CEO RISK SENSITIVITY AND EMPLOYEE-RELATED IRRESPONSIBILITY: A MODERATING ROLE OF MANAGERIAL DISCRETION

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Abstract

This study explores whether risk-based chief executive officer (CEO) compensation, specifically, the sensitivity of CEO pay to firm risk exposure (CEO risk sensitivity), can serve as an incentive to reduce employee-related corporate social irresponsibility (E-CSI). Motivated by growing concerns over corporate harm to employees and the need to align executive incentives with broader stakeholder interests, we examine whether CEOs treat E-CSI as a risk-mitigating strategy when incentivized with risk sensitivity. Using a panel data of over 17,000 firm-year observations from large U.S. public companies from 1998 to 2018, and fixed effects Poisson regression, we find that higher CEO risk sensitivity is associated with significantly lower E-CSI. This relationship is amplified in firms in contexts characterized by high managerial discretion, across individual, organizational, and industry levels. Our findings reveal that risk-sensitivity pay promotes CEOs paying attention to corporate harmful behaviors toward employees. These insights challenge a conventional view that CEO compensation serves only shareholder interests and highlight a novel, risk-aligned pathway to improving employee outcomes. The result provides practical implications for boards, regulators, and policymakers aiming to design CEO incentives that align with responsible corporate behavior toward employees.

Keywords: Corporate Social Irresponsibility (CSI), Employee-Related Corporate Social Irresponsibility (E-CSI), CEO Risk Sensitivity, Risk Management, Managerial Discretion

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1. INTRODUCTION

Companies can undertake responsible practices by "avoiding harm" or reducing corporate social irresponsibility (CSI) by minimizing negative impacts or negatively perceived practices, thereby reducing the potential for unfavorable evaluations by stakeholders (Chiu & Sharfman, 2018; Kanuri et al., 2020; Strike et al., 2006). Defined by "a decision to accept an alternative that is thought by the decision maker to be inferior to another alternative when the effects upon all parties are considered" (Armstrong, 1977, p. 185), CSI has unique properties that separate it from corporate social responsibility (CSR) (Markoczy et al., 2023). A firm's duty not to harm or to avoid harm has a moral priority (Lichtenberg, 2010). Refraining from CSI is a fundamental duty for corporate managers because harmful actions damage stakeholders; meanwhile, refraining from doing good does not influence stakeholders' loss (Hsieh, 2009). Reducing or disengagement from CSI is a primary aspect of responsible behaviors and an essential duty for corporate managers.

Moreover, employee-related corporate social irresponsibility (E-CSI) is especially salient among CSI for various stakeholder groups, because the employee group has distinct characteristics. In corporate organizations, only employees are categorized as direct, internal, and technical stakeholders (Hillman & Keim, 2001). They have direct stakes in corporate behaviors and decisions. Employees are internal team members within a company's boundary and technical stakeholders (Mattingly & Berman, 2006). With their investment in human capital for firms, employees have legitimate concerns about corporate managerial decisions and outcomes (Pendleton & Gospel, 2013). Due to their low bargaining power based on their specificity as assets to their firm, they are more vulnerable than other stakeholders (Blair, 1995). Thus, employees are vulnerable to harmful practices and may be overlooked by corporate management. Thus, reducing E-CSI directly increases employee motivation and engagement and reduces turnover (Carnahan et al., 2017).

With regard to drivers reducing CSI behaviors, some studies address corporate managers' behaviors and characteristics (Tan et al., 2024), such as background expertise (Al-Shammari et al., 2023), morality and type of leadership (Pearce & Manz, 2011), or education (Erraja et al., 2024). Moreover, the CEO pay based on performance is proposed to focus exclusively on shareholder benefits and limit corporate executives' attention to CSI (Core & Guay, 2002; Deckop et al., 2006). Interestingly, given E-CSI's unique characteristics, the mechanism of the CEO pay scheme reducing the level of E-CSI has been rarely examined (Iborra & Riera, 2023). Then, how does CEO pay influence E-CSI, especially when a CEO has managerial discretion?

In order to answer the aforementioned question, this study aims to examine how the CEO compensation scheme, designed to be sensitively linked to risk, affects the level of E-CSI, particularly integrating theoretical frames from the risk-management perspective and the upper echelon theory. First, we provide a brief rationale for our focus on E-CSI. Second, drawing on risk-management theory, we introduce the CEO's sensitivity to pay risk as an essential motivator for CEOs to reduce E-CSI. Third, we propose managerial discretion at the individual, firm, and industry levels as a boundary condition in the relationship between CEO risk sensitivity and E-CSI reduction. When CEOs perceive themselves as having a high level of autonomy based on managerial discretion and performance-based CEO pay, they are likely to reduce their firm's E-CSI. Our hypotheses are tested using a sample of more than 17,000 firm-year observations spanning the 20 years from 1998 to 2018.

This study makes contributions to three relevant areas. First, this research focuses on E-CSI, representing critical but often ignored irresponsible activities that affect the most vulnerable stakeholder group: employees. Second, this study employs a risk-management approach to E-CSI at the CEO level, where CEO risk sensitivity serves as a risk-mitigating motivator, prompting CEOs to mitigate their moral risks despite shareholder demands. Third, we provide insight into why performance-based CEO pay works differently from how it is designed to (i.e., simply pursuing shareholder interests). CEOs do not follow the path that the CEO pay scheme is designed and expected to produce; instead, they endeavor to fulfill their values.

The remainder of this paper proceeds as follows. Section 2 reviews the relevant literature on risk management approaches to CEO pay and managerial discretion as a boundary condition, and develops four testable hypotheses. Section 3 describes the research framework and design, including data sources, sample construction, variable measurement, and empirical specifications. Section 4 presents the results from empirical analysis to test the proposed hypotheses. Section 5 discusses the main findings, their theoretical implications. Lastly, Section 6 concludes with limitations of the study and directions for future research.

2. LITERATURE REVIEW

2.1. CEO pay: A risk-management approach

By aligning CEO interests with shareholders' demands, the CEO pay scheme functions as a constraint on CEO attention to risk-oriented business and decision-making (Deckop et al., 2006), but some studies present that this form of compensation is not always effective for fulfilling shareholder benefits (Ariely et al., 2009). Moreover, most research examines a simple connection between the CEO pay scheme and E-CSI (McGuire et al., 2003).

Alternatively, we can better understand the underlying mechanisms behind E-CSI reduction from the CEO's perspective by drawing upon the term CEO sensitivity to firm risk (or CEO risk sensitivity) — the sensitivity of a CEO's total compensation to the risk of the firm's stock price (volatility). This sensitivity occurs because equity-based compensation, such as stock options, is more valuable when the firm's stock price is more volatile (Coles et al., 2006). Thus, CEO risk sensitivity is related to CEO risk-mitigating motivation (Godfrey, 2005; Sharfman & Fernando, 2008): if a business entity enhances its CSR and/or reduces its CSI, it will be perceived favorably by stakeholders, and this will ultimately mitigate its possible risks (Shiu & Yang, 2017). CEOs are affected by a need to alleviate risks such as injury to good moral capital (Godfrey et al., 2009), based on two rationales described below.

First, for a prudent level of stakeholder relationships, a firm should allocate its resources (McWilliams & Siegel, 2001), which its CEO chiefly influences (Lange & Washburn, 2012). A firm's "leaders can, do, and will consider impacts on others or the social good in their decisions: in short, that managers and their firms possess an 'other-considering' disposition toward their various stakeholders" (Godfrey et al., 2009, p. 428). Just as a firm's CSR/CSI related activities influence its risk level, a CEO's consistent involvement in reducing CSI activities "provides a reservoir of positive attributions that can be drawn on to 'indemnify' relational wealth against loss of value when stakeholders are adversely affected" (Godfrey, 2005, p. 789). Thus, with a high risk sensitivity, CEOs are likely to reduce their firm's risk by reducing E-CSI.

Second, non-shareholding stakeholders may prefer to secure stable and low-risk business options and thus may view and evaluate risk-favoring CEOs as undesirable corporate managers (Albuquerque et al., 2019). A firm's E-CSI level can be an excellent indicator of how much attention the CEO devotes to employees. CEOs with a record of CSI reduction practices can maintain a good moral reputation that prevents them from negatively impacting the firm's risk level (Harvard Business Review Staff, 2019). By reducing E-CSI, CEOs with high risk sensitivity can appeal to important stakeholders by maintaining a desirable moral reputation (Lange & Washburn, 2012).

Accordingly, CEO risk sensitivity can function as a risk-mitigating motivator, stimulating CEOs to reduce E-CSI. While CEOs must face shareholder demands, they also want to alleviate E-CSI and hedge against their own undesirable moral risk. Therefore, we expect that CEO risk sensitivity, by stimulating CEO risk-mitigating motivation, leads to E-CSI reduction and propose the following hypothesis:

H1: A firm's CEO risk sensitivity is negatively associated with its E-CSI level.

2.2. Managerial discretion as moderator

According to the upper echelon theory (Wangrow et al., 2015), given a higher level of managerial discretion, CEOs can take advantage of greater latitude in their managerial decision-making, i.e., they have a high degree of autonomy, which ultimately facilitates their risk-mitigating motivation to reduce E-CSI. Thus, this study proposes discretionary situations as facilitators with which CEOs are more likely to be motivated to be attentive to E-CSI issues.

Following previous research (Hambrick & Finkelstein, 1987), we examine three discretionary factors: CEO tenure at the individual level (managerial characteristics), board size at the firm level (internal organizational factors), and competition at the industry level (task environment).

2.2.1. CEO tenure at the individual level

When an executive possesses and exerts their power across a firm, they have discretion. As Hambrick and Finkelstein (1987) state, "the powerful manager can be active in a number of discretionary domains and can consider controversial options that could not be considered by less-powerful executives" (p. 388). CEO tenure is widely used as a proxy for CEO control and power in corporate governance research, such that long-serving CEOs are considered to have a strong influence on corporate decision-making (Bebchuk et al., 2010). The reason for the power of long-tenured CEOs is the "personal mystique" they have acquired over time (Finkelstein & Hambrick, 1989, p. 124). As such, long-tenured CEOs are likely to accumulate firm-specific knowledge and trustworthy relationships with stakeholders and directors (Simsek, 2007).

Accordingly, the longer a CEO's tenure, the greater the understanding she or he has of the firm's operations and the more comprehensive his or her control over decision-making (Simsek, 2007). As a result, the CEO can influence a much broader range of areas without relying on other executives and board members (Bebchuk et al., 2010). CEOs with long tenure are also perceived as having legitimacy over critical decision-making (Westphal & Zajac, 1995). Thus, CEOs perceived as capable of controlling and managing a firm's overall operation have the discretion to mitigate the possible adverse effects of risk-taking, leading to a diminished level of E-CSI.

In short, while taking CEO pay into account to align with shareholder demands, the longer a CEO has been working for a firm and the greater the autonomy they perceive, the more likely the CEO is to reduce E-CSI. Accordingly, we hypothesize as follows:

H2: CEO tenure moderates the relationship between CEO risk sensitivity and E-CSI, such that with a longer (vs. shorter) CEO tenure, CEO risk sensitivity is more negatively (vs. positively) associated with E-CSI.

2.2.2. Board size at the firm level

A board of directors is considered a central mechanism with a significant role in monitoring and disciplining top management (Van den Berghe & Baelden, 2005). How effectively a board monitors managerial decisions and behaviors is particularly important, as managerial discretion is relevant to "the freedom managers have to pursue personal objectives" (Shen & Cho, 2005, p. 845). A CEO's managerial discretion is undoubtedly affected by the composition of the board of directors (Hambrick & Finkelstein, 1987).

Increasing the board size induces less optimal monitoring and governance (De Andres et al., 2005). A larger board is less effective in terms of governance efficiency (Prado-Lorenzo & Garcia-Sanchez, 2010). Also, smaller boards have less diversified expertise than larger boards, which may provide less effective advice to corporate executives (Guest, 2009). When a CEO works with a small board, she or he may have a wide discretionary scope for strategic initiatives (Hillman et al., 2000). Thus, board size affects executive managers' discretion: the larger the board, the higher the managerial discretion is afforded to the CEO.

This proposition is reasonable for CEO risk sensitivity, as CEOs need to mitigate the risk factors related to their moral reputation. Accordingly, less effective monitoring by a larger board will increase CEO managerial discretion, encouraging or allowing a CEO to engage in E-CSI alleviation. We therefore hypothesize as follows:

H3: A firm's board size moderates the relationship between CEO risk sensitivity and E-CSI, such that with a greater (vs. smaller) number of board members, CEO risk sensitivity is more negatively (vs. positively) associated with E-CSI.

2.2.3. Competitors at the industry level

As each firm supplies its products and services to a particular industry or market, industry characteristics constrain and provide opportunities for strategic action (Boyd & Gove, 2006). Industry features also afford each firm's executive managers a wide or narrow array of potential courses of action (Hambrick & Finkelstein, 1987). In particular, CEO discretion is limited in markets with few competitors where fewer challenges are created (Bresnahan & Reiss, 1991), as these markets tend to function more straightforwardly and are highly regulated by developed norms or rules (Hambrick & Finkelstein, 1987). Further, in highly competitive markets, CEO actions are less visible to observers (Zajac & Bazerman, 1991), and the causes of outcomes may be ambiguous.

Also, in an industrial sector characterized by high competition and complexity, the products and services produced by firms are highly fragmented, and each firm must differentiate itself from its competitors. The more differentiated a firm's products or services are, the greater the autonomy in decision-making available to the CEO (Hambrick & Finkelstein, 1987). Research has demonstrated that responsible corporate practices are linked to product differentiation (Luo & Bhattacharya, 2009).

In the context of the present study, a CEO will tend to choose E-CSI reduction as a differentiation strategy to consolidate the attributes of her firm's products and services. A firm engaging in employee-related activities can differentiate its products and services from its competitors. Stakeholders can thus appraise a firm's products and services based on its engagement in E-CSI. Accordingly, while managing risk sensitivity, if a CEO's firm operates in an industry sector with a high level of competition, i.e., it has a large number of competitors, the CEO will be more likely than a CEO of a firm in a less competitive sector to reduce the firm's E-CSI. Accordingly, we hypothesize as follows:

H4: Industry competition moderates the relationship between CEO risk sensitivity and E-CSI, such that with a greater (vs. smaller) number of competitors within an industry, CEO risk sensitivity is more negatively (vs. positively) associated with E-CSI.

3. RESEARCH FRAMEWORK

3.1. Data and sample

To empirically test the proposed hypotheses, we used multiple datasets of companies listed on U.S. stock markets from 1998 to 2018, from ExecuComp, Compustat, the Center for Research in Security Price (CRSP), and MSCI ESG STATS (formerly known as KLD). To avoid an exogenous shock in data analysis, we collected and compiled datasets for the period before the COVID-19 pandemic (2020–2022).

Our initial dataset consisted of companies selected in the MSCI ESG database. We chose MSCI ESG because this database has assessed large U.S. public companies' negative relationships (categorized as concern) with employees based on consistent categories, separately from positive practices. So, we could appraise a firm's E-CSI level using MSCI ESG's employee "concern" categories. Next, we created CEO risk sensitivity variables using the ExecuComp dataset. To assess the temporal impact of CEO risk sensitivity, we used a one-year lag. Finally, we utilized the Standard & Poor's Compustat and the CRSP databases for other control variables. The initial sample size for the study is 17,129 firm-year observations. However, merging variables from multiple datasets impacted our sample size.

3.2. Measurements

3.2.1. Dependent variable

A dependent variable in this study assessed the level of E-CSI, i.e., employee-related corporate social irresponsibility. To assess a firm's frequency of E-CSI (Tan et al., 2024), we created a variable of each firm's negative or harmful activities for its employees each year, using the MSCI ESG dataset's "emp-con" (employee concern) categories.

Despite a few concerns, the MSCI data are generally reliable and valid and less problematic and less subjective than other available metrics. Furthermore, MSCI explicitly distinguishes irresponsible activities ("concern") from responsible practices ("strengths").

Since MSCI did not thoroughly collect values for all these indicators yearly, we include eight "concern" items under the employee category, presented in Table 1, for which scores were available for more than a third of the whole sample in a given year for the twenty years this study examines. The dependent variable, *E-CSI*, was created by summing each company's scores for those eight concern items. Following previous research (Deckop et al., 2006), we summed all the companies' binary scores for eight concern items under the employee category.

Table 1. Items for E-CSI

MSCI ESG (KLD) item	*Description*
EMP_con_A	Union relations
EMP_con_B	Employee health and safety
EMP_con_C	Workforce reductions
EMP_con_D	Retirement benefits concern
EMP_con_F	Supply chain
EMP_con_G	Child labor
EMP_con_H	Labor-management relations
EMP_con_X	Other concerns

3.2.2. Independent variable

To assess each firm's *CEO risk sensitivity*, we used the *vega*, the sensitivity of the CEO's compensation to the volatility of their firm's stock values, which measures how much the value of the CEO's compensation package increases or decreases with the volatility of the firm's stock price (Dunbar et al., 2020). We calculated *vega* as the change in the dollar value of a CEO's wealth for a 0.01 change in the annualized standard deviation of stock return (Coles et al., 2006; Core & Guay, 2002). The procedure used in this study was similar to that employed by Core and Guay (2002) and summed up the *vegas* of current option grants and options granted before the current fiscal year. The underlying premise is that CEO risk sensitivity motivates CEOs to consider highly risky projects and satisfy shareholders' risk preferences.

3.2.3. Moderating variables

The following three variables were created and used to create and evaluate the effects of interaction variables with the degree of CEO discretion.

First, to create a variable, *CEO tenure*, at a firm in a given year, we calculated the years (in logs) from the date the director became the firm's CEO, using data from the ExecuComp database (Simsek, 2007).

Second, to assess the second moderating variable, *board size*, each firm's board size was measured by the number of board members in each firm in a given year.

Third, to evaluate the industry factor determining CEO discretion, the *number of competitors* within an industry was used to assess the industry-level determinant of managerial discretion, as we hypothesized that the more competitors in an industry, the higher the level of competition the firms have (Menezes & Quiggin, 2012). We employed Fama-French's 12 industrial categories to classify each firm's industrial sector.

The primary independent variable (i.e., *CEO risk sensitivity*) and all three moderating variables (*CEO tenure*, *number of competitors*, and *board size*) were converted by a natural log function to compress the scale of their distributions, transforming their increased variation patterns into relatively constant ones (Gelman et al., 2020, p. 43).

3.2.4. Control variables

We included several control variables widely used in prior CSR/CSI studies. The E-CSR variable is included to control for a possible CSR effect on CSI. For normalized E-CSR, we divide the number of 'strength' items by the maximum possible number for each firm-year. Thus, the E-CSR variable ranges from 0 to 1.

As the primary relationship tested in this study was related to CEO compensation, we included CEO cash compensation and another risk sensitivity measure, delta (i.e., the sensitivity of pay to stock value).

Each firm's return on assets is strongly related to stakeholder-oriented performance (Waddock & Graves, 1997), which was included in each model. As responsible and irresponsible practices are relevant to the long-term perspective (Flammer & Bansal, 2017), we also controlled each firm's capital expenditure as a proxy for its long-term investment. We also included the effects of each firm's size on the total sales amount. Each statistical analysis also included each firm's market-to-book ratio, research and development (R&D) intensity, and advertising intensity to control for the effects of intangible assets (McWilliams & Siegel, 2000).

Given that required investments in fixed assets commit the firm to a course of action, capital intensity is likely to constrain managerial choices (Skinner, 1993). So, we controlled the average annual capital intensity by dividing the net value of property, plant, and equipment by total asset value.

3.3. Statistical analysis

We employed fixed-effects Poisson regression analysis to predict E-CSI for four reasons. First, the dependent variable, *E-CSI*, was a thermostat-style index that was in count data format. Second, it had a clear skewness pattern: 74% of the E-CSI cases used in this study have zero value. Third, its variance (0.37) was close to its mean value (0.32), which is a requirement for using the Poisson regression model.

Fourth, out of two options to test for company effects — the fixed effects (FE) and the random effects (RE) treatments — we used an FE model because we were interested in assessing within-firm variation. This strategy enabled us to examine how changes in CEO risk sensitivity within a firm were associated with changes in the firm's E-CSI. All models included year dummies as well as control variables.

To further validate our objective, we aim to investigate whether CEO risk sensitivity (*vega*) and managerial discretion proxies (CEO tenure, board size, and industry competition) have any significant impact on E-CSI reduction over 20 years, from 1998 to 2018.

4. EMPIRICAL RESULTS

4.1. Regression results

Table 2 presents descriptive statistics for all variables used in this study, including their minimum and maximum values. Log-transformed variables are indicated by "log" in parentheses, like all four main variables, including *vega* (i.e., *CEO risk sensitivity*), *CEO tenure*, *number of competitors*, and *board size*. Table A.1 (see Appendix) also presents correlation values among all 17 variables used in this study (except for three interaction variables).

The mean value of CEO risk sensitivity is 23.34 (as *ln* (23.34) = 3.15), ranging from 1 to 796.32 (as *ln* (796.32) = 6.68), indicating that, on average, a unit change in the firm's stock value affects a 23.34-unit fluctuation in CEO wealth. This number confirms that CEOs' wealth based on compensation packages is considerably sensitive to the volatility of their companies' stock values.

Table 2. Descriptive statistics

No.	*Variable*	*Mean*	*SD*
1	*E-CSI*	0.32	0.61
2	*CEO risk sensitivity* (log)	3.15	2.02
3	*CEO tenure* (log)	1.96	0.75
4	*Board size* (log)	2.27	0.32
5	*Number of competitors* (log)	6.94	0.85
6	*E-CSR*	0.07	0.12
7	*Delta* (log)	5.02	1.62
8	*Cash compensation* (log)	6.89	0.80
9	*CEO on board*	0.96	0.20
10	*Total sales* (log)	7.14	1.55
11	*ROA*	0.14	0.11
12	*R&D intensity*	0.03	0.05
13	*Advertising expenditure*	0.02	0.05
14	*Capital expense*	0.05	0.05
15	*Book leverage*	0.23	0.21
16	*Market-to-book*	1.67	1.28
17	*PPE assets*	0.24	0.23

Table 3 reports all the regression coefficients from the models estimating the impact of the independent, interaction, and control variables on E-CSI. Model 1 presents the coefficients of all control variables regressed on E-CSI. In this baseline model, Delta and cash compensation, assessing other executive compensation types, have negative coefficients. A firm performance variable, *total sales*, has a significant and positive coefficient, meaning that a firm's sales amount is positively associated with E-CSI. Meanwhile, a firm's *ROA*, another performance variable, is negatively associated with its E-CSI, implying that a firm with effective management shows a low level of E-CSI.

Model 2 in Table 3 presents the CEO risk sensitivity (or vega) as an independent variable with other control variables. *H1* proposes a negative relationship between a firm's vega and E-CSI, i.e.,

the higher a firm's CEO risk sensitivity, the lower its level of E-CSI. Thus, hypothesis 1 is fully supported.

Model 3 includes the interaction effect of vega and CEO Tenure on a firm's E-CSI level, to assess hypothesis 2. As this model presents, the interaction variable has a significant and negative regression coefficient. This result confirms that a CEO's risk sensitivity with a longer tenure in a firm is more likely to alleviate the firm's E-CSI level. Thus, *H2* is also supported.

Model 4 shows the result of examining *H3*, which proposes a negative interaction effect of vega with a firm's board size on E-CSI. As hypothesized, a significant and negative regression coefficient is observed for this interaction effect, confirming that a greater number of board members in a firm amplifies the negative effect of CEO risk sensitivity on E-CSI. Thus, *H3* is fully supported.

To test *H4*, Model 5 regresses a firm's E-CSI on the interaction between its CEO's risk sensitivity and the number of competitors within the industry. As shown in Model 5, the interaction effect has a significant and negative regression coefficient, meaning that, in a more competitive industry, CEO risk sensitivity reduces the firm's E-CSI level more than other firms. Thus, the result supports *H4*.

Table 3. Fixed effects Poisson regression of E-CSI on CEO risk sensitivity and managerial discretion

DV: E-CSI	***Model 1***	***Model 2***	***Model 3***	***Model 4***	***Model 5***
E-CSR	0.498	0.493	0.517	0.656	0.523
	[0.001]***	[0.001]***	[0.001]***	[0.000]***	[0.001]***
Delta (log)	-0.008	0.006	0.019	0.014	0.017
	[0.641]	[0.759]	[0.387]	[0.563]	[0.431]
Cash compensation (log)	-0.086	-0.083	-0.090	-0.093	-0.090
	[0.003]***	[0.004]***	[0.004]***	[0.006]***	[0.004]***
CEO on board	-0.092	-0.091	-0.095	-0.030	-0.091
	[0.326]	[0.331]	[0.352]	[0.785]	[0.372]
CEO tenure (log)	0.022	0.020	0.036	0.070	0.016
	[0.445]	[0.502]	[0.277]	[0.051]*	[0.603]
Total sales (log)	0.106	0.112	0.078	0.052	0.080
	[0.045]**	[0.035]**	[0.198]	[0.472]	[0.188]
ROA	-1.322	-1.328	-1.424	-1.457	-1.419
	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***
R&D intensity	-0.980	-0.949	-0.893	-1.276	-0.858
	[0.239]	[0.254]	[0.360]	[0.275]	[0.380]
Advertising expenditure	0.459	0.473	0.735	2.147	0.769
	[0.675]	[0.665]	[0.551]	[0.129]	[0.532]
Capital expense	0.720	0.719	0.103	-0.517	0.087
	[0.193]	[0.193]	[0.873]	[0.485]	[0.893]
Book leverage	0.463	0.464	0.551	0.523	0.545
	[0.010]***	[0.010]***	[0.006]***	[0.019]**	[0.006]***
Market-to-book	0.052	0.047	0.020	0.043	0.017
	[0.043]**	[0.075]*	[0.517]	[0.243]	[0.578]
PPE assets	-0.306	-0.317	-0.300	-0.469	-0.311
	[0.303]	[0.285]	[0.356]	[0.214]	[0.340]
Year dummies	Included	Included	Included	Included	Included
Predicting variables:					
CEO risk sensitivity (log)		-0.025	-0.016	-0.019	-0.008
		[0.081]*	[0.324]	[0.308]	[0.633]
CEO risk sensitivity × CEO tenure			-0.011		
			[0.035]**		
Board size				0.004	
				[0.972]	
CEO risk sensitivity × Board size				-0.002	
				[0.055]*	
Number of competitors					0.000
					[0.416]
CEO risk sensitivity × Number of competitors					-0.005
					[0.026]**
N (observations)	11316	11316	9792	9792	9792
N (firms)	1050	1050	944	944	944
Log likelihood	-6544.858	-6543.343	-5668.343	-4583.882	-5667.816
Wald Chi^2	1837.740	1839.750	1598.660	1270.850	1598.300
Prob > Chi^2	0.000	0.000	0.000	0.000	0.000

*Note: p-values in brackets * p < 0.10, ** p < 0.05, *** p < 0.01. All dummy variables for the year are not presented.*

In summary, our empirical findings fully support all four proposed hypotheses. CEO risk sensitivity diminishes a firm's E-CSI level, and CEO managerial discretion at individual, firm, and industry levels further attenuates the E-CSI level.

4.2. Additional analysis: The relation between CEO risk sensitivity and E-CSI

We also conducted three additional analyses to check the robustness of the proposed relationships between CEO risk sensitivity and E-CSI.

4.2.1. Reverse causality

A possible alternative argument to our main hypothesis (a negative impact of CEO risk sensitivity on E-CSI) is the impact of E-CSI on CEO risk sensitivity, i.e., when a firm significantly reduces its level of E-CSI, its CEO is likely to reward risk sensitivity. In other words, a firm's level of E-CSI was negatively associated with vega. Because the dependent variable (*vega*) was continuous, we utilized the fixed effect linear regression models, with E-CSI lagged one year to predict current CEO risk sensitivity. Table 4 below shows the results from regression

analyses of CEO risk sensitivity (*vega*) on E-CSI with the same set of control variables for the same period (i.e., 2008–2018). Model 2 in Table 4 shows that E-CSI has no significant regression coefficient, indicating that E-CSI is not associated with CEO risk sensitivity. Models 3–5 present results for the interaction variables between E-CSI and three managerial discretion variables — the regression coefficients are either positive or non-significant. Note that the R-squared value for each model is over 0.1, i.e., an acceptable level in social science research with statistical significance of explanatory variables (Ozili, 2023). Thus, managerial discretion at individual, firm, and industry levels does not attenuate E-CSI impacts on CEO risk sensitivity. These findings support that the causality runs from CEO risk sensitivity to E-CSI, not vice versa.

Table 4. Fixed effects linear regression of CEO risk sensitivity on E-CSI

DV: CEO risk sensitivity	***Model 1***	***Model 2***	***Model 3***	***Model 4***	***Model 5***
E-CSR	-0.336	-0.338	-0.342	-0.503	-0.340
	[0.002]***	[0.002]***	[0.001]***	[0.000]***	[0.001]***
Delta (log)	0.295	0.295	0.294	0.308	0.294
	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***
Cash compensation (log)	0.100	0.100	0.101	0.094	0.102
	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***
CEO on board	0.008	0.008	0.006	0.033	-0.003
	[0.901]	[0.898]	[0.923]	[0.633]	[0.965]
CEO tenure (log)	-0.143	-0.143	-0.162	-0.161	-0.143
	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***
Total sales (log)	0.377	0.376	0.378	0.403	0.381
	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***
ROA	-0.412	-0.409	-0.406	-0.616	-0.439
	[0.008]***	[0.008]***	[0.009]***	[0.000]***	[0.005]***
R&D intensity	-0.167	-0.166	-0.160	-0.402	-0.226
	[0.712]	[0.715]	[0.725]	[0.413]	[0.619]
Advertising expenditure	-1.023	-1.022	-1.030	-1.295	-1.047
	[0.012]**	[0.012]**	[0.012]**	[0.003]***	[0.010]**
Capita expense	-0.117	-0.116	-0.126	-0.041	-0.102
	[0.737]	[0.739]	[0.718]	[0.915]	[0.770]
Book leverage	0.006	0.006	0.004	0.003	-0.008
	[0.950]	[0.951]	[0.970]	[0.979]	[0.940]
Market-to-book	-0.071	-0.071	-0.071	-0.066	-0.070
	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***
PPE assets	-0.305	-0.304	-0.298	-0.349	-0.243
	[0.113]	[0.113]	[0.122]	[0.108]	[0.209]
Year dummies	Included	Included	Included	Included	Included
Predicting variables:					
E-CSI		0.008	-0.095	-0.025	0.016
		[0.671]	[0.042]**	[0.858]	[0.923]
E-CSI × CEO tenure			0.055		
			[0.015]**		
Board size				0.259	
				[0.001]***	
E-CSI × Board size				0.014	
				[0.818]	
Number of competitors					-0.335
					[0.001]***
E-CSI × Number of competitors					-0.001
					[0.960]
N (observations)	17129	17129	17129	14658	17129
N (firms)	2196	2196	2196	1960	2196
F	65.60	63.68	62.05	57.18	60.51
Prob > F	0.000	0.000	0.000	0.000	0.000
R-squared	0.127	0.127	0.127	0.126	0.128

*Note: p-values in brackets * p < 0.10, ** p < 0.05, *** p < 0.01. All dummy variables for the year are not presented.*

4.2.2. Alternative E-CSI measurement

Another plausible argument is about an alternative E-CSI measurement, i.e., the net score of employee-related corporate social irresponsibility (*net E-CSI*). Using the approaches used in previous studies with the net score of CSR, we examined the net score of E-CSI. We calculated the net E-CSI by subtracting E-CSR (positive employee-related activities) from E-CSI (negative activities) for each firm in a given year, then conducted empirical testing with Net E-CSI measurement in the identical models used for the proposed hypotheses. The fixed effects linear regression models were used, as net E-CSI, unlike E-CSI, was not skewed with many values at a lower bound of zero. Table 5 below presents all results: Model 1 includes only control variables for net E-CSI as a dependent variable; Model 2 regresses net E-CSI on CEO risk sensitivity; and Models 3–5 include three interaction variables. Interestingly, CEO risk sensitivity has significant and positive regression coefficients in all models, except for an interaction of CEO risk sensitivity with the number of competitors, indicating that CEO risk sensitivity influences the net engagements of E-CSI. Again, all models presented in Table 5 are acceptable as they have an R-squared value over 0.2 (Ozili, 2023). These results imply different dynamics based on asymmetry between E-CSI and E-CSR. Thus, for this study, our E-CSI variable, separating from E-CSR, is a more effective measurement than net E-CSI.

Table 5. Fixed effects OLS regression of net E-CSI on CEO risk sensitivity

DV: Net E-CSI	*Model 1*	*Model 2*	*Model 3*	*Model 4*	*Model 5*
Delta (log)	-0.001	-0.014	-0.007	-0.001	-0.013
	[0.919]	[0.129]	[0.518]	[0.957]	[0.143]
Cash compensation (log)	-0.018	-0.020	-0.025	-0.028	-0.020
	[0.255]	[0.199]	[0.147]	[0.141]	[0.213]
CEO on board	0.064	0.061	0.050	0.046	0.060
	[0.175]	[0.191]	[0.350]	[0.425]	[0.199]
CEO tenure (log)	0.025	0.029	0.024	0.021	0.028
	[0.059]*	[0.029]**	[0.132]	[0.228]	[0.040]**
Total sales (log)	-0.009	-0.015	-0.039	-0.058	-0.015
	[0.697]	[0.507]	[0.153]	[0.068]*	[0.515]
ROA	-0.832	-0.825	-0.884	-0.809	-0.827
	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***
R&D intensity	0.356	0.325	0.350	0.184	0.323
	[0.276]	[0.320]	[0.344]	[0.659]	[0.323]
Advertising expenditure	-0.069	-0.059	-0.091	-0.276	-0.048
	[0.814]	[0.841]	[0.781]	[0.435]	[0.870]
Capita expense	0.231	0.244	0.116	-0.151	0.243
	[0.357]	[0.331]	[0.686]	[0.655]	[0.334]
Book leverage	0.036	0.033	0.045	-0.039	0.030
	[0.632]	[0.654]	[0.593]	[0.683]	[0.687]
Market-to-book	0.033	0.038	0.037	0.017	0.038
	[0.001]***	[0.000]***	[0.002]***	[0.243]	[0.000]***
PPE assets	-0.589	-0.585	-0.632	-0.602	-0.577
	[0.000]***	[0.000]***	[0.000]***	[0.001]***	[0.000]***
Yesr dummies	Included	Included	Included	Included	Included
Predicting variables:					
CEO risk sensitivity (log)		0.022	0.025	0.024	0.126
		[0.001]***	[0.001]***	[0.010]**	[0.010]**
CEO risk sensitivity × CEO tenure			-0.002		
			[0.424]		
Board size				-0.062	
				[0.311]	
CEO risk sensitivity × Board size				0.001	
				[0.279]	
Number of competitors					0.078
					[0.289]
CEO risk sensitivity × Number of competitors					-0.015
					[0.033]**
N (observations)	17129	17129	14898	12597	17129
N (firms)	2196	2196	1952	1756	2196
F	118.69	115.52	103.29	104.94	109.07
Prob > F	0.000	0.000	0.000	0.000	0.000
R-squared	0.203	0.204	0.209	0.226	0.204

*Note: p-values in brackets * p < 0.10, ** p < 0.05, *** p < 0.01. All dummy variables for the year are not presented.*

4.2.3. Fixed effect models for endogeneity

To mitigate concerns of endogeneity, especially about omitted variables, we included two time-invariant factors: firm-fixed effect and year-fixed effect. In Table 4, both fixed effects are controlled in all five models. In particular, in Model 2, as each model is set to focus on the within-variation of a main predicting variable (*vega*), not allowing between-variation of them, these fixed effects can resolve the concern about omitted variable bias.

In addition, there is an endogeneity issue at the firm level when CEO's compensation scheme is not randomly chosen, but based on their moral reputation. Thus, a firm's selection of a CEO may be affected by its propensity of "doing good" and its level of E-CSR. For example, a firm that maintains decent employee welfare programs increases the likelihood of choosing a CEO with a high moral reputation. So it is not unreasonable to conjecture that a firm's level of E-CSR can affect its E-CSI. The concern about biased estimates can be addressed by including each firm's E-CSR in all statistical analysis models in Table 4.

5. DISCUSSION OF THE RESULTS

In this study, the central proposition is that CEO's risk sensitivity to the underlying stock price volatility significantly reduces E-CSI. Drawing on the risk-mitigating perspective, we propose and test whether and how CEO risk sensitivity alleviates E-CSI. Our theoretical framing and empirical testing validate that CEO risk sensitivity is a risk-mitigating motivator that drives CEOs to disengage from or alleviate E-CSI. Also, we confirm the moderating roles of CEO managerial discretion at individual, firm, and industry levels on the impact of CEO risk sensitivity on E-CSI reduction. The central contributions lie in the following three areas.

First, this research sheds light on E-CSI, i.e., employee-related corporate social irresponsibility. A firm's employees are one of the most salient stakeholder groups, categorized as primary (Hillman & Keim, 2001) and technical (Mattingly & Berman, 2006). Unlike other primary and technical stakeholders, such as customers and suppliers (Mattingly & Berman, 2006), employees must invest their own human capital in their firms (Blair, 1995) but are exposed to status threats (such as layoffs). In addition, a firm's E-CSI presents substantive aspects of its responsible activities that external stakeholders may not be able to assess and recognize (Westphal, 2023). By focusing on the unique properties of E-CSI, we emphasize the importance and necessity of reducing E-CSI, separate from E-CSR or comprehensive CSR activities.

Second, this study highlights the importance of risk management in the context of CEO risk sensitivity schemes. Thus, it is necessary to consider how CEOs' risk-mitigating motivation is stimulated

to understand how CEO risk sensitivity works in E-CSI contexts. We integrate CEOs' risk-mitigating motivation with the CSI literature and highlight how corporate managers achieve desirable employee relationships. Although the CEO pay scheme is designed to provide monetary rewards, CEOs are motivated by risk sensitivity, which alleviates E-CSI activities. Thus, CEO incentive pay may not effectively motivate CEOs to focus exclusively on shareholder benefits; instead, their desire for a good moral reputation is distinctly stimulated.

Third, this study reveals the role of CEO managerial discretion in the relationship between CEO risk sensitivity and CSI reduction. Moreover, managerial discretion in CEO pay contexts is related to agentic capabilities, i.e., the ability to "can do otherwise" (DiMaggio & Powell, 1983). While undertaking managerial decisions to fulfill shareholders' demands, when CEOs perceive a high degree of discretion based on factors at individual, firm, and industry levels, they are encouraged to mitigate the firm's undesirable behavior to stakeholders. Indeed, "to hold a social entity responsible for the consequences of its actions implies a widespread belief that the entity has agentic capabilities" (King et al., 2010, p. 294).

This study advances understanding of how CEO risk sensitivity — defined as sensitivity to underlying stock price volatility — mitigates E-CSI. The findings also integrate risk management perspectives with the corporate social irresponsibility literature, especially E-CSI, to explain how executive compensation design influences responsible employment practices. All these findings strongly support recent studies arguing CEO personal hedging behavior, aligning with the sensitivity of their equity-based compensation to the firm's stock price performance (Park et al., 2023). More fundamentally, this research verified the link between CEO insurance behaviors or risk-aversion with CSR/CSI engagement (Hossain et al., 2023; Wang & Yan, 2023).

6. CONCLUSION

In the present research, we propose a mechanism in which CEO risk sensitivity reduces companies' irresponsible activities for employees, a primary but vulnerable stakeholder group. The major conceptual contribution of this paper is to highlight the risk-mitigating motivation in the context of CEO risk sensitivity. With CEO risk sensitivity, given a sufficient level of managerial discretion, CEOs are encouraged to reduce their firm's E-CSI further. This finding indicates that CEOs attempt to attenuate undesirable employee-related activities contingent upon the discretionary level.

Despite contributions, this study also raises new research issues and limitations. First, this research assesses employee-related irresponsible behaviors based on a single data source, MSCI ESG data. Future studies are encouraged to expand the range of data sources and indicators (measurements). For example, future research may focus on specific employee-related CSIs, such as workplace health and safety, retirement benefits, and work-family issues.

Second, this research focuses on three types of managerial discretion at the individual, firm, and industry levels. This approach, however, does not permit us to examine various aspects of managerial discretion. For example, the corporate board of directors can be another critical category for CEO managerial discretion. So it is necessary to assess how diverse types of CEO managerial discretion influence firms' E-CSI.

Third, although this study empirically tested the proposed hypotheses using large U.S. public companies over the 20 years from 1998 to 2018, it is also necessary to examine data from after the COVID-19 pandemic and in international contexts. Also, a few previous studies propose that CSI activities should be managed differently between U.S. and Asian countries (Matten & Moon, 2004) and European countries (Chapple & Moon, 2005). Thus, testing the relationship between CEO risk sensitivity and E-CSI with samples from diverse contexts should be considered in future research.

This study demonstrated that CEO risk sensitivity serves as a critical mechanism for reducing E-CSI. We illuminate E-CSI as a distinct phenomenon warranting separate attention from broader CSR initiatives, given that employees represent a uniquely vulnerable primary stakeholder group who invest human capital yet face status threats and whose treatment may remain opaque to external observers. This study proposes that executive incentive structure stimulates concerns beyond shareholder wealth maximization, particularly regarding moral reputation. Moreover, CEO managerial discretion facilitates this relationship by enhancing executives' agentic capabilities to prioritize stakeholder welfare alongside shareholder demands. These contributions integrate risk management perspectives with the CSI literature to explain how compensation design influences responsible employment practices.

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APPENDIX

Table A.1. Correlation matrix

No.	Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	*E-CSI*	1.000															
2	*CEO risk sensitivity* (log)	0.148***	1.000														
3	*CEO tenure* (log)	-0.050***	0.027***	1.000													
4	*Board size* (log)	0.127***	0.218***	-0.086***	1.000												
5	*Number of competitors* (log)	-0.173***	-0.082***	0.057***	0.074***	1.000											
6	*E-CSR*	0.110***	0.183***	-0.061***	-0.033***	0.208***	1.000										
7	*Delta* (log)	0.087***	0.513***	0.341***	-0.007	0.130***	0.158***	1.000									
8	*Cash compensation* (log)	0.139***	0.343***	0.022**	-0.031***	0.331***	0.178***	0.344***	1.000								
9	*CEO on board*	0.010	0.076***	0.029***	-0.073***	0.022**	0.018**	0.061***	0.027***	1.000							
10	*Total sales* (log)	0.269***	0.378***	-0.082***	-0.173***	0.478***	0.357***	0.372***	0.595***	0.049***	1.000						
11	*ROA*	-0.019**	0.049***	0.008	-0.189***	-0.049***	0.062***	0.176***	0.129***	0.023**	0.122***	1.000					
12	*R&D intensity*	-0.038***	0.090***	0.026***	-0.069***	-0.203***	0.076***	0.022**	-0.168***	0.034***	-0.274***	-0.156***	1.000				
13	*Advertising expenditure*	0.019**	0.004	-0.017*	-0.171***	-0.016*	-0.010	0.031***	-0.005	-0.017**	0.009	0.169***	-0.030***	1.000			
14	*Capital expense*	0.037***	-0.017*	0.004	-0.260***	-0.046***	0.053***	0.050***	-0.017*	0.019**	0.053***	0.219***	-0.110***	0.036***	1.000		
15	*Book leverage*	0.056***	0.024***	-0.037***	-0.065***	0.127***	0.024***	-0.015*	0.128***	-0.022***	0.184***	-0.070***	-0.163***	-0.014*	0.003	1.000	
16	*Market-to-book*	-0.075***	0.049***	0.051***	-0.074***	-0.183***	0.048***	0.279***	-0.050***	0.009	-0.154***	0.462***	0.327***	0.169***	0.088***	-0.086***	1.000
17	*PPE assets*	0.147***	-0.011	-0.041***	-0.426***	0.048***	0.097***	-0.042***	0.027***	0.021**	0.175***	0.101***	-0.206***	-0.005	0.647***	0.202***	-0.114***

*Note: * p < 0.10, ** p < 0.05, *** p < 0.01.*