003 (-0.24)	0.013 (1.25)	-0.003 (-0.24)
POST1	-0.001 (-0.59)	0.000 (0.01)	-0.000 (-0.12)	0.000 (0.19)
ESGcomp^C*POST1	0.022* (2.13)	-0.000 (-0.01)	0.023 (1.63)	0.000 (0.00)
POST2	-0.001 (-0.52)	0.000 (0.02)	0.000 (0.02)	-0.000 (-0.06)
ESGcomp^C*POST2	0.024** (2.64)	0.007 (0.46)	0.024* (1.86)	0.010 (0.61)
ESGcomp ^S	0.064*** (3.93)	-0.011 (-0.42)	0.062*** (3.78)	-0.012 (-0.48)
Salary% ^S	-0.211*** (-6.29)	0.012 (0.60)	-0.215*** (-5.83)	0.016 (0.71)
Bonus% ^S	-0.174** (-2.27)	-0.075 (-0.72)	-0.172* (-2.22)	-0.086 (-0.83)
Equity% ^S	-0.006 (-0.33)	0.058** (2.36)	-0.006 (-0.31)	0.060** (2.53)
DE ^S	-0.000 (-0.19)	0.000 (0.01)	-0.000 (-0.32)	0.000 (0.13)
ROA ^S	0.245*** (3.41)	0.207*** (6.04)	0.255*** (3.67)	0.213*** (5.65)
SalesGrowth ^S	-0.122*** (-7.14)	-0.096*** (-5.40)	-0.122*** (-7.31)	-0.092*** (-5.52)
TobinQ ^S	0.019*** (3.76)	-0.001 (-0.71)	0.018*** (3.66)	-0.001 (-0.67)
R&D ^S	0.101* (2.21)	0.067** (2.83)	0.097* (2.12)	0.065** (2.59)
Assets ^S	0.059*** (20.29)	0.046*** (6.37)	0.059*** (18.99)	0.047*** (5.78)
ESGscore ^C			-0.030 (-1.40)	-0.006 (-0.24)
Salary% ^C			-0.024 (-1.41)	0.027* (2.21)
Bonus% ^C			-0.100** (-2.24)	0.059 (1.26)
Equity% ^C			-0.006	0.004

(Table 8, Panel A continued)

			(-0.76)	(0.31)
Assets ^C			0.001	0.003
			(0.53)	(1.11)
DE ^C			0.000	-0.000
			(0.28)	(-0.55)
ROA ^C			0.018	0.078
			(0.52)	(1.20)
SalesGrowth ^C			0.012	-0.034**
			(0.83)	(-2.29)
TobinQ ^C			-0.004	-0.002
			(-1.51)	(-0.74)
R&D ^C			0.022	0.111**
			(0.58)	(2.41)
Constant	-0.011	-0.008	0.007	-0.048
	(-0.30)	(-0.16)	(0.12)	(-0.69)
Model	OLS	OLS	OLS	OLS
Observations	32,254	18,043	29,664	16,883
R-squared	0.410	0.240	0.417	0.246
Fixed Effects				
-Year	Yes	Yes	Yes	Yes
-Customer industry	Yes	Yes	Yes	Yes
-Customer comp. consultant	Yes	Yes	Yes	Yes

(Table 8 continued)

Panel B. Three-way Interactions

Dependent Variable =	(1) Top tercile supplier asset ESGscore ^S	(2) Bottom tercile supplier asset ESGscore ^S	(3) Top tercile supplier asset ESGscore ^S	(4) Bottom tercile supplier asset ESGscore ^S
ESGcomp ^C	0.004 (0.43)	-0.012 (-1.10)	0.002 (0.17)	-0.016 (-1.50)
POST0	0.000 (0.36)	-0.002 (-1.28)	0.001 (0.77)	-0.001 (-1.22)
ESGcomp ^C *POST0	-0.004 (-0.24)	0.007 (0.62)	-0.003 (-0.22)	0.010 (0.90)
Large_supplier	0.059*** (6.73)		0.059*** (6.29)	
ESGcomp ^C *Large_supplier	-0.036*** (-3.40)		-0.038*** (-3.44)	
POST0*Large_supplier	-0.001 (-0.95)		-0.002 (-1.02)	
ESGcomp^C*POST0*Large_supplier	0.021 (0.86)		0.023 (0.92)	
POST1	-0.000 (-0.07)	-0.003 (-1.46)	0.000 (0.25)	-0.002 (-1.46)
ESGcomp ^C *POST1	-0.000 (-0.01)	0.015 (1.14)	0.001 (0.06)	0.018 (1.37)
POST1*Large_supplier	-0.001 (-0.84)		-0.002 (-0.68)	
ESGcomp^C*POST1*Large_supplier	0.028 (1.75)		0.030 (1.73)	
POST2	-0.000 (-0.24)	-0.003 (-1.49)	-0.000 (-0.11)	-0.003 (-1.43)
ESGcomp ^C *POST2	0.004 (0.28)	0.015 (1.12)	0.005 (0.32)	0.019 (1.32)
POST2*Large_supplier	-0.001 (-0.19)		-0.001 (-0.15)	
ESGcomp^C*POST2*Large_supplier	0.021 (1.29)		0.024 (1.27)	
Small_supplier		-0.005 (-0.50)		-0.004 (-0.48)
ESGcomp ^C *Small_supplier		0.017 (1.66)		0.019 (1.80)
POST0*Small_supplier		0.005 (1.63)		0.006 (1.67)
ESGcomp^C*POST0*Small_supplier		-0.014 (-0.90)		-0.021 (-1.18)
POST1*Small_supplier		0.008* (1.89)		0.008* (1.86)
ESGcomp^C*POST1*Small_supplier		-0.017 (-1.00)		-0.020 (-0.95)
POST2*Small_supplier		0.012* (1.81)		0.012 (1.73)

(Table 8, Panel B continued)

ESGcomp^C*POST2*Small_supplier		-0.012		-0.015
		(-0.70)		(-0.79)
ESGcomp ^S	0.041*** (3.75)	0.044*** (3.91)	0.041*** (3.74)	0.043*** (3.86)
Salary% ^S	-0.118*** (-5.36)	-0.118*** (-5.65)	-0.118*** (-5.14)	-0.119*** (-5.39)
Bonus% ^S	-0.160** (-2.48)	-0.154** (-2.31)	-0.162** (-2.49)	-0.157** (-2.31)
Equity% ^S	0.015 (1.08)	0.016 (1.15)	0.017 (1.15)	0.018 (1.19)
DE ^S	-0.000 (-0.76)	-0.000 (-0.38)	-0.000 (-0.55)	-0.000 (-0.12)
ROA ^S	0.259*** (6.75)	0.247*** (6.02)	0.259*** (6.65)	0.247*** (6.01)
SalesGrowth ^S	-0.118*** (-9.33)	-0.120*** (-9.26)	-0.119*** (-8.87)	-0.121*** (-8.64)
TobinQ ^S	0.007** (3.05)	0.008*** (3.20)	0.007*** (3.33)	0.008*** (3.49)
R&D ^S	0.065** (2.28)	0.057* (1.88)	0.063* (2.21)	0.055* (1.83)
Assets ^S	0.058*** (19.89)	0.070*** (27.54)	0.058*** (18.20)	0.070*** (27.22)
ESGscore ^C			-0.003 (-0.17)	-0.005 (-0.27)
Salary% ^C			0.009 (0.63)	0.007 (0.51)
Bonus% ^C			-0.016 (-0.61)	-0.013 (-0.46)
Equity% ^C			-0.002 (-0.27)	-0.004 (-0.52)
Assets ^C			0.002 (1.09)	0.002 (1.21)
DE ^C			-0.000 (-0.45)	-0.000 (-0.57)
ROA ^C			0.021 (1.04)	0.026 (1.29)
SalesGrowth ^C			0.007 (0.55)	0.006 (0.50)
TobinQ ^C			-0.002 (-1.81)	-0.002* (-1.96)
R&D ^C			0.072*** (3.71)	0.071*** (3.34)
Constant	-0.046 (-1.55)	-0.133*** (-4.48)	-0.062 (-1.71)	-0.149*** (-4.24)
Model	OLS	OLS	OLS	OLS
Observations	77,775	77,775	72,200	72,200
R-squared	0.559	0.552	0.559	0.553
Fixed Effects				
-Year	Yes	Yes	Yes	Yes
-Customer industry	Yes	Yes	Yes	Yes
-Customer comp. consultant	Yes	Yes	Yes	Yes

Table 9. Conditioning Analyses (H2a/H2b)

This table presents the test results of H2a and H2b. The dependent variable is supplier firms' ESG score. The observations are from the pooled sample at customer-supplier-year level, split at median supplier firm's sales as a proportion to total sales at the 2-digit SIC level in each year and 2-digit SIC group. *, **, and *** indicate statistical significance at 0.1, 0.05, and 0.01 levels, respectively.

Panel A. Testing of H2a

Dependent Variable =	(1) IndSales ^S above median ESGscore ^S	(2) IndSales ^S below median ESGscore ^S	(3) IndSales ^S 3-way ESGscore ^S
ESGcomp ^C	-0.012 (-1.40)	-0.006 (-0.48)	-0.009 (-0.86)
POST0	-0.000 (-0.08)	-0.000 (-0.32)	0.001 (0.70)
ESGcomp^C*POST0	0.013 (1.58)	-0.006 (-0.47)	0.004 (0.46)
POST1	-0.000 (-0.13)	-0.001 (-0.46)	0.001 (0.58)
ESGcomp^C*POST1	0.021** (2.42)	-0.001 (-0.04)	0.010 (0.70)
POST2	0.000 (0.06)	-0.001 (-0.37)	0.001 (0.73)
ESGcomp^C*POST2	0.023* (2.05)	0.004 (0.30)	0.014 (1.21)
POST1*IndSales ^S			-0.037** (-2.27)
ESGcomp^C*POST0*IndSales^S			-0.045 (-0.37)
POST2*IndSales ^S			-0.047* (-1.86)
ESGcomp^C*POST1*IndSales^S			0.006 (0.04)
IndSales ^S			0.182*** (3.87)
ESGcomp^C*IndSales^S			0.077 (0.52)
POST0*IndSales ^S			-0.025* (-1.97)
ESGcomp^C*POST2*IndSales^S			-0.089 (-0.54)
ESGcomp ^S	0.047** (2.89)	0.017 (1.19)	0.045*** (4.06)
Salary% ^S	-0.190*** (-6.34)	-0.020 (-0.69)	-0.114*** (-5.68)
Bonus% ^S	-0.195** (-2.56)	-0.096 (-1.13)	-0.167** (-2.52)
Equity% ^S	0.010 (0.74)	0.044* (2.21)	0.022 (1.54)
DE ^S	-0.000 (-0.17)	0.000 (0.53)	-0.000 (-0.72)
ROA ^S	0.248***	0.256***	0.261***

(Table 9, Panel A continued)

	(4.82)	(5.61)	(6.29)
SalesGrowth ^S	-0.113***	-0.117***	-0.121***
	(-6.46)	(-5.33)	(-8.78)
TobinQ ^S	0.014***	0.003	0.007**
	(3.69)	(1.14)	(3.00)
R&D ^S	0.106**	0.061	0.073*
	(2.38)	(1.57)	(2.09)
Assets ^S	0.067***	0.057***	0.067***
	(24.07)	(14.17)	(25.29)
Constant	-0.101***	-0.070*	-0.121***
	(-3.26)	(-1.89)	(-4.06)
Model	OLS	OLS	OLS
Observations	46,805	30,963	77,775
R-squared	0.526	0.308	0.554
Fixed Effects			
-Year	Yes	Yes	Yes
-Customer industry	Yes	Yes	Yes
-Customer comp. consultant	Yes	Yes	Yes

(Table 9 continued)

Panel B. Testing of H2b

Dependent Variable =	(1) Rel_duration above median ESGscore ^S	(2) Rel_duration below median ESGscore ^S	(3) Rel_duration 3-way ESGscore ^S
ESGcomp ^C	-0.011 (-0.91)	-0.008 (-0.71)	-0.012 (-1.03)
POST0	0.000 (0.06)	-0.001 (-1.14)	-0.000 (-0.17)
ESGcomp^C*POST0	-0.006 (-0.68)	0.011 (0.80)	0.015 (1.08)
POST1	-0.000 (-0.14)	-0.001 (-1.30)	-0.000 (-0.19)
ESGcomp^C*POST1	-0.009 (-1.05)	0.023 (1.43)	0.026 (1.57)
POST2	-0.000 (-0.02)	-0.001 (-1.05)	0.000 (0.16)
ESGcomp^C*POST2	0.002 (0.21)	0.020 (1.24)	0.022 (1.55)
Rel_duration			0.001 (1.03)
ESGcomp ^C *Rel_duration			0.001 (1.04)
POST0*Rel_duration			-0.000 (-0.30)
ESGcomp^C*POST0*Rel_duration			-0.003 (-1.64)
POST1*Rel_duration			-0.000 (-0.40)
ESGcomp^C*POST1*Rel_duration			-0.004* (-1.98)
POST2*Rel_duration			-0.000 (-0.78)
ESGcomp^C*POST2*Rel_duration			-0.003 (-1.30)
ESGcomp ^S	0.035** (2.62)	0.048*** (3.38)	0.044*** (3.90)
Salary% ^S	-0.119*** (-5.58)	-0.114*** (-4.20)	-0.118*** (-5.56)
Bonus% ^S	-0.190** (-3.05)	-0.133 (-1.70)	-0.153** (-2.31)
Equity% ^S	0.030** (3.00)	0.008 (0.44)	0.016 (1.16)
DE ^S	-0.000 (-1.13)	0.000 (0.30)	-0.000 (-0.38)
ROA ^S	0.175*** (5.00)	0.302*** (7.03)	0.245*** (5.93)
SalesGrowth ^S	-0.099*** (-5.98)	-0.133*** (-9.91)	-0.120*** (-9.48)
TobinQ ^S	0.009*** (3.58)	0.007** (2.84)	0.008*** (3.21)

(Table 9, Panel B continued)

R&D ^s	0.058 (1.74)	0.059 (1.64)	0.055* (1.87)
Assets ^s	0.073*** (17.20)	0.068*** (34.35)	0.070*** (27.22)
Constant	-0.165*** (-3.75)	-0.115*** (-4.02)	-0.138*** (-4.36)
Model	OLS	OLS	OLS
Observations	33,859	43,909	77,775
R-squared	0.583	0.541	0.552
Fixed Effects			
-Year	Yes	Yes	Yes
-Customer industry	Yes	Yes	Yes
-Customer comp. consultant	Yes	Yes	Yes

Table 10. Customer-supplier Relationship Terminations
Panel A. Likelihood of Termination by Supplier Firms' ESG Score

This table presents the test results of customer firms' adoption of ESG-linked compensation on the likelihood of customer-supplier relationship terminations. The dependent variable equals to one if a customer-supplier relationship discontinues in the year, and zero otherwise. The observations are from the pooled sample at customer-supplier-year level, split by supplier firms' ESG score at median in each year and 2-digit SIC group. *, **, and *** indicate statistical significance at 0.1, 0.05, and 0.01 levels, respectively.

Dependent Variable =	(1) ESGscore ^S above median	(2) ESGscore ^S below median
	Rel_lastyear	Rel_lastyear
ESGcomp ^C	-0.143 (-0.88)	-0.166 (-0.89)
POST0	0.008 (0.20)	0.009 (0.17)
ESGcomp^C*POST0	-0.218 (-0.90)	0.165 (0.63)
POST1	-0.020 (-0.44)	0.007 (0.12)
ESGcomp^C*POST1	0.348 (1.53)	0.254 (0.93)
POST2	-0.020 (-0.41)	-0.019 (-0.31)
ESGcomp^C*POST2	0.005 (0.02)	0.378 (1.40)
ESGscore ^C	0.654*** (4.88)	0.219 (1.33)
Salary% ^C	-0.210 (-1.24)	0.071 (0.38)
Bonus% ^C	0.027 (0.08)	0.769* (1.83)
Equity% ^C	0.249*** (2.88)	-0.051 (-0.47)
Assets ^C	-0.046*** (-2.99)	-0.115*** (-6.19)
DE ^C	0.000 (0.70)	0.001 (1.15)
ROA ^C	1.129*** (3.39)	-0.667* (-1.66)
SalesGrowth ^C	-0.545*** (-3.92)	-0.142 (-0.84)
TobinQ ^C	-0.033* (-1.72)	-0.014 (-0.57)
R&D ^C	0.230 (0.63)	0.094 (0.21)
ESGcomp ^S	0.273*** (5.17)	0.169* (1.80)
Salary% ^S	-0.367** (-2.19)	-0.187 (-1.22)
Bonus% ^S	1.365***	-0.264

(Table 10, Panel A continued)

	(3.49)	(-0.67)
Equity% ^S	0.474***	0.278***
	(5.40)	(2.65)
DE ^S	-0.012***	-0.012**
	(-3.87)	(-2.49)
ROA ^S	-0.985***	-0.380
	(-3.35)	(-1.56)
SalesGrowth ^S	-0.409***	0.244**
	(-3.57)	(2.36)
TobinQ ^S	0.059***	0.045***
	(3.82)	(3.02)
R&D ^S	-1.685***	-0.528***
	(-6.77)	(-2.60)
Assets ^S	-0.005	0.056***
	(-0.49)	(3.16)
Constant	-4.166***	-0.206
	(-4.71)	(-0.30)
Model	Logistic	Logistic
Observations	35,732	24,910
Pseudo R2	0.0365	0.0491
Fixed Effects		
-Year	Yes	Yes
-Customer industry	Yes	Yes
-Customer comp. consultant	Yes	Yes

Panel B. Market Share of Terminated Supplier Firms

This table presents the t-test results of showing the difference in the likelihood of customer-supplier relationship terminations by supplier firms' market share (above or below industry median). Only observations containing customer firms that have adopted ESG-linked compensation are included in the test.

Supplier Firm Group	Obs	Mean	Standard Errors	t-stat / p-value
Market share below-median	1,203	0.153	0.010	
Market share above-median	957	0.156	0.012	
Total	2,160	0.154	0.008	
Difference		-0.003	0.016	-0.175 (p=0.861)

Table 11. Comparison of Supplier Firms' ESG Scores Pre- and Post-adoption**Panel A. Pre-adoption**

This table presents t-test results showing the mean difference of continuing and terminated supplier firms' ESG performance, before customer firms' adoption of ESG-linked compensation.

Supplier Firm Group	Obs	Mean	Standard Errors	t-stat / p-value
Continuing Suppliers	944	-0.000	0.006	
Terminated Suppliers	134	0.002	0.014	
Total	1,078	0.000	0.005	
Difference		-0.003	0.016	-0.162 (p=0.871)

Panel B. Post-adoption

This table presents t-test results showing the mean difference of continuing and terminated supplier firms' ESG performance, after customer firms' adoption of ESG-linked compensation.

Supplier Firm Group	Obs	Mean	Standard Errors	t-stat / p-value
Continuing Suppliers	1,997	-0.000	0.003	
Terminated Suppliers	326	0.003	0.010	
Total	2,323	-0.000	0.004	
Difference		-0.003	0.011	-0.281 (p=0.779)

Panel C. New Supplier Firms' ESG Performance by Pre-/Post-adoption Status

This table presents t-test results showing the mean difference of new supplier firms' ESG performance, before vs after customer firms' adoption of ESG-linked compensation.

Adoption Status Group	Obs	Mean	Standard Errors	t-stat / p-value
Pre-adoption	293	0.011	0.010	
Post-adoption	847	-0.009	0.006	
Total	1,140	-0.004	0.006	
Difference		0.020	0.013	1.608 (p=0.108)

Table 12. Propensity Score Matching**Panel A. Matching Effectiveness**

This table presents the distribution of the variables used to match treated firms with control firms. Only successfully matched observations are included in this table.

	PSM Treated			PSM Control			Difference	
	Mean	Median	N	Mean	Median	N	Mean	P
ESGscore ^C	0.604	0.647	3799	0.523	0.563	3799	0.081	0.000
Salary% ^C	0.112	0.090	3799	0.128	0.105	3799	-0.016	0.000
Bonus% ^C	0.016	0.000	3799	0.025	0.000	3799	-0.009	0.000
Equity% ^C	0.617	0.654	3799	0.603	0.628	3799	0.014	0.001
Asset ^C	10.315	10.366	3799	9.495	9.495	3799	0.820	0.000
DE ^C	2.876	1.770	3799	2.570	1.674	3799	0.306	0.002
ROA ^C	0.047	0.049	3799	0.045	0.047	3799	0.002	0.188
SalesGrowth ^C	0.041	0.030	3799	0.059	0.031	3799	-0.018	0.000
TobinQ ^C	1.847	1.583	3799	1.876	1.613	3799	-0.029	0.214
R&D ^C	0.032	0.000	3799	0.036	0.008	3799	-0.004	0.003

Panel B. PSM Regression Analysis

This table presents the test results of my H1 using a propensity score-matched sample. Adopting and non-adopting customer firms are matched with a caliper of 0.03 without replacement on the following variables: customer firms' ESG score, the proportions of each of the CEO's salary, bonus, and equity to total compensation, total assets, leverage, ROA, sales growth, Tobin's Q, R&D expenses, 2-digit SIC, and year. The observations are from the pooled sample at customer-supplier-year level. *, **, and *** indicate statistical significance at 0.1, 0.05, and 0.01 levels, respectively.

Dependent Variable =	(1) Supplier controls	(2) Supplier controls	(3) Customer and supplier controls	(4) Customer and supplier controls
	ESGscore ^S	ESGscore ^S	ESGscore ^S	ESGscore ^S
ESGcomp ^C	-0.015 (-1.62)	-0.010 (-1.14)	-0.007 (-0.62)	-0.009 (-0.84)
POST0	-0.006 (-0.80)	-0.005 (-1.10)	-0.002 (-0.35)	-0.004 (-0.77)
ESGcomp^C*POST0	0.013 (1.23)	0.012 (1.53)	0.009 (0.81)	0.010 (1.22)
POST1	0.003 (0.52)	0.004 (0.70)	0.008 (1.30)	0.005 (0.80)
ESGcomp^C*POST1	0.011 (0.69)	0.010 (0.75)	0.008 (0.60)	0.009 (0.71)
POST2	-0.011 (-1.32)	-0.003 (-0.37)	-0.004 (-0.41)	-0.001 (-0.14)
ESGcomp^C*POST2	0.024 (1.34)	0.012 (0.89)	0.019 (1.18)	0.012 (0.88)
ESGscore ^C			-0.010 (-0.42)	-0.009 (-0.42)
Salary% ^C			-0.048 (-1.24)	-0.003 (-0.10)
Bonus% ^C			0.085	0.023

(Table 12, Panel B continued)

			(1.15)	(0.55)
Equity% ^C			-0.000	-0.008
			(-0.01)	(-0.32)
Assets ^C			-0.014***	-0.000
			(-4.72)	(-0.06)
DE ^C			-0.000	-0.001
			(-0.15)	(-0.69)
ROA ^C			-0.099	-0.123**
			(-1.40)	(-2.72)
SalesGrowth ^C			0.016	0.015
			(0.81)	(0.87)
TobinQ ^C			-0.003	0.000
			(-0.90)	(0.05)
R&D ^C			0.112	0.138*
			(1.22)	(2.06)
ESGcomp ^S	0.096***	0.047***	0.093***	0.047***
	(4.88)	(3.30)	(4.47)	(3.20)
Salary% ^S	-0.437***	-0.171***	-0.430***	-0.170**
	(-7.58)	(-3.18)	(-7.28)	(-3.17)
Bonus% ^S	-0.233*	-0.213**	-0.212*	-0.212**
	(-1.99)	(-2.68)	(-1.84)	(-2.50)
Equity% ^S	-0.091**	0.032	-0.085**	0.033
	(-2.52)	(1.24)	(-2.37)	(1.25)
DE ^S	0.002	0.000	0.002	0.000
	(1.61)	(0.00)	(1.64)	(0.01)
ROA ^S	0.552***	0.216***	0.541***	0.207**
	(7.51)	(3.35)	(7.01)	(3.03)
SalesGrowth ^S	-0.148***	-0.147***	-0.153***	-0.150***
	(-6.29)	(-5.03)	(-5.82)	(-4.98)
TobinQ ^S	-0.007**	0.007**	-0.007**	0.007**
	(-2.73)	(3.08)	(-2.29)	(2.81)
R&D ^S	0.124**	0.097*	0.120**	0.080
	(2.51)	(1.83)	(2.24)	(1.51)
Assets ^S		0.072***		0.072***
		(29.17)		(28.20)
Constant	0.575***	-0.166***	0.726***	-0.154***
	(16.97)	(-4.35)	(21.44)	(-4.44)
Model	OLS	OLS	OLS	OLS
Observations	5,858	5,858	5,858	5,858
R-squared	0.267	0.517	0.274	0.519
Fixed Effects				
-Year	Yes	Yes	Yes	Yes
-Customer industry	Yes	Yes	Yes	Yes
-Customer comp. consultant	Yes	Yes	Yes	Yes

Table 13. Entropy Balancing
Panel A. Matching Effectiveness

This table presents the distribution of variables after entropy balancing, with weights applied.

	Treated		Control		Difference	
	Mean	SD	Mean	SD	Mean	P
ESGscore ^C	0.604	0.191	0.604	0.165	0.000	1.000
Salary% ^C	0.112	0.114	0.112	0.100	0.000	1.000
Bonus% ^C	0.016	0.049	0.016	0.054	0.000	1.000
Equity% ^C	0.618	0.180	0.618	0.199	0.000	1.000
Asset ^C	10.310	1.513	10.310	1.453	0.000	1.000
DE ^C	2.870	4.285	2.873	3.984	-0.003	0.963
ROA ^C	0.047	0.068	0.047	0.067	0.000	1.000
SalesGrowth ^C	0.041	0.168	0.041	0.175	0.000	1.000
TobinQ ^C	1.844	1.100	1.844	0.893	0.000	1.000
R&D ^C	0.032	0.064	0.032	0.054	0.000	1.000

Panel B. Entropy Balancing Regression Analysis

This table presents the test results of my H1 using entropy balancing. The dependent variable is supplier firm's ESG score. The observations are from the pooled sample at customer-supplier-year level. *, **, and *** indicate statistical significance at 0.1, 0.05, and 0.01 levels, respectively.

Dependent Variable =	(1) Supplier controls	(2) Supplier controls	(3) Customer and supplier controls	(4) Customer and supplier controls
	ESGscore ^S	ESGscore ^S	ESGscore ^S	ESGscore ^S
ESGcomp ^C	0.002 (0.20)	-0.001 (-0.19)	-0.001 (-0.06)	0.000 (0.01)
POST0	0.003 (0.95)	0.001 (0.92)	0.004 (1.09)	0.001 (0.77)
ESGcomp^C*POST0	-0.008 (-0.83)	-0.003 (-0.47)	-0.010 (-0.81)	-0.005 (-0.63)
POST1	0.005 (1.06)	0.004 (1.62)	0.006 (1.30)	0.003 (1.42)
ESGcomp^C*POST1	-0.009 (-0.44)	-0.000 (-0.00)	-0.007 (-0.35)	-0.002 (-0.16)
POST2	0.004 (0.76)	0.002 (0.67)	0.006 (1.05)	0.002 (0.52)
ESGcomp^C*POST2	-0.006 (-0.36)	-0.002 (-0.18)	-0.006 (-0.35)	-0.006 (-0.49)
ESGscore ^C			-0.025 (-1.08)	0.028 (0.85)
Salary% ^C			-0.006 (-0.15)	0.015 (0.52)
Bonus% ^C			-0.011 (-0.16)	-0.110**
Equity% ^C			0.005 (0.38)	0.003 (0.23)
Assets ^C			-0.011**	-0.001

(Table 13, Panel B continued)

			(-2.28)	(-0.27)
DE ^C			-0.000	-0.001
			(-0.44)	(-1.23)
ROA ^C			-0.095	-0.042
			(-1.79)	(-1.42)
SalesGrowth ^C			0.001	0.032
			(0.04)	(1.63)
TobinQ ^C			-0.008	-0.003
			(-1.79)	(-1.79)
R&D ^C			-0.039	0.068
			(-0.60)	(1.25)
ESGcomp ^S	0.089***	0.039***	0.087***	0.040***
	(5.28)	(3.69)	(5.34)	(3.59)
Salary% ^S	-0.351***	-0.127***	-0.352***	-0.127***
	(-8.98)	(-4.75)	(-8.40)	(-4.15)
Bonus% ^S	-0.329***	-0.247***	-0.323***	-0.252***
	(-3.31)	(-3.91)	(-3.44)	(-3.91)
Equity% ^S	-0.085**	0.028	-0.083**	0.028
	(-3.10)	(1.44)	(-2.96)	(1.50)
DE ^S	0.002	0.000	0.002	0.000
	(1.73)	(0.36)	(1.72)	(0.33)
ROA ^S	0.519***	0.169***	0.522***	0.165***
	(10.79)	(3.54)	(10.42)	(3.29)
SalesGrowth ^S	-0.140***	-0.137***	-0.135***	-0.140***
	(-7.41)	(-5.75)	(-6.17)	(-5.51)
TobinQ ^S	-0.002	0.010**	-0.003	0.010**
	(-0.87)	(2.61)	(-1.03)	(2.59)
R&D ^S	0.104**	0.101*	0.114**	0.096
	(2.59)	(2.00)	(2.67)	(1.79)
Assets ^S		0.070***		0.070***
		(24.61)		(25.37)
Constant	0.556***	-0.152***	0.705***	-0.156**
	(25.82)	(-4.16)	(13.27)	(-3.09)
Model	OLS	OLS	OLS	OLS
Observations	72,200	72,200	72,200	72,200
R-squared	0.251	0.517	0.257	0.518
Fixed Effects				
-Year	Yes	Yes	Yes	Yes
-Customer industry	Yes	Yes	Yes	Yes
-Customer comp. consultant	Yes	Yes	Yes	Yes

Table 14. Main Results with Inverse Mills Ratio (IMR)

This table presents the test results of my H1 with the inverse Mills ratio included. The dependent variable is supplier firm's ESG score. The observations are from the pooled sample at customer-supplier-year level. *, **, and *** indicate statistical significance at 0.1, 0.05, and 0.01 levels, respectively.

(1)	
Dependent Variable =	Supplier controls with IMR ESGscore ^S
ESGcomp ^C	-0.009 (-1.01)
POST0	0.000 (0.20)
ESGcomp^C*POST0	-0.012 (-1.63)
POST1	-0.000 (-0.10)
ESGcomp^C*POST1	0.001 (0.14)
POST2	0.000 (0.02)
ESGcomp^C*POST2	0.007 (0.61)
ESGcomp ^S	0.045** (3.22)
Salary% ^S	-0.128*** (-6.48)
Bonus% ^S	-0.160** (-2.63)
Equity% ^S	0.010 (0.40)
DE ^S	0.000 (0.03)
ROA ^S	0.256*** (5.64)
SalesGrowth ^S	-0.121*** (-5.95)
TobinQ ^S	0.008** (2.65)
R&D ^S	0.063 (1.50)
Assets ^S	0.069*** (17.07)
IMR	0.007* (1.89)
Constant	-0.121*** (-3.27)
Model	OLS
Observations	61,598
R-squared	0.556

Table 15. Industry Analysis**Panel A. Customer Firms in Consumer Facing Industries**

This table presents the test results of H1 for firms in consumer facing industries. The dependent variable is supplier firm's ESG score. The observations are from the pooled sample at customer-supplier-year level, split based on whether a customer firm is in a consumer-facing industry. *, **, and *** indicate statistical significance at 0.1, 0.05, and 0.01 levels, respectively.

	(1) Customer consumer facing	(2) Customer Not consumer facing	(3) 3-way customer consumer facing	(4) 3-way customer consumer facing
Dependent Variables =	ESGscore ^S	ESGscore ^S	ESGscore ^S	ESGscore ^S
ESGcomp ^C	-0.000 (-0.00)	-0.010 (-0.61)	-0.015 (-1.02)	-0.017 (-1.15)
POST0	0.000 (0.15)	-0.001 (-1.08)	-0.001 (-1.11)	-0.001 (-1.44)
ESGcomp^C*POST0	-0.005 (-0.60)	0.009 (0.80)	0.013 (1.22)	0.013 (1.14)
POST1	-0.000 (-0.13)	-0.001 (-0.92)	-0.001 (-0.82)	-0.001 (-0.65)
ESGcomp^C*POST1	0.004 (0.26)	0.014 (0.85)	0.019 (1.26)	0.020 (1.32)
POST2	0.000 (0.19)	-0.001 (-0.61)	-0.001 (-0.44)	-0.000 (-0.22)
ESGcomp^C*POST2	-0.000 (-0.00)	0.015 (0.88)	0.019 (1.22)	0.020 (1.27)
Consumer_facing			0.009 (1.31)	0.007 (0.98)
ESGcomp ^C *Consumer_facing			0.020 (1.22)	0.016 (0.98)
POST0*Consumer_facing			0.001 (1.06)	0.001 (1.00)
ESGcomp^C*POST0*Consumer_facing			-0.024 (-1.77)	-0.021 (-1.44)
POST1*Consumer_facing			0.001 (0.42)	0.001 (0.33)
ESGcomp^C*POST1*Consumer_facing			-0.022 (-1.02)	-0.019 (-0.85)
POST2*Consumer_facing			0.001 (0.23)	-0.000 (-0.09)
ESGcomp^C*POST2*Consumer_facing			-0.019 (-0.71)	-0.017 (-0.59)
ESGcomp ^S	0.029** (2.64)	0.067*** (6.10)	0.046*** (3.98)	0.045*** (3.91)
Salary% ^S	-0.130*** (-5.60)	-0.124*** (-4.66)	-0.119*** (-5.59)	-0.120*** (-5.32)
Bonus% ^S	-0.130 (-1.51)	-0.191*** (-3.27)	-0.153** (-2.27)	-0.155** (-2.30)
Equity% ^S	0.008 (0.48)	0.012 (0.97)	0.014 (1.02)	0.016 (1.08)

(Table 15, Panel A continued)

DE ^S	0.000 (0.34)	-0.000 (-0.47)	-0.000 (-0.11)	0.000 (0.20)
ROA ^S	0.253*** (5.70)	0.213*** (4.04)	0.249*** (6.04)	0.249*** (6.02)
SalesGrowth ^S	-0.106*** (-6.04)	-0.140*** (-5.30)	-0.118*** (-8.77)	-0.119*** (-8.15)
TobinQ ^S	0.008** (2.69)	0.005** (3.04)	0.008*** (3.22)	0.008*** (3.52)
R&D ^S	0.010 (0.64)	0.218*** (4.48)	0.054* (1.86)	0.053* (1.82)
Assets ^S	0.070*** (28.50)	0.071*** (19.68)	0.070*** (26.74)	0.070*** (26.07)
ESGscore ^C				-0.003 (-0.19)
Salary% ^C				0.006 (0.42)
Bonus% ^C				-0.014 (-0.50)
Equity% ^C				-0.004 (-0.57)
Assets ^C				0.002 (1.05)
DE ^C				-0.000 (-0.52)
ROA ^C				0.024 (1.13)
SalesGrowth ^C				0.005 (0.46)
TobinQ ^C				-0.002* (-1.82)
R&D ^C				0.071*** (3.42)
Constant	-0.123*** (-4.40)	-0.147*** (-3.60)	-0.137*** (-4.42)	-0.150*** (-3.98)
Observations	48,914	27,892	76,806	71,251
R-squared	0.552	0.565	0.552	0.553
Fixed Effects				
-Year	Yes	Yes	Yes	Yes
-Customer industry	Yes	Yes	Yes	Yes
-Customer comp. consultant	Yes	Yes	Yes	Yes

(Table 15 continued)

Panel B. Customer Firms in Manufacturing Industries

This table presents the test results of H1 for firms in manufacturing industries. The dependent variable is supplier firm's ESG score. The observations are from the pooled sample at customer-supplier-year level, split based on whether a customer firm is in a manufacturing industry. *, **, and *** indicate statistical significance at 0.1, 0.05, and 0.01 levels, respectively.

Dependent Variable =	Manufacturing		Non-manufacturing	
	(1) Supplier controls ESGscore ^S	(2) Customer and supplier controls ESGscore ^S	(3) Supplier controls ESGscore ^S	(4) Customer and supplier controls ESGscore ^S
ESGcomp ^C	-0.001 (-0.10)	-0.002 (-0.16)	-0.017 (-1.19)	-0.022 (-1.77)
POST0	0.000 (0.30)	0.001 (0.60)	-0.001 (-0.76)	-0.001 (-0.55)
ESGcomp^C*POST0	0.010 (1.16)	0.012 (1.24)	0.004 (0.37)	0.006 (0.54)
POST1	0.000 (0.20)	0.001 (0.52)	-0.002 (-1.11)	-0.001 (-0.86)
ESGcomp^C*POST1	0.024** (2.23)	0.026* (2.08)	0.010 (0.73)	0.012 (1.01)
POST2	0.000 (0.14)	0.001 (0.52)	-0.001 (-0.69)	-0.001 (-0.76)
ESGcomp^C*POST2	0.020 (1.36)	0.023 (1.52)	0.006 (0.43)	0.009 (0.57)
ESGscore ^C		-0.013 (-0.40)		0.005 (0.27)
Salary% ^C		-0.007 (-0.32)		0.001 (0.05)
Bonus% ^C		-0.033 (-0.64)		0.006 (0.23)
Equity% ^C		-0.017 (-1.72)		0.003 (0.23)
Assets ^C		0.003 (1.32)		0.000 (0.15)
DE ^C		-0.000 (-1.19)		0.000 (0.75)
ROA ^C		-0.004 (-0.09)		0.039* (2.21)
SalesGrowth ^C		0.006 (0.37)		0.013 (0.93)
TobinQ ^C		0.001 (0.55)		-0.005* (-2.16)
R&D ^C		0.121*** (3.20)		0.078** (2.59)
ESGcomp ^S	0.051*** (4.73)	0.050*** (4.52)	0.034* (2.00)	0.034* (1.97)
Salary% ^S	-0.108*** (-3.61)	-0.109*** (-3.62)	-0.132*** (-6.53)	-0.135*** (-6.22)
Bonus% ^S	-0.145** (-2.30)	-0.141** (-2.31)	-0.163 (-1.69)	-0.176 (-1.78)
Equity% ^S	0.014	0.013	0.014	0.018

(Table 15, Panel B continued)

	(0.94)	(0.77)	(0.76)	(0.92)
DE ^S	0.000	0.000	-0.000	-0.000
	(0.82)	(1.44)	(-0.80)	(-0.75)
ROA ^S	0.275***	0.280***	0.212***	0.208***
	(5.29)	(5.14)	(5.33)	(4.92)
SalesGrowth ^S	-0.122***	-0.126***	-0.115***	-0.112***
	(-7.85)	(-7.51)	(-5.35)	(-4.89)
TobinQ ^S	0.007**	0.007**	0.009***	0.009***
	(2.36)	(2.34)	(3.27)	(3.45)
R&D ^S	0.152**	0.147**	-0.002	-0.005
	(2.99)	(2.88)	(-0.10)	(-0.24)
Assets ^S	0.070***	0.070***	0.070***	0.070***
	(17.98)	(17.48)	(32.38)	(29.05)
Constant	-0.146***	-0.166***	-0.121***	-0.127***
	(-3.34)	(-3.96)	(-4.85)	(-3.40)
Model	OLS	OLS	OLS	OLS
Observations	39,271	36,354	38,504	35,845
R-squared	0.564	0.565	0.546	0.547
Fixed Effects				
-Year	Yes	Yes	Yes	Yes
-Customer industry	Yes	Yes	Yes	Yes
-Customer comp. consultant	Yes	Yes	Yes	Yes

Table 16. ESG Pillar Scores – Environmental Score

This table presents the test results of H1. The dependent variable is supplier firm's environmental score. The observations are from the pooled sample at customer-supplier-year level. *, **, and *** indicate statistical significance at 0.1, 0.05, and 0.01 levels, respectively.

Dependent Variable =	(1) Supplier controls	(2) Supplier controls	(3) Customer and supplier controls	(4) Customer and supplier controls
	ENVscore ^S	ENVscore ^S	ENVscore ^S	ENVscore ^S
ESGcomp ^C	-0.028*	-0.013	-0.015	-0.016
	(-1.85)	(-1.19)	(-0.87)	(-1.37)
POST0	-0.002	-0.000	0.002	-0.000
	(-1.62)	(-0.33)	(1.10)	(-0.10)
ESGcomp^C*POST0	0.014	0.006	0.006	0.006
	(1.02)	(0.53)	(0.47)	(0.55)
POST1	-0.003	-0.000	0.002	0.000
	(-1.66)	(-0.12)	(1.16)	(0.11)
ESGcomp^C*POST1	0.030	0.019	0.024	0.021
	(1.64)	(1.29)	(1.11)	(1.40)
POST2	-0.006	-0.000	0.002	-0.000
	(-1.41)	(-0.08)	(0.77)	(-0.01)
ESGcomp^C*POST2	0.045**	0.020	0.036	0.023
	(2.60)	(1.02)	(1.64)	(1.08)
ESGcomp ^S	0.144***	0.053***	0.140***	0.053***
	(8.35)	(4.03)	(7.98)	(3.99)
Salary% ^S	-0.522***	-0.065*	-0.499***	-0.065*
	(-7.37)	(-1.95)	(-6.89)	(-1.87)
Bonus% ^S	-0.407***	-0.240**	-0.401***	-0.238**
	(-3.69)	(-2.31)	(-3.47)	(-2.28)
Equity% ^S	-0.159***	0.056**	-0.146***	0.058**
	(-7.00)	(2.54)	(-6.62)	(2.42)
DE ^S	0.005***	0.000	0.005***	0.001
	(4.23)	(1.08)	(4.41)	(1.57)
ROA ^S	0.808***	0.202***	0.819***	0.210***
	(9.82)	(3.87)	(10.25)	(4.29)
SalesGrowth ^S	-0.172***	-0.166***	-0.181***	-0.172***
	(-6.79)	(-9.38)	(-7.31)	(-9.05)
TobinQ ^S	-0.011**	0.009***	-0.012**	0.009***
	(-3.04)	(4.40)	(-2.82)	(4.73)
R&D ^S	0.088	-0.002	0.124	0.005
	(1.26)	(-0.04)	(1.80)	(0.11)
Assets ^S		0.113***		0.113***
		(33.18)		(33.71)
ESGscore ^C			-0.050*	0.013
			(-1.88)	(0.49)
Salary% ^C			-0.028	-0.003
			(-1.02)	(-0.14)
Bonus% ^C			0.074	0.042
			(1.54)	(1.53)
Equity% ^C			-0.018	-0.018
			(-0.79)	(-1.77)

(Table 16 continued)

Assets ^C			-0.020**	0.001
			(-3.02)	(0.36)
DE ^C			0.000	-0.000
			(1.28)	(-1.34)
ROA ^C			-0.101	0.005
			(-1.59)	(0.13)
SalesGrowth ^C			0.031	0.022
			(1.19)	(1.31)
TobinQ ^C			0.002	-0.004
			(0.41)	(-1.80)
R&D ^C			-0.134*	0.010
			(-1.86)	(0.13)
Constant	0.541***	-0.635***	0.765***	-0.634***
	(20.51)	(-18.73)	(12.92)	(-16.36)
Model	OLS	OLS	OLS	OLS
Observations	77,775	77,775	72,200	72,200
R-squared	0.216	0.582	0.230	0.580
Fixed Effects				
-Year	Yes	Yes	Yes	Yes
-Customer industry	Yes	Yes	Yes	Yes
-Customer comp. consultant	Yes	Yes	Yes	Yes

(Table 16 continued)

Dependent Variable =	(5) Top tercile supplier asset ENVscore ^S	(6) Bottom tercile supplier asset ENVscore ^S	(7) Top tercile supplier asset ENVscore ^S	(8) Bottom tercile supplier asset ENVscore ^S
ESGcomp ^C	-0.048** (-2.71)	0.006 (0.36)	-0.050** (-2.55)	-0.000 (-0.03)
POST0	-0.000 (-0.45)	-0.000 (-0.23)	0.000 (0.13)	-0.001 (-0.48)
ESGcomp^C*POST0	0.026 (1.70)	0.004 (0.22)	0.025 (1.53)	0.003 (0.13)
POST1	-0.000 (-0.39)	-0.001 (-0.29)	0.001 (0.38)	-0.002 (-0.71)
ESGcomp^C*POST1	0.041** (2.26)	0.009 (0.33)	0.043* (2.04)	0.006 (0.21)
POST2	-0.000 (-0.22)	-0.001 (-0.28)	0.001 (0.51)	-0.003 (-0.76)
ESGcomp^C*POST2	0.030 (1.66)	0.032 (1.01)	0.029 (1.29)	0.031 (0.87)
ESGcomp ^S	0.053*** (3.34)	-0.010 (-0.24)	0.053*** (3.30)	-0.012 (-0.30)
Salary% ^S	-0.059 (-1.32)	-0.031 (-0.71)	-0.060 (-1.21)	-0.020 (-0.43)
Bonus% ^S	-0.260* (-2.17)	-0.212 (-1.62)	-0.256* (-2.15)	-0.224 (-1.72)
Equity% ^S	0.087*** (3.94)	-0.025 (-0.73)	0.086*** (3.37)	-0.021 (-0.60)
DE ^S	-0.000 (-0.31)	0.002 (0.95)	-0.000 (-0.42)	0.002 (1.38)
ROA ^S	0.308*** (3.43)	-0.023 (-0.42)	0.328*** (3.90)	-0.009 (-0.17)
SalesGrowth ^S	-0.167*** (-4.68)	-0.078** (-2.52)	-0.173*** (-4.96)	-0.080** (-2.43)
TobinQ ^S	0.023*** (3.29)	-0.005 (-1.63)	0.023*** (3.27)	-0.005 (-1.49)
R&D ^S	0.075 (1.04)	-0.035 (-0.72)	0.079 (1.08)	-0.033 (-0.65)
Assets ^S	0.088*** (14.98)	0.075*** (6.80)	0.087*** (14.02)	0.078*** (6.69)
ESGscore ^C			-0.012 (-0.45)	0.045 (1.22)
Salary% ^C			-0.031 (-1.55)	0.025 (1.14)
Bonus% ^C			-0.049* (-1.99)	0.077 (1.08)
Equity% ^C			-0.018 (-1.39)	0.007 (0.53)
Assets ^C			-0.001 (-0.32)	0.005* (1.89)
DE ^C			-0.000 (-0.36)	-0.000 (-1.53)
ROA ^C			0.003	0.003

(Table 16 continued)

			(0.07)	(0.04)
SalesGrowth ^C			0.023	-0.006
			(1.11)	(-0.24)
TobinQ ^C			-0.005	-0.006
			(-1.38)	(-1.28)
R&D ^C			-0.034	0.076
			(-0.59)	(0.85)
Constant	-0.416***	-0.315***	-0.368***	-0.410***
	(-5.27)	(-3.78)	(-3.99)	(-4.89)
Model	OLS	OLS	OLS	OLS
Observations	32,254	18,043	29,664	16,883
R-squared	0.359	0.310	0.361	0.314
Fixed Effects				
-Year	Yes	Yes	Yes	Yes
-Customer industry	Yes	Yes	Yes	Yes
-Customer comp. consultant	Yes	Yes	Yes	Yes

Table 17. ESG Pillar Scores – Social Score

This table presents the test results of H1. The dependent variable is supplier firm's social score. The observations are from the pooled sample at customer-supplier-year level. *, **, and *** indicate statistical significance at 0.1, 0.05, and 0.01 levels, respectively.

Dependent Variable =	(1) Supplier controls SOCscore ^S	(2) Supplier controls SOCscore ^S	(3) Customer and supplier controls SOCscore ^S	(4) Customer and supplier controls SOCscore ^S
ESGcomp ^C	-0.011 (-0.91)	-0.001 (-0.06)	-0.001 (-0.09)	-0.002 (-0.17)
POST0	-0.002* (-2.00)	-0.001 (-1.48)	0.001 (0.46)	-0.001 (-1.01)
ESGcomp^C*POST0	-0.000 (-0.00)	-0.005 (-0.66)	-0.003 (-0.37)	-0.003 (-0.34)
POST1	-0.004* (-1.89)	-0.001 (-1.20)	0.001 (0.40)	-0.001 (-0.94)
ESGcomp^C*POST1	0.011 (0.77)	0.003 (0.26)	0.008 (0.44)	0.006 (0.44)
POST2	-0.006 (-1.75)	-0.002 (-1.21)	0.000 (0.04)	-0.001 (-1.03)
ESGcomp^C*POST2	0.020* (1.82)	0.002 (0.17)	0.013 (0.86)	0.004 (0.32)
ESGcomp ^S	0.104*** (7.96)	0.041*** (3.23)	0.100*** (7.44)	0.040** (2.98)
Salary% ^S	-0.402*** (-7.28)	-0.085** (-2.80)	-0.385*** (-6.73)	-0.084** (-2.65)
Bonus% ^S	-0.310*** (-4.68)	-0.194** (-2.31)	-0.306*** (-4.50)	-0.194** (-2.35)
Equity% ^S	-0.108*** (-7.44)	0.041** (2.41)	-0.097*** (-6.88)	0.044** (2.39)
DE ^S	0.002** (2.40)	-0.000 (-0.73)	0.002** (2.41)	-0.000 (-0.63)
ROA ^S	0.664*** (9.69)	0.243*** (6.50)	0.668*** (9.56)	0.246*** (6.24)
SalesGrowth ^S	-0.101*** (-4.49)	-0.096*** (-5.10)	-0.102*** (-4.29)	-0.096*** (-4.91)
TobinQ ^S	-0.002 (-0.90)	0.012*** (4.88)	-0.003 (-1.08)	0.012*** (5.10)
R&D ^S	0.231*** (3.23)	0.169*** (3.89)	0.249** (2.98)	0.166*** (3.18)
Assets ^S		0.078*** (45.61)		0.078*** (44.36)
ESGscore ^C			-0.047*** (-3.29)	-0.003 (-0.19)
Salary% ^C			-0.019 (-0.76)	-0.001 (-0.07)
Bonus% ^C			-0.019 (-0.39)	-0.041 (-1.36)
Equity% ^C			-0.002 (-0.13)	-0.002 (-0.20)

(Table 17 continued)

Assets ^C			-0.015*** (-3.25)	-0.001 (-0.35)
DE ^C			0.000** (2.59)	0.000 (0.14)
ROA ^C			-0.008 (-0.13)	0.065** (2.77)
SalesGrowth ^C			0.014 (0.71)	0.008 (0.59)
TobinQ ^C			0.002 (0.62)	-0.002 (-1.27)
R&D ^C			0.017 (0.25)	0.117** (2.29)
Constant	0.606*** (33.48)	-0.211*** (-10.05)	0.763*** (19.71)	-0.206*** (-9.04)
Model	OLS	OLS	OLS	OLS
Observations	77,775	77,775	72,200	72,200
R-squared	0.218	0.507	0.231	0.506
Fixed Effects				
-Year	Yes	Yes	Yes	Yes
-Customer industry	Yes	Yes	Yes	Yes
-Customer comp. consultant	Yes	Yes	Yes	Yes

(Table 17 continued)

Dependent Variable =	(5) Top tercile supplier asset SOCscore ^S	(6) Bottom tercile supplier asset SOCscore ^S	(7) Top tercile supplier asset SOCscore ^S	(8) Bottom tercile supplier asset SOCscore ^S
ESGcomp ^C	-0.015 (-1.14)	0.007 (0.54)	-0.014 (-0.98)	-0.001 (-0.07)
POST0	-0.001 (-0.78)	-0.000 (-0.31)	-0.000 (-0.18)	-0.001 (-0.39)
ESGcomp^C*POST0	0.001 (0.04)	-0.008 (-0.61)	0.000 (0.03)	-0.005 (-0.31)
POST1	-0.001 (-0.79)	-0.000 (-0.04)	0.000 (0.01)	-0.001 (-0.24)
ESGcomp^C*POST1	0.014 (1.11)	-0.014 (-0.77)	0.014 (0.94)	-0.014 (-0.84)
POST2	-0.002 (-1.01)	0.000 (0.09)	-0.000 (-0.17)	-0.001 (-0.26)
ESGcomp^C*POST2	0.008 (0.54)	-0.015 (-1.00)	0.007 (0.39)	-0.011 (-0.80)
ESGcomp ^S	0.056*** (3.40)	0.002 (0.07)	0.054** (3.10)	0.001 (0.02)
Salary% ^S	-0.093* (-1.92)	-0.057** (-2.36)	-0.095* (-1.89)	-0.060** (-2.36)
Bonus% ^S	-0.217 (-1.68)	-0.144 (-1.27)	-0.216 (-1.62)	-0.155 (-1.41)
Equity% ^S	0.073** (3.07)	0.036* (1.83)	0.074** (2.90)	0.036* (1.99)
DE ^S	-0.001 (-0.92)	0.000 (0.33)	-0.001 (-0.97)	0.000 (0.33)
ROA ^S	0.232** (2.57)	0.207*** (5.79)	0.251** (2.79)	0.212*** (4.90)
SalesGrowth ^S	-0.098*** (-4.03)	-0.107*** (-5.52)	-0.098*** (-3.73)	-0.102*** (-5.78)
TobinQ ^S	0.019*** (3.45)	0.003 (1.60)	0.019*** (3.38)	0.002 (1.29)
R&D ^S	0.308*** (4.66)	0.172*** (10.89)	0.306*** (4.59)	0.169*** (6.79)
Assets ^S	0.069*** (19.14)	0.046*** (7.50)	0.068*** (18.17)	0.047*** (6.15)
ESGscore ^C			-0.043 (-1.57)	0.025 (0.82)
Salary% ^C			-0.040* (-1.84)	0.029* (2.05)
Bonus% ^C			-0.114 (-1.62)	0.035 (0.55)
Equity% ^C			-0.007 (-0.67)	0.016 (0.93)
Assets ^C			-0.002 (-0.77)	0.003 (0.77)
DE ^C			-0.000 (-0.58)	0.000 (0.13)
ROA ^C			0.068	0.135*

(Table 17 continued)

			(1.80)	(2.08)
SalesGrowth ^C			0.005	-0.029
			(0.29)	(-1.13)
TobinQ ^C			-0.002	-0.004
			(-1.00)	(-1.36)
R&D ^C			0.065	0.150
			(1.50)	(1.39)
Constant	-0.138***	0.022	-0.079	-0.042
	(-3.25)	(0.53)	(-1.36)	(-0.63)
Model	OLS	OLS	OLS	OLS
Observations	32,254	18,043	29,664	16,883
R-squared	0.393	0.196	0.399	0.200
Fixed Effects				
-Year	Yes	Yes	Yes	Yes
-Customer industry	Yes	Yes	Yes	Yes
-Customer comp. consultant	Yes	Yes	Yes	Yes

Table 18. Alternative Responsible Sourcing Measures

This table presents the test results of H1 at customer firm-year level. The dependent variables are binary ESG metrics related to responsible sourcing as collected by Refinitiv. The explanatory variable of interest *ESGcomp*^C equals to one if a customer firm-year has ESG-linked compensation, and zero otherwise. Appendix 1, Panel B lists the definition of each variable. *, **, and *** indicate statistical significance at 0.1, 0.05, and 0.01 levels, respectively.

Dependent Variable =	(1)	(2)	(3)	(4)	(5)	(6)
	HRBreachContractor	HRCContractor	PolicyChildLabor	PolicyForcedLabor	EnvSMManagement	EnvSMMonitoring
ESGcomp^C	-0.282	-0.374*	-0.301	0.282	-0.622***	-0.149
	(-1.42)	(-1.89)	(-1.48)	(1.37)	(-3.45)	(-0.65)
ESGscore ^C	6.866***	8.977***	8.246***	7.557***	9.387***	7.151***
	(21.34)	(25.30)	(23.10)	(21.91)	(25.53)	(16.01)
Salary% ^C	-0.258	-0.328	-0.130	-0.534	0.145	1.414***
	(-0.65)	(-0.86)	(-0.30)	(-1.28)	(0.37)	(3.00)
Bonus% ^C	-0.703	-1.118	-0.851	-1.604**	-0.598	1.977*
	(-0.85)	(-1.45)	(-0.87)	(-2.00)	(-0.73)	(1.74)
Equity% ^C	-0.001	-0.479*	-0.681***	-0.504**	0.062	0.606*
	(-0.01)	(-1.88)	(-2.78)	(-2.06)	(0.25)	(1.83)
Assets ^C	0.125***	0.264***	0.266***	0.232***	0.297***	0.320***
	(2.91)	(5.45)	(5.85)	(5.20)	(6.18)	(5.36)
DE ^C	-0.006*	-0.003	0.000	-0.002	-0.001	-0.001
	(-1.68)	(-1.55)	(0.10)	(-0.57)	(-0.25)	(-0.32)
ROA ^C	-1.360*	-0.365	-1.125*	-0.082	-2.052***	-0.936
	(-1.88)	(-0.58)	(-1.68)	(-0.13)	(-3.09)	(-1.02)
SalesGrowth ^C	-0.516*	-0.805***	-0.613**	-0.773***	-0.959***	-1.109***
	(-1.76)	(-3.12)	(-2.17)	(-2.70)	(-3.79)	(-3.09)
TobinQ ^C	0.067*	0.039	-0.017	0.030	0.056	0.025
	(1.67)	(1.00)	(-0.42)	(0.76)	(1.44)	(0.51)
R&D ^C	-3.865***	-1.875**	-2.751***	-2.828***	-1.369*	1.350
	(-4.78)	(-2.53)	(-3.59)	(-3.68)	(-1.81)	(1.28)
Constant	-5.458***	-6.997***	-6.870***	-6.760***	-4.915***	-8.912***
	(-5.35)	(-9.05)	(-8.73)	(-8.40)	(-2.71)	(-3.91)
Model	Logistic	Logistic	Logistic	Logistic	Logistic	Logistic
Observations	4,290	4,786	4,765	4,758	4,691	2,655
Pseudo R2	0.315	0.450	0.444	0.438	0.433	0.384

(Table 18 continued)

Dependent Variable =	(7) EnvSMTermination	(8) PolicyEnvSupplier	(9) PolicyHealthSafety	(10) SupplierESGTrain	(11) SuppHealthSafetyImprov	(12) SuppHealthSafetyTrain
ESGcomp^C	-0.126	-0.443**	-0.362*	-0.067	-0.282	-0.223
	(-0.64)	(-2.13)	(-1.85)	(-0.34)	(-0.60)	(-1.03)
ESGscore ^C	6.936***	10.145***	7.705***	5.806***	5.049***	6.152***
	(19.10)	(27.27)	(22.51)	(15.88)	(5.76)	(15.14)
Salary% ^C	0.991**	0.678*	1.356***	0.855**	1.082	0.798*
	(2.36)	(1.81)	(3.56)	(2.14)	(1.43)	(1.82)
Bonus% ^C	0.251	-0.899	-1.329	0.485	-5.156	-0.399
	(0.28)	(-1.04)	(-1.32)	(0.48)	(-1.58)	(-0.34)
Equity% ^C	-0.346	0.328	0.074	-0.058	-0.361	-0.497*
	(-1.31)	(1.31)	(0.30)	(-0.21)	(-0.63)	(-1.79)
Assets ^C	0.185***	0.294***	0.195***	0.359***	0.225*	0.237***
	(4.21)	(6.09)	(4.44)	(7.67)	(1.78)	(4.71)
DE ^C	-0.015**	0.000	-0.012**	0.001	0.011*	-0.007*
	(-2.25)	(0.08)	(-2.47)	(0.39)	(1.70)	(-1.67)
ROA ^C	-2.115**	-1.838***	-0.552	-1.504*	1.112	-1.575*
	(-2.41)	(-2.68)	(-0.83)	(-1.80)	(0.59)	(-1.95)
SalesGrowth ^C	-0.566*	-0.855***	-0.705***	-0.578*	0.218	-0.350
	(-1.65)	(-3.23)	(-2.63)	(-1.82)	(0.25)	(-1.05)
TobinQ ^C	0.128***	-0.020	0.028	0.121***	-0.109	0.058
	(2.85)	(-0.52)	(0.76)	(2.93)	(-0.99)	(1.35)
R&D ^C	-4.864***	-1.352*	-2.129***	-1.189	-0.810	0.481
	(-5.64)	(-1.74)	(-2.98)	(-1.30)	(-0.42)	(0.57)
Constant	-7.110***	-8.280***	-4.988***	-7.732***	-5.476***	-6.341***
	(-7.49)	(-7.84)	(-6.31)	(-6.22)	(-3.67)	(-5.32)
Model	Logistic	Logistic	Logistic	Logistic	Logistic	Logistic
Observations	4,311	4,726	4,700	4,272	2,699	4,346
Pseudo R2	0.314	0.449	0.373	0.304	0.280	0.265