

Executive Consequences of Corporate Misconduct: Environmental Violations' Effect on Executive Turnover and Compensation for Oil and Gas Firms

Douglas Dalén
Stockholm School of Economics

Maximilian Oker-Blom
Stockholm School of Economics

Bachelor Thesis for the degree of Bachelor of Science, BSc in Retail Management
Stockholm School of Economics, 2024

Executive Consequences of Corporate Misconduct: Environmental Violations' Effect on
Executive Turnover and Compensation for Oil and Gas Firms

Douglas Dalén and Maximilian Oker-Blom, 2024

Tutored by Mariya Ivanova. Assistance from Zeping Pan

Keywords: Extractive Industries, Oil and Gas, Executive Turnover, Executive Compensation, ESG
Investing, Corporate Social Responsibility and Irresponsibility (CSR & CSI), Environmental
Penalty, Reputation Repair.

Abstract

Within the domain of Environmental, Social, and Governance (ESG) and Corporate Social Responsibility (CSR) practices, organizations grapple with the complex task of integrating sustainability imperatives with profit-driven objectives. This dual mandate presents a multifaceted and intricate business problem for firm executives, where they must navigate their corporations through regulatory requirements, stakeholder expectations, and the risks associated with environmental violations. This thesis investigates how firms in the oil and gas industry take punitive action against their own executives following environmental violations as part of the corporate strategy to repair their reputation. Through a quantitative study, this thesis reveals that oil and gas executives whose firms commit environmental violations are not at greater risk of being fired or having their salary reduced, but their bonuses are found to be negatively affected by committing environmental violations. Thus, the main findings are that oil and gas firms reduce executives' total cash compensation by reducing their bonuses following environmental violations. This thesis contributes to existing literature on reputational repair and executive consequences following corporate misconduct. Further, this thesis delves into the implications of these findings by discussing industry specific characteristics as well as avenues for further research.

Table of Contents

Abstract	3
1. Introduction.....	5
2. Literature Review	7
2.1 <i>The Role of the Firm.....</i>	7
2.2 <i>Reputation as a Cornerstone of Trust</i>	7
2.3 <i>Market Forces</i>	8
2.3.1 <i>Impact Investing – Incentivizing Firms to do Good</i>	11
2.3.2 <i>The Incongruent ESG Ratings Definitions</i>	13
2.4 <i>Reputational Capital</i>	14
2.4.1 <i>Reputation loss – Third-Party Enforcement.....</i>	14
2.4.2 <i>Reputation loss – Related-Party Enforcement.....</i>	15
3. Background.....	17
4. Methodology	18
4.1 <i>Sample Selection</i>	19
4.2 <i>Variables</i>	22
4.3 <i>Correlations</i>	22
4.4 <i>Statistical Methodology.....</i>	25
5. Results.....	25
6. Analysis	29
7. Discussion	30
8. Limitations.....	31
9. Conclusion.....	32
10. Further Research	32
References	34

1. Introduction

This thesis studies executive turnover and changes in executive compensation as a vehicle for corporate reputation repair for firms that have committed major environmental violations. Focus has shifted from shareholders (e.g., Friedman, 1970) to stakeholders (e.g., Freeman & McVea, 2001) and ESG and CSR has become more and more important (Flammer, 2013). Globally, ESG assets is estimated to surpass 25% of the projected total assets under management (Bloomberg, 2024). For firms, ESG is becoming a strategic resource (Flammer, 2015). Yet, a firm's reputation can suffer considerably if it is exposed to negative ESG events. For instance, prominent events such as the *Deepwater Horizon* catastrophe in 2010 and the *DuPont* scandal have led to direct multi-million dollar legal penalties (Shapira & Zingales, 2017; Karpoff 2012), negative short-term stock returns (Karpoff, Lott, & Wehrly, 2005; McGuire, Holtmaat, & Prakash, 2022), as well as longer-term reputational losses (Karpoff, 2012). This often leads to firms having to revise their corporate strategy to becoming more ethical (Balmer & Powell, 2011).

How firms choose to react to regulatory scrutiny varies greatly. Sometimes a passive or even defensive strategy when faced with the risk of reputational loss is to the benefit of the violating firm (Bundy et al., 2018). The reaction is propositioned to be a direct product of the likelihood of reputational loss which is circumstantial on the perception of the organization's actions relating to control, certainty, threat, and deviance; the external stakeholders' motivation; and the level of media coverage relating to how frequent and predominantly negative the news are (Reuber & Fischer, 2010). While prior studies provide valuable insights, this literature has generally ignored effects on executive turnover and compensation. This is a gap because CEOs and other key executives are ultimately responsible for the most important strategic decisions, i.e. to deploy the firm's resources to strategies that maximizes long-term growth and economic profits (Hambrick & Mason, 1984). Further, executive compensation is one of the most controversial topics which is closely scrutinized by investors (Murphy, 1999).

In some industries, environmental violations are more common than in others. For instance, in the extractive industries, environmental violations are common, especially in the oil and gas industry (Gray, Hellman, & Ivanova, 2019). Firms in extractive industries are some of the largest companies in the world, representing immense values on stock exchanges (Ibid). Because the pressure to conform to green legislation and investor preferences is more strongly felt in extractive industries, such as mining, oil and gas, compared to low-emissions industries, like insurance and banking, their societal role and responsibilities are particularly scrutinized (Chava, 2014; Hartzmark & Sussman, 2019; Hartzmark & Shue, 2023).

To the best of our knowledge, no prior literature has studied executive turnover and change in executive compensation following environmental violations, specifically in the oil and gas industry. This led to the motivation to investigate the following research question in this thesis: *"Does the occurrence of environmental violations and subsequent penalties in the oil and gas industry lead to executive punishment, such as termination, or a decrease in executive compensation?"*

To address the research question, this thesis adopts a two-fold approach involving a comprehensive literature review and quantitative methods. Firstly, a thorough literature review is conducted to examine existing research on reputation, reputation repair actions, as well as the oil and gas industry, and ESG & CSR. This secondary research provides a foundational understanding of the theoretical frameworks, empirical findings, and gaps in the literature, guiding the quantitative analysis.

Building upon insights gathered from the literature review, quantitative methods are employed to analyze a dataset of environmental violations (above \$5 thousand) from Violation Tracker, gathered by the non-profit organization Good Jobs First. We limit the sample to environmental violations that are registered in the period 2010-2020 (which centers around the Paris Agreement) committed by oil and gas firms. This sample is then accompanied by a control group from Wharton Research Data Service (WRDS) in similar fashion to Cai et al. (2023), i.e. matching firm fundamentals for the firms found in the Violation Tracker dataset and introducing the control group based on the same industry and year to isolate the effect that environmental violations have on the likelihood of a firm taking punitive actions against their executives. The final sample comprises of 2,720 total observations. This quantitative analysis focuses on identifying instances of executive punishment, such as terminations, as well as changes in executive compensation from one year prior to the violation to one year after the violation.

Four statistical tests were carried out and structured as follows. The first two tests (Table 4 and 5) concentrate on turnover and the remaining two tests (Table 6 and 7) focus on compensation (defined as salary plus bonus) as the vehicle for executive punishment. The investigation into whether environmental violations predict executive turnover yielded statistically insignificant results, suggesting that such violations do not significantly influence the likelihood of executive turnover within the oil and gas industry. Secondly, the analysis of environmental violations' effect on executive compensation revealed statistically significant results that executive compensation was reduced ensuing penalties for environmental misconduct within the studied context. Our main finding is that after environmental violations, executives' compensation for violating firms decreased by \$31,847 on average. We found that the decrease in total compensation is derived from a change in the bonus and not the salary. Overall, these findings suggest a complex relationship between environmental violations, executive behavior, and corporate governance structures within the oil and gas industry. These findings appear more intricate than what previous literature shows, warranting further research to reveal the underlying mechanisms and implications.

This thesis contributes to the contemporary literature on reputation in terms of corporate accountability and environmental governance (e.g., Tetrault Sirsly & Lvina, 2016; Akey et al., 2018; Bundy et al., 2018) by shedding a light on a critical yet overlooked aspect: the limited repercussions for executives when their companies engage in environmental violations (e.g., Cai et al., 2023; Desai, Hogan, & Wilkins, 2006; Persons, 2006). While numerous studies have examined corporate environmental impact and corporate governance structures discretely, few have simultaneously delved into both matters. By synthesizing empirical evidence from a quantitative methodology, this thesis exposes a systemic pattern wherein executives often evade punishment or face trivial consequences for environmental violations committed by their firms.

Furthermore, this thesis contributes to ongoing discussions surrounding CSR and sustainable business practices (e.g. Cornell & Damodaran, 2020; Chava, 2014; Hartzmark & Shue, 2023). By highlighting the impunity enjoyed by executives in the face of environmental violations, it underscores the salient need for regulatory reforms, enhanced corporate governance mechanisms, and greater transparency and accountability within the oil and gas industry and beyond which brings into question optimal penalty policy (e.g., Becker, 1968; Posner, 1985).

Moreover, this thesis advances scholarly understanding of executive accountability following environmental violations (e.g. Karpoff, 2012) within the oil and gas industry. The findings of this thesis provide valuable insights for future studies and policymaking efforts aimed at enhancing environmental responsibility and corporate accountability.

2. Literature Review

This section of the thesis outlines previous literature on closely associated subjects. We guide the reader through the concept of trust, in which reputation plays a central role. Then, the essential developments of investing (e.g., changes in investor preferences) are investigated. This moves us to the section of reputational capital, which is the focal point of this thesis. We review prior literature on reputation loss and particularly *reputation repair*. In it lies the intricacies for firms to navigate stakeholders' expectations. After articulating the hypotheses, we give a brief literary background on the oil and gas specific industry characteristics. This equips the reader with a deeper contextual understanding of reputation and managing stakeholder expectations in situations that might call for reputation repair in this industry.

2.1 The Role of the Firm

To understand when and how executives are punished for their firms' misconduct, the role of the firm (for which executives serve at the helm) needs to be understood. This section probes into how the role of the firm has changed from the 1970s to the present day.

In 1970, Milton Friedman wrote his now eminent article in the New York Times on the social responsibility of business. In it, he refutes the notion that businesses can possess any responsibilities at all (Friedman, 1970). Only people, he continues, can have responsibilities. On what the role of business is, Friedman writes: "there is only one social responsibility of business – to use its resources and engage in activities designed to increase its profits so long as it stays within the rules of the game, which is to say, engages in open and free competition without deception or fraud." (Friedman, 1970).¹

Friedman's acclaimed doctrine is now decades old. During its maturation, other competing philosophies have emerged. One of the most famous of which is Freeman's *stakeholder theory* which surfaced in 1984.² In conflict with Friedman's doctrine that solely focuses on maximizing shareholder value, the stakeholder approach revolved around managing the myriad of groups and relationships such as those between the company and its shareholders, employees, customers, suppliers, lenders, and society (Freeman & McVea, 2001). Freeman's stakeholder theory assumes that shared values are necessary as part of doing business and advocates that creating value for stakeholders creates value for shareholders (Freeman et al., 2004). Thus, it addresses CSR, market economy, and social contract theory more directly. Both Friedman and Freeman's philosophies and theories are still prominent in current literature.

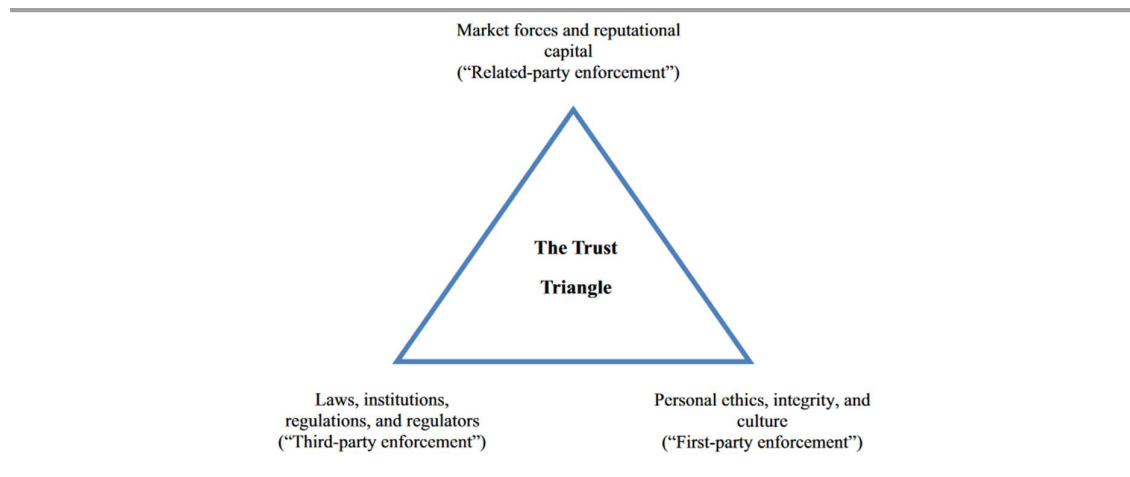
2.2 Reputation as a Cornerstone of Trust

Vital to understanding the role of the firm is to grasp the concept of trust. Figure 1 illustrates the *trust triangle* as discussed by Dupont & Karpoff (2019). They begin their paper by stating that trust lies at the core of nearly all economic transactions. In their goal to propose a framework to organize and better understand empirical research in finance that highlights the importance of trust, the authors coined the trust triangle, which describes the encouraging forces that leads to overcoming opportunism and participate in mutually beneficial economic exchange (Dupont & Karpoff, 2019).

¹ This is a repeated argument from Milton Friedman's book *Capitalism and Freedom* (1962).

² Edward Freeman's *Strategic Management: A Stakeholder Approach* (1984) is the foundation of stakeholder theory.

Figure 1: The Trust Triangle



Source: Dupont & Karpoff (2019) p.218.

The base corners of the triangle refer to the third-party enforcement of a society's laws and regulations and personal, moral, religious, societal, and cultural values that discourage cheating even when penalties are not imposed by third parties. In between them, market forces and reputational capital are at play (Dupont & Karpoff, 2019). These are referred to by Dupont & Karpoff (2019) as related-party incentives to behave honestly and they draw a parallel to Adam Smith's characterization of the Invisible Hand and game theory (Ibid).

The base corners of the triangle refer to the third-party enforcement of a society's laws and regulations and personal, moral, religious, societal, and cultural values that discourage cheating even when penalties are not imposed by third parties. In between them, market forces and reputational capital are at play (Dupont & Karpoff, 2019). These are referred to by Dupont & Karpoff (2019) as related-party incentives to behave honestly and they draw a parallel to Adam Smith's characterization of the Invisible Hand and game theory (Ibid). From Dupont & Karpoff's (2019) view, the three parts of trust do not overlap, but relate to and affect each other. For instance, they note that an increase in legal penalties for business misconduct leads to a decrease in reliance on reputational capital. Similarly, they also note that deregulation can lead to self-regulation based on personal ethics to guide decision making. In practice, they note, many misconducts are disciplined through a combination of the three.

The focus of this thesis relates to Dupont & Karpoff's (2019) *Trust Triangle* apex, i.e., related-party enforcement. We will review literature from its two constituents –market forces and reputational capital – in succession starting with market forces and then reputational capital which is the focus of this thesis.

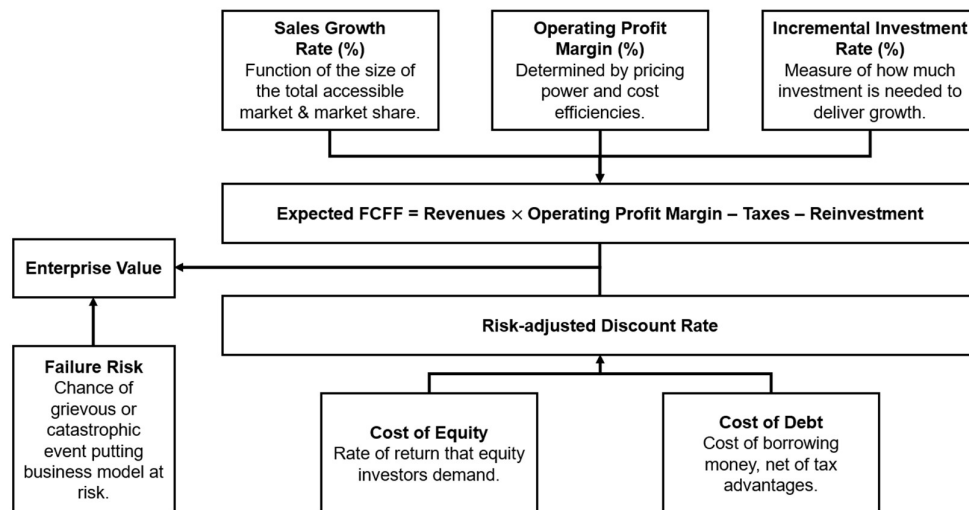
2.3 Market Forces

Market forces hold many challenges for executives that steer and influence corporate behavior. In market forces terms, the primary vehicle in which companies are rewarded or punished is through investing. Investors' preferences and investing philosophy plays a key role in how the firm's actions are perceived (Hong & Kacperczyk, 2007). In this section, investor preferences are expounded upon, e.g. how ESG and CSR adds or destroys value and how the phenomenon associates with the pressure of the dynamic concept of the role of the firm. The purpose of including this section in the thesis is to provide a more holistic picture of the issue of reputational repair seeing as reputational capital and market forces are correlated.

Over the past two decades, corporate environmental disclosures and environmental sensitivity of investors have increased markedly (Chava, 2014). Investors worldwide value sustainability: high-sustainability ranked funds have received net inflows of more than \$24 billion, whereas low-sustainability ranked funds have resulted in net outflows of more than \$12 billion (Hartzmark & Sussman, 2019). The material shift is also noted in the amount of money dedicated to socially responsible investing (SRI) that has seen a growth of 324% over the 1995-2007 time period and over 50 times in the last 20 years (Chava, 2014). Cornell & Damodaran (2020) insinuates that using ESG criteria and considerations is becoming an increasingly important decision-making investment aspect, especially for institutional investors (Cornell & Damodaran, 2020).

ESG can both add and take away value (Cornell & Damodaran, 2020). Cornell & Damodaran demonstrates this by disaggregating a discounted-cash-flow (DCF) model into its constituents as shown in Figure 2: the expected cash flows to a firm (FCFF), and the risk-adjusted rate at which the cash flows are discounted by (also known as the “weighted average cost of capital” or simply “WACC”) (Ibid). Consistent with the authors’ model set up of a DCF is Mauboussin and Rappaport’s (2021).³ They identify three operating value drivers that collectively influence the FCFF: sales growth rate (%), operating profit margin (%), and incremental investment rate (%). The cost of capital captures the operating risk of a business as a going concern, capturing the uncertainty about future revenues and operating income (Cornell & Damodaran, 2020). A risk of failure is parted to represent the risk that the company will not survive as a going concern, following a grievous or catastrophic event that puts the business model at risk (Ibid). Formulating the impact of ESG in this way is imperative to understanding the results later found in this report.

Figure 2: The Value Drivers of a simplified Discounted-Cash-Flow Model



Source: Cornell & Damodaran (2020) p.5; adjusted based on Mauboussin & Rappaport (2021).

With their model in place, they observe that ESG can have both positive and negative effects on enterprise value. The authors lay out three plausible cycles (hereafter referred to as scenarios) to illustrate how ESG might impact value.

³ This definition is also consistent with the value drivers found in Koller et al. (2020).

In the first scenario, Cornell & Damodaran (2020) outline the ways it could pay off to be “good”. If it is in the best interest of corporations to act responsibly, companies could enjoy a higher enterprise value through their operations by:

- *Higher revenue growth*: customers’ willingness to pay for “good” companies is heightened.
- *Unchanged or higher margins*: operating expenses might increase in the short term but revert or fall below original levels in the long term.
- *Higher capital turnover and returns on capital*: capital invested in “good” companies might deliver higher growth and efficiency.

A lower risk profile as a result of being good would also increase value:

- *Lower cost of equity*: investors flock to investing in good companies.
- *Lower cost of debt*: lenders may lend at more attractive rates and governments could offer subsidized debt.

In a punitive scenario, “bad” companies are punished by being bad instead of “good” companies being rewarded for being good (Ibid):

- *Lower revenue growth*: customers will want to purchase less from “bad” companies.
- *Lower long-term margins*: operating expenses rise in the long term.
- *Lower capital turnover and returns on capital*: capital invested in “bad” [sic] companies might deliver worse growth and efficiency.
- *Higher cost of equity*: investors may divest their money from “bad” companies, pushing their stock prices down.
- *Higher cost of debt*: lenders might demand higher interest rates.
- *Higher failure risk*: higher exposure to crisis events might put “bad” companies out of business.

In a third, vicious scenario, Cornell & Damodaran (2020) recognize that it is plausible for “bad” companies to get the upper hand of “good” companies by being morally and ethically unconstrained:

- *Bad companies grow faster*: customers value other performance objectives (quality, dependability, speed, flexibility, and cost) more than being ESG performance.
- *Bad companies have higher margins*: it is costly for “good” companies to stay good.
- *Bad companies reinvest more efficiently*: “bad” companies will be unconstrained in their investment decisions.
- *Bad companies have lower costs of equity*: higher earnings will increase stock prices.
- *Bad companies have lower costs of debt*: lenders will more readily borrow to companies that look safer and have more stable cash earnings and cash flows.

Karpoff et al. (2005) investigates the abnormal stock return for publicly traded companies that have committed environmental violations and find that these losses are similar in size to the legal penalties they face. This result, Karpoff et al. (2005) argue, is because (i) environmental violations are not typically considered to directly harm stakeholders of the company, and (ii) shareholders rely on government authorities to carry out the total penalty. The primary deterrence for misconduct against third parties (environmental stakeholders, etc.) is therefore through legal penalties (Karpoff et al., 2005). Violations of environmental regulations entail meaningful

decreases in the violating firm's equity value that are almost exclusively attributable to the legal sanction indicating that the reputational cost is negligible (Ibid.).

Investors often base their valuations on DCF models like the simplified one shown in Figure 2. DCF valuations typically ignore nonoperating expenses (Koller et al., 2020). Reported major litigation settlements are amongst the type of expenses sometimes treated as one-time (or “non-recurring”) expenses that, although infrequently, distort a company's historical fundamentals (Koller et al., 2020). While whether to adjust for litigation charges in valuations or not is beyond this thesis, Koller et al. (2020) clearly recognizes that litigation charges can significantly impact a company's financials. Recognizing the significant impact litigation charges can have on companies' financials, it becomes clear how legal penalties and other punishments serve as a vital mechanism of corporate governance.

2.3.1 Impact Investing – Incentivizing Firms to do Good

Extant literature on ESG investing (sometimes referred to as “impact investing”) has empirically tested the effect CSR and various ESG criteria and rankings on value. This body literature, large parts of which Cornell & Damodaran (2020) maintain to be inconclusive, is now expounded on.

Heinkel et al. (2001) examined the effect of exclusionary ethical investing in a risk-averse, equilibrium setting. Their paper captures the zeitgeist of impact investing – green investors eschewing polluting firms leads to them having considerably fewer investors total which depresses their stock prices and escalates their cost of capital. If the value loss from an increase in cost of capital exceeds the cost of transforming the business to become greener, then polluting firms will naturally comply to transitioning towards becoming green. This is congruous with Cornell and Damodaran's (2020) virtuous and punitive cycles.

Investors' preferences to directing resources toward sustainability has spread like wildfire. ESG assets surpassed the \$35 trillion mark in 2020 and is poised to surpass \$50 trillion by 2025.⁴ In March of 2016, as shown in Figure 3, Morningstar launched their in-house sustainability ratings applied to more than 20,000 mutual funds ranked on a percentile basis and rated with “globes” based on their underlying holdings (Hartzmark & Sussman, 2019). The worst 10% in an industry were granted one globe (low sustainability) and the best 10% five globes (high sustainability). Prior to this, there were no simple ways investors could evaluate the sustainability of mutual funds without considerable effort. The main finding from Hartzmark & Sussman's paper (2019) was that investors collectively appreciate sustainability – as is evident from the considerable net inflows to high sustainability funds and net outflows from low sustainability funds.

⁴ See *ESG May Surpass \$41 Trillion Assets in 2022, But Not Without Challenges, Finds Bloomberg Intelligence* (Bloomberg, ESG May Surpass \$41 Trillion Assets in 2022, But Not Without Challenges, Finds Bloomberg Intelligence, 2022). See also *Global ESG assets predicted to hit \$40 trillion by 2030, despite challenging environment, forecasts Bloomberg Intelligence* (Bloomberg, 2024).

Figure 3: Do Investors Value Sustainability?

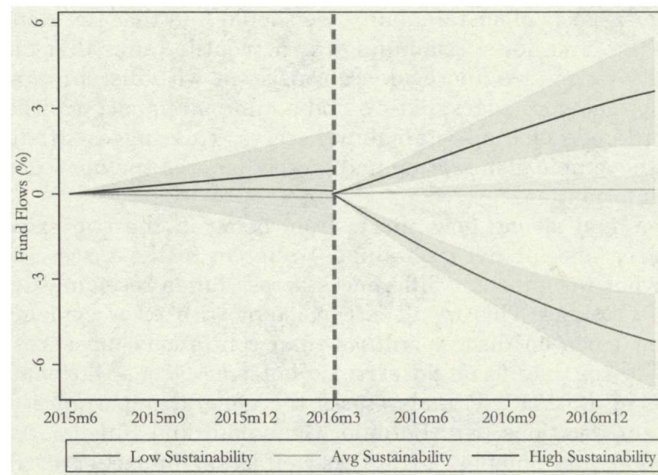


Figure 1. Cumulative fund flows by sustainability rating. Estimates are accumulated from a local linear plot of monthly flows after removing year-by-month fixed effects for nine months before and 11 months after rating publication (denoted by the dashed vertical line). Shaded areas indicate the 90% confidence interval. (Color figure can be viewed at wileyonlinelibrary.com)

Source: Hartzmark & Sussman (2019) p. 2791.

As mentioned before, the insurmountable complexity of ESG ratings for the average investor prior to Morningstar's publication meant the low sustainability and high sustainability funds enjoyed similar net money flows. After the publication however, Hartzmark & Sussman (2019) estimated that in the 11 months that followed, between \$12 and 15 billion in assets left one-globe funds and between \$24 and 32 billion in assets entered five-globe funds as a result of their new ratings.

After Heinkel et al.'s (2001) publication, more recent literature corroborates and contradicts Heinkel et al.'s (2001) findings. The first premise in Heinkel et al. (2001) has empirically held true. Namely, green investors abjuring polluting (or "brown") firms has driven their cost of capital up and dampened their market equity (Chava, 2014; Hartzmark & Shue, 2023). Specifically, Chava (2014) found that firms with environmental concerns (brown) have a higher cost of capital but did not however find support for a lower cost of capital for firms with environmental strengths (green). These empirical findings can be adapted to fit Cornell & Damodaran's (2020) virtuous and punitive cycles.

However, it was only recently discovered by Hartzmark & Shue (2023) that the latter part of the old ESG investing dogma was flawed. Following increased cost of capital from a net outflow of investors, brown firms are met with two choices: favoring brown projects with negative or zero upfront costs by reducing pollution abatement activities and continuing its brown trajectory or transitioning to green production which requires significant new investment and associated with backloaded cash-flows and long payback periods (Ibid). This, Hartzmark & Shue (2023) argues, ultimately leads to ESG investing having counterproductive results to what it initially set out to achieve – reducing global GHG emissions to reach net zero targets.

They attribute this partly to the erroneous focus on percentage reductions in emissions: "the sustainable investing movement primarily rewards green firms for economically trivial reductions in their already low levels of emissions." (Hartzmark & Shue, 2023). They found that brown firms have much higher levels of emissions intensity and greater variability. Because on average, brown firms have approximately 261 times larger emissions than green firms, and about

150 times greater emissions variability, they have several orders of magnitude more environmental impact (Ibid). At the risk of overemphasizing this, Hartzmark & Shue (2023) write: “A 100% reduction in emissions by a green firm is far less economically meaningful than a 1% reduction by a similarly-sized brown firm. [...] if the average brown firm doubled its emissions, the real environmental impact would be the equivalent to the average green firm increasing its emissions by 26,000%.” Further, the immutable fact remains that green industries, like insurance, finance, and legal services provide inadequate substitutes for essential products from brown industries like energy, transportation, and building materials.

2.3.2 The Incongruent ESG Ratings Definitions

Cornell & Damodaran (2020) draw attention to the disparity in ESG definitions. For example, they cite literature that found 70 different firms that provide some sort of ESG rating as of 2019.⁵ Further, they also cite literature that documented that over 600 ESG ratings were produced in 2018.⁶ This leads Cornell & Damodaran (2020) to suggest that ESG definitions as it stands are often in the eyes of the beholder [investor]. Billio et al. (2020) compares the impediments of ESG ratings with that of credit ratings:

“Unlike credit ratings, ESG measurement is somehow nebulous given the lack of a common definition, reporting standards and shared characteristics among each ESG component and across rating providers. Currently, rating agencies are proposing several metrics similar to the credit ratings market, but, unlike those, ESG ratings are derived from alternative and competing definitions. Hence, a common standard for ESG is missing and makes the sustainability of a company very difficult to assess and, in some cases ‘unratable.’”

ESG ratings are not only crippled by a lack of standardization, lack of credibility of information, bias, trade-offs, lack of transparency, and lack of independence. But also, Billio et al. (2020) note, assessment criteria of ESG ratings agencies are changing rapidly, exacerbating the complexity of the evaluating process.⁷ This heterogeneity in ESG ratings, Billio et al. (2020) argue, is problematic to the investment industry itself, since the ratings have taken centerstage in the identification of sustainable investments. To make matters worse, the disagreement and intricacy of the ratings have become fertile breeding ground for confirmation bias and data mining in literature.⁸ At the expense of investors wanting to invest more “ESG friendly” (as has been discussed), certain groups are benefiting from the disorder.⁹

While Cornell & Damodaran (2020) show that, theoretically, ESG per se can impact companies positively, negatively, or neutrally, one paper by Hong & Kacperczyk (2007) studied the effects on social norms on markets by examining “sin” stocks. Sin stocks – publicly traded companies in the industries of alcohol, tobacco, and gaming – were found to have higher expected returns, which the authors postulated was due to them being neglected by norm-constrained investors

⁵ See Li et al. (2020) *What a difference an ESG ratings provider makes*.

⁶ See Fish & Lawrence (2020) *A fundamental reshaping of finance, Blackrock Letter to CEOs*.

⁷ See Bloomberg’s (2021) short documentary *ESG Ratings Are Not What They Seem*. Available at: https://www.youtube.com/watch?v=f_rrS-giP8

⁸ See for example Giese et al. (2019) *Foundations of ESG Investing: How ESG Affects Equity Valuation, Risk, and Performance* – written by five MSCI directors. They find surprisingly strong statistical evidence for ESG as a financial performance indicator that elicits suspicion.

⁹ See Damodaran’s (2021) *An ESG Follow up: The Gravy Train (or circle) rolls on!* Available at: https://www.youtube.com/watch?v=5H6_60Tv0i0. Particularly at minute mark 19:00.

and thus face greater litigation risks heightened by those social norms (Hong & Kacperczyk, 2007).

2.4 Reputational Capital

In this section, we review literature from the second part of related-party enforcement, namely reputational capital. Karpoff (2012) establishes reputation as a fleeting concept and something that is thus hard to measure. Therefore, Karpoff focused his academic research on measuring the change in reputational capital when the firm or its managers engage in misconduct. Karpoff defines reputation as: “the present value of the cash flows earned when an individual or firm eschews opportunism and performs as promised on explicit and implicit contracts.” (Karpoff, 2012). This idea is echoed in Dupont & Karpoff’s article on trust, where they state that losses can materialize in any leg of the trust triangle (Dupont & Karpoff, 2019). For instance, direct costs including regulatory fines, class-action settlements and other legal expenses can emerge from the third-party enforcement leg of the trust triangle. And as investors catch wind of the firm’s wrongdoing, the firm’s equity value might revert from inflated (incorrect) financial information and could face potential losses in reputational capital, i.e., higher cost of capital, lower sales, or higher operating costs, which would appear from the related-party enforcement leg (Ibid).

While Dupont & Karpoff (2019) argue that firms may build reputation over time to serve as a buffer for when lightning strikes, Tetrault Sirsly & Lvina (2016) argue that firms are both perpetually encouraged and anticipated to “go further”. They point out that this is consistent with the Red Queen effect, which describes a scenario where firms must continuously adapt and develop not just to gain advantage but to maintain their current position. They reject the previously held assumption that reputation is sticky. In other words, stakeholders’ increasingly heightened expectations means that firms must make more substantial and constant contributions to CSR to improve or at least sustain firm reputation (Tetrault Sirsly & Lvina, 2016).

When a firm loses reputational capital, there are two main enforcers of punitive actions according to previous literature. These are captured in the trust triangle as “third-party enforcement” (laws, institutions, regulations, and regulators) and “related-party enforcement” (market forces and reputational capital) (Dupont & Karpoff, 2019). We briefly discuss third-party enforcement before diving deeper into related-party enforcement where we develop our hypotheses.

2.4.1 Reputation loss – Third-Party Enforcement

Legal sanctions are the fines imposed by regulatory bodies on the firm related to the violation as well as any legal fees associated with litigation. Despite often being sizeable, legal sanctions often only represent a small fraction of the value lost after corporate misconduct (Karpoff, 2012; Armour et al., 2017).

The optimal punishment should deter misconduct efficiently, aiming to achieve maximum compliance at minimal cost. However, there are two conflicting views with regards to how punishments should be constructed. Becker (1968) advocates for the internalization of social costs through penalties, suggesting that penalties should be of a magnitude that reflects the broader societal ramifications of offenses. Conversely, Posner (1985) suggests that penalties should serve as deterrents, dissuading misconduct by imposing penalties perceived as sufficiently severe to deter misconduct altogether.

Recognizing stakeholders as key determinants of firm value sheds light on the different elements of a sanction and its preventive mechanisms. Karpoff (2012) investigates whether the reputational sanctions imposed on firms act as ex-ante deterrents of corporate misconduct by analyzing the economic effects associated with non-compliance. It is found that reputational

sanctions do work as an ex-ante disciplinary mechanism deterring misconduct in accordance with Posner (1985). The efficacy fluctuates based on benefits received from stakeholder relationships, the type of misconduct, and the cost-benefit analysis associated with engaging in such behavior.

The ability of penalties to deter corporate misconduct depends on the nature of a firm's stakeholder relationships (Karpoff, 2012). Karpoff writes that the key underlying causes altering relationships are impaired operations, increased cost of capital, and reduced cash flows from operations. Impaired operations are losses which limit the firm's capacity to act by distracting or indicting managers or requiring management controls to be put in place. Increased cost of capital is a consequence of lenders demanding increased risk premium due to the deterioration of trust. Reduced cash flows from operations are due to deteriorated capabilities or character reputation (Ibid.). Reputational penalties are driven by stakeholders who need to safeguard their own interests by demanding higher risk premiums to engage with firms that have worsened reputations (Karpoff, et al. 2008). The situation exemplified by the finding that deceitfully inflated earnings and assets are punished with margin, chiefly through reputational penalties (Ibid.).

The composition of the factors inducing value losses, i.e., legal sanctions, readjustment effects, and reputational losses, depend on the degree to which stakeholders are contractually involved with the firm. Reputational losses are largely constrained to cases where 'second parties', i.e., stakeholders that trade with the firm, are involved. Instances of wrongdoings harming 'third parties', i.e., other market participants, do not majorly affect the firm's value through reputational penalties but instead through legal sanctions (Karpoff et al., 2005; Armour et al., 2017). In other words, if the misconduct does not affect the firm's more involved stakeholders the reputational effects are small and value losses are almost exclusively attributable to the legal penalties imposed, shifting which party of enforcement is relied upon which is also what is found by Dupont & Karpoff (2019).

Becker (1968) asserts that misconduct will only occur if the economic benefits gained from misconduct outweigh the expected penalties, which are a function of punishment severity and detection probability.¹⁰ As aforementioned, Becker (1968) suggests that the punishment should correspond directly to the misconduct, while Posner (1985) proposes that penalties should be sufficient to deter all potential misconduct. One significant factor in deterring corporate misconduct is the impact of reputational losses, which generally far exceed the legal penalties. Karpoff et al. (2008) highlight that while the average legal penalties is \$23.5 million, reputational losses are 7.5 times as large (Karpoff et al, 2008), thus greatly overshadowing the legal ramifications. This disproportionate impact has shifted the focus towards reputational penalties as a more effective deterrent, as emphasized by Armout et al. (2017).

2.4.2 Reputation loss – Related-Party Enforcement

Legal penalties are not the only way for companies to pay for corporate social irresponsibility. Corporate misconduct entails reputational losses for firms; however, the impact of these losses varies. Reputational losses are violations of prevailing norms that alter the foundational trust vis-à-vis stakeholders, i.e., investors, customers, suppliers, employees, and investors (Karpoff, 2012). Reputational penalties are driven by stakeholders who need to safeguard their own interests by demanding higher risk premiums to engage with firms that have worsened reputations (Karpoff, et al. 2008; Hong & Kacperczyk, 2007). Impaired reputations entail higher costs and/or lower

¹⁰ $E(X) = \sum \chi_i \cdot \rho(\chi_i)$

Where $E(X)$ is the expected penalty, $\sum \chi_i$ is the expected penalty, and $\rho(\chi_i)$ is the probability of detection.

revenues which reduce the firm's present value, congruous with the punitive cycle of ESG (Karpoff, 2012; Cornell & Damodaran, 2020).

Ackey et al. (2018) postulates that firms' reputations are central to customer evaluations of the firm as they assure contractual performance, consistent with Karpoff's theorization of reputation. Firms may undertake a set of actions and investments to repair their reputations with various stakeholders, which have been proven especially effective if the actions specifically target the stakeholder affected by the violation (Akey et al., 2018).

Reuber & Fischer (2010) present a model which integrates different factors – the perceptions of the action, the external stakeholder motivation, and media coverage – to show when discreditable actions are likely to negatively impact an organization's reputation. Their six propositions argue that the severity of discreditable actions' impact on an organization's reputation depends on factors such as stakeholder perceptions, organizational legitimacy, consistency with organizational identity, the visibility of the actions, stakeholder relationships, and the existence of effective responses from the organization (Ibid). This is related to Christensen et al.'s (2023) empirical investigation on the market forces' ability to enforce misconduct. For firms to be reprimanded for corporate social irresponsibility (CSI) events, customers need to be made aware of the transpired event – which is far from every time. Christensen et al. (2023) find that CSI events can affect firm value by deteriorating a firm's reputation thus reducing its cash flows from operations.

Bundy et al. (2018) emphasizes that the effectiveness of responses depends on the nature of misconduct and that different stakeholders hold different expectations for how a firm should respond. The distinct situational expectations call for different strategies, e.g., deterioration of firm's capability reputation and character reputation is best met with individually adapted responses. Reputations among different stakeholders are also interlinked which adds complexity to responses by pitting the demands of different groups of stakeholders against each other.

Furthermore, firms which have deteriorated legitimacy might be less inclined to avert future instances of corporate social irresponsibility. Shevchenko (2020) describes that a firm's commitment to comply with environmental regulation in large relies on its internal motivation. Compliance is often deemed non-essential if it does not align strategically with the firm's objectives or is not critical for its survival. Additionally, Shevchenko highlights that a firm's level of residing legitimacy in an area influences its motivation to perform. Firms with compromised environmental legitimacy are less likely to protect it, suggesting a fundamental difference between firms with low environmental legitimacy, which frequently violate regulations, and those that comply in terms of stakeholder expectations.

Executives, such as the C-suite and president/VP of major departments of regions, are sometimes made scapegoats and turned over (Cai et al., 2023). Persons (2006) find significantly higher executive turnover among U.S. firms following the surfacing of fraud or pending lawsuits. Desai et al. (2006) corroborates the increased propensity for executive turnover while studying turnover following earnings restatements, finding top manager turnover to be well above 50 percent for firms that perpetrates aggressive accounting (e.g. earnings restatements) as reputational penalty. Desai et al. (2006) also suggest that both the external labor market and other corporate boards impose material penalties on executives overseeing corporate misconduct. The risk for turnover and poor subsequent career prospects may deter managers from engaging in misconduct ex ante which should assure stakeholders of functioning corporate governance. This may be an attempt to pin the cause of a violation on poor governance or culture and in replacing the persons at the center of this signals to investors that it is serious about change (Cai et al., 2023). While most prior literature compels the notion that executives have the ultimate

responsibility over the firm's conduct and therefore bear the ultimate punishment for misconduct, there are arguments that can be made against taking punitive action against executives following environmental violations. For example, Bundy et al. (2018) suggest that environmental violations represent an important context for studying lapses of character. In studying these violations, they found that accommodative repair strategies were less effective at defending character reputation which they attribute to "admitting guilt and signals a lack of integrity" (Ibid). This infers to this thesis first null hypothesis:

Null hypothesis (H₀): *Environmental violations do not affect executive turnover.*

Ensuing misconduct, compensation adjustments are more common than executive turnover (Persons, 2006). On average, executives receive increases in cash compensation but to a lower extent than in control groups. On this note, previous literature points out that governance structures need to incentivize actions promoting social and environmental efforts to compensate for the increased associated risk. Al-Shaer and Zaman (2019) observe a correlation between sustainability committees and the inclusion of sustainability related targets in CEO compensation contracts.

It is conceivable that violations carry different weights in different industries. Environmental violation is a common occurrence in the oil and gas industry, due to its nature which relies on hazardous chemicals, environmental degradation, gas flaring, and similar activities during their operations (Gray, Hellman, & Ivanova, 2019). Combined with lenient accounting regulation¹¹ and significant lobbying power, it is possible that traditional disciplinary mechanisms are not present in oil and gas to the extent they might be present in other industries. This raises questions about the extent to which these firms enforce internal governance measures, such as executive accountability. Examining whether environmental violations influence executive turnover and compensation provides insights into the extent oil and gas companies take environmental stewardship as part of their corporate governance. Furthermore, previous literature has found executive compensation in the oil and gas industry to be strongly tied to oil prices (Davis & Hausman, 2020).

Since it is not clear whether there are any compensation related consequences for managers of oil and gas firms involved in violations, we again choose to state this thesis' second hypothesis in the null form:

Null hypothesis (H_{0b}): *Environmental violations do not affect total executive compensation.*

3. Background

EI "refer to [companies] exploring for and finding minerals, oil, and natural gas deposits, developing those assets, and extracting the minerals, oil, and natural gas" (IASB, 2010, p. 15).¹² Operations in the industry necessitate considerable initial investments, followed up by subsequent allocations to facilitate iterative development and/or expansion (Gray, Hellman, & Ivanova, 2019). There are significant operational risks due to the high degree of fixed costs, volatility of selling prices, and forecasting difficulties (Ibid).

Although environmental penalties can negatively impact corporate reputations, stakeholders often do not materialize any effects of the altered relationship, suggesting that penalties are largely dispensed by stakeholders. The absence of stakeholders imposing sanctions other than

¹¹ Gray et al. (2019) cite literature that found oil and gas firms has significantly lower environmental disclosure quality compared to firms operating in other industries.

¹² See International Accounting Standards Board's discussion paper on Extractive Industries.

legislative bodies to deter corporate misconduct is especially prevalent in the EI (Addison & Roe, 2018). In addition to being one of the largest industries worldwide, the EI include some of the industries most levied for environmental misconducts.¹³ A prime example is the study by McGuire et al. (2022), which examines the repercussions of the Deepwater Horizon disaster – a BP-leased offshore oil rig in the Gulf of Mexico that exploded, sank, and resulted in 11 deaths and the largest marine oil spill in U.S. history. McGuire et al. found that although BP's reputation suffered a significant and lasting reputational decline (50%) and an initial plummeted market value, there were no lasting adverse impacts on stock returns in the medium (1-2 years) or long term (2-7 years). The study underscores the discrepancy between the reputations of EI and the sanctions imposed by stakeholders other than governmental bodies.

The disparity between how EI firm reputation and firm value is affected should, following the drivers outlined by Cornell and Damodaran (2020), arise because stakeholders are not prioritizing firm reputation when valuing a firm. This disregard could stem from several factors; the commoditized nature of the products, the EI being shielded from scrutiny, or lack of customer awareness regarding incidents of environmental misconduct, as highlighted by Christensen et al. (2023).

Adding to the problem of governance, EI experience limited and inconsistently applied regulation. A key reason for the lack of regulation is a consequence of EI economic significance and the accompanying lobbying power (Gray, Hellman, & Ivanova, 2019). Additionally, many EI reside in resource rich undeveloped countries - characterized by lack of democracy and functioning institutions often case plagued by corruption - that are dependent on the economic benefits international EI firms bring, resulting in even more accommodative regulation (Addison & Roe, 2018). The EI have historically been characterized by low transparency¹⁴ which in combination with a low visibility production process curbs customers' ability to discipline firms (Christensen et al. 2023). Today, EI lobbies to maintain accounting flexibility (Hellman & Ivanova, 2023). Governing agencies limited understanding how to govern and a push from industry incumbents to self-regulate by disclosing selected information, chiefly consisting of non-financial information, makes disclosures in EI ambiguous (Hellman & Ivanova, 2023; Gray et al., 2019).

4. Methodology

To discern the effects of environmental violations the focus of study is split into the two key areas likely to be affected: first, executive turnover, and second executive compensation. Both analyses employ a twofold approach where the validity of the hypotheses is first tested using a comparative statistical analysis and second, regression analyses to identify the impact environmental violations have on executive turnover/compensation. The regression analyses aim to estimate the effect of environmental violations on executive turnover/compensation. To discern a as pure effect as possible, many other effects are controlled for to isolate the explanatory variable. This results in four analyses investigating environmental violations' role as a deterrent of environmental misconduct in the O&G industry.

The ultimate penalty a firm can impose on an executive is to fire them. To discern whether firms convicted for environmental misconduct have higher rates of executive turnover than non-violating firms a contingency table is used to plot the frequency of each respective intersection, highlighting the relative frequencies. To determine the association between the variables, a chi-square test is included. Subsequently, to measure the impact of environmental violations on top

¹³ See Violation Tracker – appended graph on industries with greatest fines.

¹⁴ See for instance *Extractive Industries Transparency Initiative (EITI)*. Available at: <https://eiti.org/our-history>

executive turnover, the presence of environmental violations during a given year is regressed on executive turnover while controlling for firm-specific variables.

Firms may also punish executives in less severe ways. Executive compensation is a reliable measurement of executive performance and the change in compensation thus reflects changes in executive performance. First, the change in executive cash compensation is analyzed to determine whether there are differences of changes in compensation for misconducting and non-misconducting firms. Thereafter, the effect of the presence of environmental violations on executive compensation is investigated by regressing the presence of environmental violations and other firm-specific variables on the change in executive compensation in whole and decomposed into its constituent's, i.e. salary and bonus.

4.1 Sample Selection

We start by compiling instances of environmental misconduct resulting in corporate penalties. Violation Tracker, compiled by the non-profit organization Good Jobs First, provides the most encompassing database, aggregating all issuances from American federal regulatory agencies and parts of the U.S. Justice Department, state attorneys general, and selected state as well as local regulatory agencies. Consequentially, the sample is comprised of U.S. firms only.

The period of our analysis is centered around the 2015 Paris Climate Agreement, which is regarded as a pivotal moment for firms transitioning towards sustainability. To capture a representative sample of environmental violations, a sample period extending five years before and after the agreement (2010-2020) was used. The selected period has especially high levels of documented environmental violations.¹⁵

Given the significant role of the oil and gas industry in environmental violations – in terms of the number of violations and the total penalty amounts¹⁶ - as well as their emblematic representation of the EI, epitomized by their substantial environmental impact and lack of transparency, the sample was limited to oil and gas. This leaves 1,119 unique firm-year-executive observations that saw convictions for environmental violations to be studied summarized. These are summarized in Table 1.

The number of annual environmental violation observations fluctuates around approximately 100 and shows a decline towards the end of the decade with a notable downtick in 2020. Most violations are enforced at the state level (811 cases), followed by federal enforcement (294 cases), with only a minimal number at the local level (14 cases). It should be noted that the distribution of agencies issuing environmental penalties is uneven, with the Pennsylvania Department of Environmental Protection, Environmental Protection Agency, and Colorado Department of Public Health & Environment accounting for most enforcements.

The dispersity in the penalty amount is substantial. The data from Violation Tracker only covers violations with amounts equal to or exceeding \$5 thousand. In the sample, the median penalty amount was \$31.5 thousand, with a much larger mean of \$4.6 million. A few notably large violations are to blame for the right skewed distribution of the penalty amounts. Notably a \$5.15 billion fine awarded Anadarko Petroleum Corp. in 2015 for cleanups across the U.S.

¹⁵ Appended graph on environmental penalties per industry over time.

¹⁶ Appended graph on industries with greatest fines and number of penalties.

Table 1: Sample of Environmental Violations

Event Classification	Number
<i>Year</i>	
2010	113
2011	117
2012	113
2013	125
2014	130
2015	125
2016	92
2017	86
2018	84
2019	86
2020	48
Total	1,119
<i>Government level</i>	
Federal	294
State	811
Local	14
Total	1,119
<i>Agency</i>	
Pennsylvania Department of Environmental Protection	224
Environmental Protection Agency	220
Colorado Department of Public Health & Environment	138
Texas Commission on Environmental Quality	110
Wyoming Department on Environmental Quality	110
Colorado Oil & Gas Conversion	71
Other	278
Total	1,119
<i>Penalties (\$)</i>	
Min.	5,000
Mean	4,610,151
Median	31,500
Max	5,150,000,000

Note. – Distribution of 1,119 firm-year-executive observations of environmental violation events based on the Violation Tracker database 2010-2020.

To be included in analyses, criteria of data availability must be met. Specifically, firms must be included in the Wharton Research Data Service (WRDS) Fundamentals Annuals and Execucomp databases.¹⁷ This results in the exclusions of firms convicted for environmental violations that have no data available in WRDS.

As a group of reference to the sample of 1,119 firm-year-executive observations with that were convicted of environmental violations, firm-year-executive observations not levied with penalties during the select period in the oil and gas industry were also included into the sample. These firm-year-executive combinations not levied for environmental violations in the O&G industry totaled 1,601 during the 2010-2020 period. Combined, the groups of firm-year-executives not convicted for environmental violations (1,119) and the group convicted (1,601) comprise 2,720 firm-year-executive combinations as the basis for analysis.¹⁸

The sample is comprised of 611 unique executives at 57 unique firms over the period of study. These may belong to the group convicted for environmental violations and the group not convicted during different years. Table 2 describes the firms and executives who comprise the dataset by showing firm size and total executive cash compensation.

Table 2: Firms & Executives Descriptive Statistics

Event Classification	Number
Unique Firms	57
<i>Firm Size – Assets (Million \$)</i>	
25 th	2,529
Mean	6,900
Median	15,936
75 th	18,700
Unique executives	611
<i>Total Cash Compensation (\$)</i>	
25 th	379,999
Mean	526,785
Median	664,418
75 th	778,548

Note. – Distribution of companies and executives included in WRDS databases during the period 2010-2020.

The size of the firms is notably right skewed with a mean of \$6,900 million and a median of \$15,936 million. At the helm of these firms, there have been 611 unique executives, receiving an

¹⁷ Fundamentals Annual contains annual report data for firms. Security Monthly Contains stock market data. Execucomp database contains data on executive remuneration.

¹⁸ In the sample selection process for some analyses, specific observations are excluded because of how the data is structured - this does not bias the sample. However, it should be noted that the lack of coverage of certain firms might not be random, indicating a missing not at random risk.

average annual cash compensation (salary plus bonus) of \$526,785, also showing a right skewed distribution.

4.2 Variables

The subject of focus in all studies is the effects of environmental violations as an independent variable. A dichotomous variable indicating whether firms have been convicted for environmental violations is therefore constructed. The variable indicates the year the penalty was awarded which does not necessarily coincide with the year the misconduct underlying the violation was performed.

To study executive turnover as a dependent variable, the Execucomp database – containing information on firms’ executives – was used to generate a dichotomous variable indicating executive turnover. In this thesis executive turnover is defined as when an executive present in one year is no longer present the next. It should be noted that this method does not discriminate for the reason of turnover. This implies that executives that are no longer present due to sudden passing away, retirement are recorded the same way as those that have been fired. However, the rate of natural executive turnover is assumed to be the same for both violating and non-violating firms, which allows the analyses to isolate the differences attributable specifically to the conviction of environmental violations.

In the analysis examining the predictors of executive turnover, both described variables are used. To increase the analysis’s robustness, standard firm characteristics which may affect executive turnover need to be controlled for. The control variables used in Cai et al. (2023), emblematic of other studies of executive turnover, guided the control variable used in this regression. The natural logarithm of firms’ assets indicates firm size. Return on equity (ROE) is a profitability metric indicating firms’ ability to generate income given the firm’s equity. The market-to-book ratio (M/B) highlights firms’ market valuations relative to their accounting values. Taken together, these control for general firm-level financial situations which may impact the results of the analysis.¹⁹

The predictors of change in executive compensation analysis utilizes the representative structure of control variables in Kaplan (1994) to increase the validity of the model. Revenue shows the sum of all proceeds from customers and revenue growth the rate of change of revenue from the previous year. Return on assets (ROA) is a profitability metric indicating profitability relative to total assets. Equity growth shows the change in equity per share compared with the previous year. EPS is earnings per share.²⁰

4.3 Correlations

All variables included in the thesis for each respective study are presented in the correlation matrix in Table 3. Several key relationships stand out beyond the naturally occurring correlations due to the interconnectedness of the terms. Company size is positively correlated with environmental violations (0.564***). This suggests that larger firms are more frequently convicted for environmental violations than their smaller counterparts. Similarly, there is a positive correlation between the market-to-book value and environmental violations (0.225***). The relationship implies that firms with higher market premiums tend to be convicted of more environmental violations. Moreover, the profitability metrics – ROA and ROE – both show positive correlations with environmental violations, indicating that more profitable companies tend to

¹⁹ See appended table on variables for more elaborate description of variables.

²⁰ See appended table on variables for more elaborate description of variables.

face more violations. Concurrently, both ROA and ROE are negatively correlated with executive turnover, which intuitively suggests that more profitable executives are less likely to be replaced. Additionally, the change in market value of equity is negatively correlated with executive turnover (-0.112***). This indicates that firms experiencing growth (reductions) in equity are likely to have lower (higher) rates of executive turnover. A similar pattern emerges with EPS, where a slight negative correlation (-0.123***) with executive turnover is observed. The correlation indicates that higher EPS is associated with reduced likelihood of executive turnover. Lastly, it should be noted that the change in salary (\$) and executive turnover is negatively correlated (-0.331***). Despite the two variables belonging to different analyses, it is telling that executives receiving increases (decreases) in salary are less (more) prone to turnover.

Table 3: Correlations of Variables

	Penalty	Executive Turnover	Size	Leverage	ROA	ROE	M/B	Δ MV of Equity	EPS	Δ Salary \$	Δ Bon. \$	Δ Comp. \$
Penalty	1											
Executive Turnover	-0.0356	1										
Size	0.564***	-0.0516**	1									
Leverage	-0.0503**	0.0202	-0.0319	1								
ROA	0.108***	-0.149***	0.201***	0.0456*	1							
ROE	0.0456*	-0.113***	0.0208	0.0226	0.328***	1						
M/B	0.225***	-0.0547**	0.410***	0.303***	0.0408*	0.0380*	1					
Δ MV of Equity	-0.0774***	-0.112***	-0.176***	0.0338	0.165***	0.0884***	0.0630**	1				
EPS	0.0475*	-0.123***	0.0302	0.0438*	0.345***	0.989***	0.0393*	0.0943***	1			
Δ Salary \$	-0.0167	-0.331***	0.028	-0.0243	0.0958***	0.0322	0.00351	0.0241	0.0322	1		
Δ Bonus \$	-0.0477*	-0.0305	-0.0890***	0.0214	0.0194	-0.000551	-0.0212	0.0747***	0.000328	-0.0699***	1	
Δ Comp. \$	-0.0517*	-0.139***	-0.0768***	0.0127	0.0506*	0.0101	-0.0193	0.0802***	0.011	0.265***	0.944***	1

Note. - * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. () show percentages. Executive Turnover = 1 if there is executive turnover and 0 otherwise. Penalty = 1 if the firm has been levied with any environmental penalty during the year. Consult the appendix for a comprehensive explanation of the variables.

4.4 Statistical Methodology

The predictors of executive turnover analysis, testing the first hypothesis, employs a logit regression to discern variables influencing executive turnover as logit regression is the preferred way to study dichotomous variables. Its usage is, however, as outlined in Stone and Rasp (1991) and Maddala (1991) contingent on the sample being sufficiently large, which is the case with the studied dataset. The model includes the aforementioned control variables resulting in the following logit regression model:

$$\text{Executive Turnover} = \beta_0 + \beta \text{Environmental Penalty}_1 + \beta \text{Size}_2 + \beta \text{Leverage}_3 + \beta \text{ROE}_4 + \beta M/B_5 + \epsilon_i$$

The predictors of change in executive compensation analysis uses ordinary least squares (OLS) regressions to test the second hypothesis by determining variables changing executive cash compensation. OLS regressions are versatile models when studying linear relationships, making them suitable to quantify the effect the imposition of environmental violations have on executive salary. The change in executive compensation (\$) from last year is used as the dependent variable. Using the change captures awards for recent performance enabling the investigation into whether environmental violations impact executive compensation changes. The analysis decomposes executive compensation into salary, bonus, and total cash compensation (salary and bonus compensation combined) to delve into the way in which executive compensation changes. The explanation for the change in compensation analysis requires the inclusion of control variables that account for firm performance characteristics which may influence executive compensation. The resulting OLS model is expressed as:

$$\Delta \text{Executive Compensation} = \beta_0 + \beta \text{Environmental Penalty}_1 + \beta \text{Revenue Growth}_2 + \beta \text{ROA}_3 + \beta \text{Equity Growth}_4 + \beta \text{EPS}_5 + \epsilon_i$$

Both regression models compute the robust standard errors of the coefficients to correct for potential heteroskedasticity as the regressions' assumption of homoscedasticity are not guaranteed.

This thesis uses a 0.05 p-value threshold for results to be regarded significant.

5. Results

To develop an initial understanding of whether the conviction of environmental violations have a notable effect on executive turnover a univariate analysis is performed. Table 4 compares the executive turnover rate between firms convicted for environmental violations and those not convicted. Among the 517 instances of executive turnover, those charged for environmental violations demonstrated lower turnover rates. Firms penalized for environmental violations had a slightly lower executive turnover rate (17.34%) compared to non-violating firms (20.17%).

Table 4: Turnover – Environmental Violation Contingency Table

		Environmental Violation	
		(0)	(1)
Executive Turnover	(0)	1,278	925
	(1)	(79.83)	(82.66)
	(0)	323	194
	(1)	(20.17)	(17.34)
Total		1,601	1,119

Note. – Executive Turnover = 1 if there is executive turnover and 0 otherwise. Penalty = 1 if the firm has been convicted for any environmental violation during the year. () show percentages.

However, the difference in turnover rates between the groups of violating and non-violating firms is not statistically significant $\chi^2(1, N = 2,720) = 3.4459$, $p = 0.063$, undermining the test's inferential power.

Table 5 presents the results of a logistic regression that evaluates predictors of changes in executive turnover. While the logistic regression model was statistically significant, $\chi^2(6, N = 2720) = 50.50$, $p < 0.001$, suggesting that the model fits the data and the included variables collectively impact executive turnover, the model's effectiveness is limited, as indicated by a low Pseudo R^2 of 0.0259, pointing to a poor overall model fit.

Table 5: Logistic Regression – Dependent Variable is Executive Turnover (1/0)

Variables	Coefficients	Robust standard error	P> z
Penalty (1/0)	-.0272	.1211	.822
Size	-.0284	.0442	.520
Leverage	.0162	.0073	.026*
ROE	-.0368	.0059	.000***
M/B	-.0002	.0001	.007**
Constant	-1.1966	.3563	.001***
Observations	2,720		
Wald chi2	50.50		
Pseudo R ²	0.0259		

Note. - * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Environmental violations ($\beta = -0.0272$, $p = 0.822$), do not significantly affect executive turnover, suggesting that the data does not provide strong evidence to reject the null hypothesis that environmental violations do not affect executive turnover. This implies that environmental violations do not significantly affect the likelihood of executive turnover.

While environmental violations do not influence executive turnover, some control variables have significant impact. Specifically, higher financial leverage increases turnover likelihood ($\beta = 0.0162$, $p = 0.026$), higher ROE reduces turnover likelihood ($\beta = -0.0368$, $p = 0.000$), and a higher market-to-book ratio (M2B) is associated with reduced executive turnover ($\beta = -0.002$, $p = 0.007$),

To assess multicollinearity of the model the correlation matrix was analyzed, and a variance inflation factors (VIF) analysis was conducted. No notably high correlations (>0.8) between the variables used was found. Additionally, the VIF for each independent variable used in the regression model range from 1.13 to 1.77, with an average of 1.35.²¹ Taken together, these values indicate absence of multicollinearity. This implies that collinearity does not influence the estimates of the regression coefficients.

The analysis, summarized in Table 6, investigates the changes in executive cash compensation over the specified period. The analysis presents aggregate changes in cash compensation and includes the results of a two-tailed t-test to determine whether firms subject to violations significantly differ in compensation changes compared to those not convicted of environmental violations.

Table 6 – Changes in Executive Cash Compensation Divided on Penalty (0/1)

Variables	Penalty (0/1)	N	minimum	mean	median	maximum	t-stat	p-value
Δ Comp. \$	0	1,343	-2,730,961	7,700	14,166	2,900,000	2.48	.0132
	1	954	-8,779,947	-31,847	50,000	5,000,000		
Δ Salary \$	0	1,343	-788,462	20,763	15,874	859,902	.80	.4246
	1	954	-1,658,574	16,526	18,083	875,000		
Δ Bonus \$	0	1,343	-3,375,000	-13,052	0	2,900,000	2.29	.0221
	1	954	-9,357,436	-48,373	0	5,000,000		

Note. – Comp is cash compensation (salary and bonus). Values in \$. All changes are relative to the preceding year. Negative means reduction.

The findings reveal a significant difference in compensation trajectory trends between firms that have committed environmental violations and those that have not. Specifically, non-violating firms experienced an average increase in total cash compensation of \$7,700. In contrast, violating firms saw an average decrease of \$31,847. These differences are statistically significant ($t = 2.48$, $p = 0.0132$), suggesting that conviction of environmental violations have a measurable impact on executive compensation changes. It should be noted that while the average compensation decrease among violating firms is significant, the median compensation change shows an increase of \$50,000. This indicates that despite some firms facing substantial cuts, at least half of the violating firms saw increases of \$50,000 or more. For salary changes, the analysis shows no statistically significant differences between the two groups ($t = 0.80$, $p = 0.4246$). This indicates that environmental violations do not significantly affect changes in salaries. The differences in bonus changes were statistically significant ($t = 2.29$, $p = 0.0221$) implying that environmental violations do significantly influence bonus distributions, with executives in violating firms likely receiving lower bonuses compared to their non-violating counterparts. The median bonus change was \$0 for both groups, reflecting that a majority (65.6%) of firm-year-executive observations reported no bonuses.

To discern whether environmental violations influence executive compensation, three OLS regressions were performed with executive salary, bonus, and cash (salary + bonus)

²¹ A OLS regression with the same variables was performed to enable a VIF analysis.

compensation as the dependent variable while also controlling for firm characteristics. Table 7 presents the results of the predictors of change in executive compensation analysis. By focusing solely on the different types of cash compensation long-term stock options are thereby excluded resulting in the remuneration metric better reflecting rewards for recent performance which should be more swayed by environmental violation convictions. All types of cash compensation are determined during the year – generally, salaries at the beginning and bonuses at year-end. This allows the board of directors (BOD) to adjust cash compensation more readily in response to environmental misconduct than what is possible with stock option-based compensation which is set long in advance and dependent on multitude factors.

The models demonstrated low explanatory power for all regression analyses. The regression results for salary were statistically significant, $F(5, 2273) = 2.49$, $p < 0.01$. Despite its significance, the model had limited explanatory power, accounting for only 1.1% of the variance in salary change ($R^2 = 0.011$). The model examining bonus payouts also yielded significant results, $F(5, 2273) = 9.85$, $p < 0.01$. However, like the salary model, it explained only a small portion, 0.74% ($R^2 = 0.074$), of the variance in bonus compensation. The analysis of cash compensation produced the most robust results among the three models, $F(5, 2273) = 10.86$, $p < 0.01$. Similar to the other models, though, it explained only little of the variance at 1.1% ($R^2 = .011$).

Table 7: OLS Regression – Prediction of Salary, Bonus, and Cash Compensation

Variables	Salary	Bonus	Cash Compensation
Penalty (1/0)	-6,908 (5,947)	-31,451* (16,818)	-38,359** (17,446)
Revenue Growth %	-0.0748 (0.187)	1.480*** (0.494)	1.405** (0.546)
ROA	47.00*** (15.54)	22.23 (14.38)	69.23*** (20.78)
Market Value Growth	1.195 (3.473)	33.65*** (9.360)	34.85*** (10.88)
EPS	-0.0177 (0.0252)	-0.0842*** (0.0252)	-0.102*** (0.0353)
Constant	24.49*** (2.908)	-16.13** (7.374)	8.355 (7.749)
Observations	2,273	2,273	2,273
R ²	0.011	0.007	0.011

Note. – * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. () indicates robust standard errors.

In the regression analysis, the environmental violation variable significantly predicted decreases in bonuses and total cash compensation, with coefficients of -31,451 ($p < 0.05$) and -38,359** ($p < 0.01$), respectively, demonstrating a substantial negative impact on these components of executive remuneration. Salaries, however, were not influenced by the presence of environmental violations. Given that bonuses are included within total cash compensation, their similar response to environmental violations is expected. These findings suggest that if a firm incurs environmental violations during the year, executives, on average, receive \$31,451 less in bonuses and \$38,359 less in total cash compensation respectively. The results provide evidence

to reject the null hypothesis that environmental violations do not affect total executive compensation.

Additionally, certain control variables in the model showed significant effects. For salary, ROA significantly influenced the compensation ($\beta = 47.00$, $RSE = 15.54$, $p < 0.01$), implying that increases in ROA result in salary increases. In the bonus model, significant influences were observed from revenue growth ($\beta = 1.48$, $RSE = 0.49$, $p < 0.01$), market value growth ($\beta = 33.65$, $RSE = 9.36$, $p < .001$), and EPS ($\beta = -0.08$, $RSE = 0.03$, $p < 0.01$), indicating that increases in revenue result greater bonuses and that increases in market value or EPS result in decreases. In the model for total cash compensation, significant variables included revenue growth ($\beta = 1.40$, $RSE = 0.55$, $p = 0.01$), ROA ($\beta = 69.23$, $RSE = 20.78$, $p < 0.01$), market value growth ($\beta = 34.85$, $RSE = 10.88$, $p = 0.01$), and EPS ($\beta = -0.102$, $RSE = 0.04$, $p < 0.01$). These imply that increases in revenue, ROA, and market value result in increased total compensation and that increases in EPS result in a diminishable decrease.

The indicators of multicollinearity suggest no multicollinearity influencing the regression coefficients. The correlation matrix revealed no notably high correlations ($r > 0.8$) between the variables. The VIF-analysis for the independent variables ranged from 1.02 to 1.20, with an average of 1.09.

6. Analysis

The findings from the first analysis, which compares the rate of executive turnover for firms convicted of environmental violations against a control group of non-convicted firms, highlight that there was no statistically significant difference in the rate of executive turnover between firms subject to environmental violations and unlevied firms. In other words, the first null hypothesis (H_0) fails to be rejected.

One explanation for this finding is that the impact of penalties on executive turnover varies considerably based on their materiality. In this study, the presence of penalties was examined dichotomously, which neglected the magnitude of penalties. It is a reasonable hypothesis that larger penalties might exert a greater influence on executive turnover; however, this factor was not adjusted for, as omitting observations diminished the statistical robustness of the analyses. Additionally, the concept of penalty materiality warrants further consideration. The significance of a penalty amount may vary between firms, being deemed material for some and immaterial for others, depending on the firm's financial scale. This variation underscores the need for a more nuanced approach in future research to measure the impact of penalty magnitude on executive behavior. Additionally, the dichotomous encoding also disregarded the number of penalties which may also affect executive turnover. Furthermore, the timing delay of the legal imposition of penalties may disguise executive turnover that arise as a result of environmental penalties.

The logit regression analysis, supporting the first analysis, shows that environmental penalties lack statistical significance on its predictable power over executive turnover ($\beta = -0.0272$, $RSE = 0.1211$, $p = 0.822$), which reiterates the point made previously that environmental penalties do not affect executive turnover. This supporting analysis is governed by the same factors as the first analysis.

Firms might take punitive actions against their executives besides replacing them. One such action is reducing their compensation. The third analysis, as shown in Table 6, examines changes in executive salary, bonus, and cash compensation based on whether a firm was subject to an environmental penalty during the year. This comparative analysis reveals that executives from

penalized firms, on average, experience a downward adjustment in bonus and following cash compensation where the difference between the two groups were both statically significant.

This finding highlights the negative correlation between environmental penalties and non-salary remuneration, suggesting that such penalties could serve a punitive role in the oil and gas sector. The results align with theoretical perspectives that suggest penalties act as a deterrent against corporate misconduct. The disparities between the mean and median compensation changes, particularly among penalized firms, point to a non-uniform distribution of compensation adjustments. This indicates that while some executives face minor changes, others undergo significant reductions. Such variability suggests complex dynamics in how penalties influence executive compensation.

The investigation on the variables that have explanatory power over the change in compensation reiterate the presence of penalties having an effect on bonus ($\beta = -31,451$, $RSE = 16,818$, $p = 0.06$) and cash compensation ($\beta = -38,359^{**}$, $RSE = 17,446$, $p = 0.03$) but no effect on salary ($\beta = -6,908$, $RSE = 5,947$, $p = 0.246$). The null (H_{0b}) that environmental violations do not affect total executive compensation can therefore be rejected. The models' R^2 values, however, imply that the model variables have little overall explanatory value. Again, the explanations and limitations of this supporting study emulate those of the third study. It should however be noted that the volatility of oil and gas prices may also be a reason for the model's low R^2 value since executive's remuneration might not be directly linked to firm financials.

What we could gather from our empirical studies when measuring the effect penalties from environmental violations have on executive turnover and executive compensation, we find that penalties have no meaningful effect on the executive turnover but that the presence of penalties does affect bonuses and consequentially total cash compensations.

7. Discussion

The research question stated at the onset of the thesis was: *"Does the occurrence of environmental violations in the oil and gas industry lead to executive punishment, such as termination, or a decrease in executive compensation?"*. After conducting four quantitative studies – two related to executive turnover following environmental violations, and two related to executive compensation following environmental violations – in the oil and gas industry during the period 2010-2020, we conclude that environmental violations do not affect the likelihood of executive turnover but reduces total cash compensation to executives by reductions in bonuses.

In previous literature, legal penalties were only the tip of the iceberg when it came to reprimands following corporate misconduct leading to a legal penalty. Karpoff (2012) and Armour et al. (2017) both state this to be the case and point to readjustment effects (for accounting misconducts) and additional reputational damages. They found the reputational damages to be several times larger than the legal penalties. This stands in stark contrast to the findings of this thesis where executives keep their position and are only punished by a reduction in compensation. To put the average total compensation reduction of \$38,359 in perspective, the average total cash compensation is \$526,785, with the top 25 percentile earning above \$778,548. Whereas this thesis probes into personal consequences of firm executives, both Karpoff (2012) and Armour et al. (2017) study reputational damages on a company level, which could indicate that executives alone do not themselves bear full responsibility despite being in charge of the firm.

Previous literature has found that, following misconduct, executives can be made sole responsible for the misdeed and be released of duty for the firm to signal to stakeholders that it is serious

about change (Cai et al., 2023). The immediate termination of duties has been proven to have long-lasting effects for the affected executives' careers after the event (Desai et al., 2006). Since this thesis reveals the effect of environmental penalties on executive turnover to be statistically insignificant, we contribute to previous literature with an opposing result that suggests a more complex dynamic than what has previously been documented. One explanation for this could be differing shareholder preferences, e.g. such as those investigated by Hong & Kacperczyk (2005) and Hartzmark & Sussman (2019). At least in theory, if all green investors already eschew oil and gas firms, the pressure to live up to investor expectations should be lower. Thus, severe personal executive punishment could be less prominent for that reason. A recent example of divergent investor preferences in the oil and gas industry that are not aligned with the transition to a greener *modus operandi* (thus fewer environmental violations) is BP and Shell's press releases stating they are leaving ESG and CSR considerations behind them in favor of solely focusing on cash flow. Moore (2023), writes: "After years of headline-grabbing management changes, splashy deals and ambitious attempts to woo ESG investors with forays into low carbon businesses, the two UK-listed oil majors have promised to focus on their core business and return as much cash as they can to shareholders". Shell reportedly is to trim its capex earmarked for low carbon projects to 19 per cent by 2030, from 23 per cent it spent last year and BP acting similarly having reduced their low carbon capex by more than a third last year (Ibid).

The key finding of this thesis is that oil and gas executives are punished with lower bonuses and total cash compensation after penalties relating to environmental violation. This insight is novel and little research has previously been conducted in this field. The findings contribute to the findings of Persons (2006) that found executives' compensation were negatively impacted following legal penalties. However, Persons focused on fraud/lawsuit revelation and its effects on U.S. top executive turnover and compensation. The low model fit of the explanatory variables found in Table 7 suggests most of the change in executive compensation is explained by factors outside of the model. For oil and gas companies, this factors likely pertains to oil prices, as studied by Davis & Hausman (2020) that found oil and gas prices.

Seeing as executives are in fact punished monetarily without being fired and environmental violations repeat themselves, this thesis also supports the notion put forth by Posner (1985) and Becker (1968) propose, i.e. that if the cost for misconduct is lower than the benefits of acting opportunistically, people and companies will act opportunistically. Supported by the backdrop of oil and gas firms having lower reporting requirements and significant political lobbying power (Gray, Hellman, & Ivanova, 2019).

8. Limitations

There are a few limitations to the executive turnover analyses. As previous literature on reputation repair shows, the main limitation of this study is that there are many reputation repair actions other than executive turnover that companies can take to remedy their situation. This is expanded upon in the further research section. Additionally, the assumption that the natural rate of turnover is comparable between firms convicted of environmental violations and those not convicted might not hold. Executives come and go for a number of reasons, including retirement, sudden passing, M&A activity and restructuring, or due to other less obvious reasons such as career moves or breaks, and these factors vary between the groups due to inherent differences between violating and non-violating firms.

There are also some limitations to the change in executive compensation analyses. The first relates to the timing effect and nature of the change in total compensation. An executive may be punished by a reduction in compensation, but the effect is not always immediate or perhaps the

punishment for an executive whose compensation has been increasing year-on-year stays constant for the year during which the violation was committed. Another caveat of the study is that the analysis follows each individual executive's compensation across positions. This entails that if an executive leaves for another job and their compensation between the two jobs differs, then these results are included in the analysis. Furthermore, the comparison of compensation development naturally depends on the employing firm. The analysis would thus be improved if a firm-characteristic matched counterpart would have used as basis for comparison instead. However, the dataset at hand did not satisfy the balance between groups necessary for propensity score matching. A final point is that executive compensation might be affected by oil and gas prices and should thus be accounted for in the model. While executives should not be rewarded or punished for events beyond their control, it is however possible that oil and gas prices – which significantly impact the profitability of O&G firms – also affect executive compensation.

9. Conclusion

The oil and gas industry account for a large share of global GHG emissions. Yet, despite mounting united efforts to curb global warming, the public discourse is still erroneously focused on percentage level changes in emissions intensity as opposed to absolute level changes in emission intensity. Furthermore, as reported by Karpoff et al. (2005), those directly affected by environmental violations to a large extent do not do business with the firm, nor do the violating firms' customers have incentives to lower their demands for the firms' products if the violations does not affect the quality of those products. Because of this relationship dynamic, it is often the law that steps in to financially counterbalance misconduct that leads to an environmental violation. Such litigation processes negatively affect the firm's Enterprise Value and whatever additional Enterprise Value is lost is attributable to a loss in reputation. Material penalty amounts may also draw media attention to the issue, which further increases the likelihood of reputational loss.

In this thesis we address the issue of reputational loss from an executive turnover and executive compensation point of view, backed by previous literature alleging that turnover in conjunction with press release-worthy negative events correlates and is higher than the natural turnover from retirement, M&A activity, etc.

The findings from the studies made in this thesis failed to reject H_0 that environmental violations do not affect executive turnover but presents evidence to reject H_{0b} that environmental violations do not affect total executive compensation. In other words, we found that executives for oil & gas companies that committed environmental between the years 2010-2020 were on an aggregate level not at greater risk of being fired but were awarded lower bonuses and consequently lower total cash compensation. In light of escalating sustainability requirements, not least observable in the rise of ESG investing, this reports results posit the question whether the penalty amount is enough to deter hazardous environmental malpractices.

10. Further Research

To better understand the context of executive turnover, a broader analysis that probes into how different types of firms (or firms in different sectors) have different stakeholder demands which in turn could affect and thus explain whether or not an environmental violation is enough for an executive to be at risk of being fired or penalized with lower compensation. This could also be related to the ESG investing movement; the underlying question that would be studied is: "if investors (one important group of stakeholders) that feel strongly about the environment divest from firms that commit environmental violations, leaving only investors that are agnostic to the idea, how does this affect the governance of the misconducting firm?" Building on Cornell and

Damodaran's (2020) third "vicious cycle" of how ESG impacts firm valuation, more research is needed to clarify whether firms can continue to be profitable through environmentally unsustainable practices so long as they are able to secure investments from investors that put return on capital above sustainability motivations for investing.

Another type of further research could examine if and how different crises, such as a material environmental violation, trigger the accountability aspect of management. In other words, for which types of crises are executives typically to blame and when is it more commonly observable that firms weather the storm by being steady at the helm and keep management until the turmoil rolls over and when is it time for abrupt change in leadership?

As both Karpoff (2005; 2012) and Armour et al. (2017) found, reputational losses are largely constrained to cases where there is a direct link between the harm done and the firms' stakeholders. In these instances, and in place of shareholders stepping in to rebuke the misconducting firm, the judicial system steps in as the enforcing party (Dupont & Karpoff, 2019). Further research could leverage the findings of this thesis and investigate the moderating effect of the degree of how much the damages directly affect the firm's closest stakeholders.

Building on the findings of Desai et al. (2006) that investigated the reputational penalties to the managers of firms that restated their earnings in the late 1990s, further analysis could study where these executives go after they are laid off following an environmental violation and how their title and total compensation is affected from one role to another. The significance of such a study would reveal insights on whether high management turnover coupled with a low rehire rate could influence managerial actions and incentives, *ex ante*. In other words, if the personal stakes for managers of polluting firms is high, then such actions would incentivize those managers to avoid environmental violations for their firm's account. Stated differently, the personal penalties implicit in the managerial labor market might reduce the number of environmental violations and the regulatory costs associated with monitoring and enforcing adherence to environmental regulation. A qualitative approach to this type of study could reveal complementary insights on the eventual changes in employment opportunities available for executives following misconduct.

References

- Addison, T., & Roe, A. (2018). *Extractive Industries: The Management of Resources as a Driver of Sustainable Development*. Oxford University Press.
- Akey et al. (2018, January). Hacking Corporate Reputations. *European Corporate Governance Institute*.
- Al-Shaer, H., & Zaman, M. (2019, August). CEO Compensation and Sustainability Reporting Assurance: Evidence from the UK. *Journal of Business Ethics*, 158(1), 233-252.
- Armour, J., Mayer, C., & Polo, A. (2017, August). Regulatory Sanctions and Reputational Damage in Financial Markets. *Journal of Financial and Quantitative Analysis*, 52(4), 1429-1448.
- Balmer, J., & Powell, S. G. (2011). Explicating Ethical Corporate Marketing, Insights from the BP Deepwater Horizon Catastrophe: The Ethical Brand that Exploded and then Imploded. *Journal of Business Ethics*, 1-14.
- Becker, G. S. (1968, April). Crime and Punishment: An Economic Approach. *Journal of Political Economy*, 76(2), 169-217.
- Billio et al. (2020). Inside the ESG ratings: (Dis)agreement and performance. *Corporate Social Responsibility and Environmental Management*.
- Bloomberg. (2022, January 24). *ESG May Surpass \$41 Trillion Assets in 2022, But Not Without Challenges, Finds Bloomberg Intelligence*. Retrieved from Bloomberg: <https://www.bloomberg.com/company/press/esg-may-surpass-41-trillion-assets-in-2022-but-not-without-challenges-finds-bloomberg-intelligence/>
- Bloomberg. (2024, February 8). *Global ESG assets predicted to hit \$40 trillion by 2030, despite challenging environment, forecasts Bloomberg Intelligence*. Retrieved from Bloomberg: <https://www.bloomberg.com/company/press/global-esg-assets-predicted-to-hit-40-trillion-by-2030-despite-challenging-environment-forecasts-bloomberg-intelligence/>
- Brady, G., Davel, R., Ludolph, S., Lundgaard, A., Spencer, J., & Walsh, M. (2010). *Extractive Industries DP*. International Accounting Standards Board.
- Bundy et al. (2018). Reputations in flux: How a firm defends its multiple reputations in response to different violations. *Strategic Management Journal*.
- Cai et al. (2023). Reputation-Building Actions After Corporate Social Irresponsibility.
- Chava. (2014). Environmental Externalities and Cost of Capital. *Management Science*.
- Christensen, H. B., De George, E. T., Joffre, A. R., & Macciocchi, D. (2023). *Consumer Responses to the Revelation of Corporate Social Irresponsibility*. Working Paper, University of Chicago Booth School of Business; University of Miami Herbert Business School.
- Cornell, & Damodaran. (2020). *Valuing ESG: Doing Good or Sounding Good?*
- Davis, L., & Hausman, C. (2020). Are Energy Executives Rewarded for Luck? *The Energy Journal*, 157-180.
- Desai et al. (2006). The Reputational Penalty for Aggressive Accounting: Earnings Restatements and Management Turnover. *The Accounting Review*.

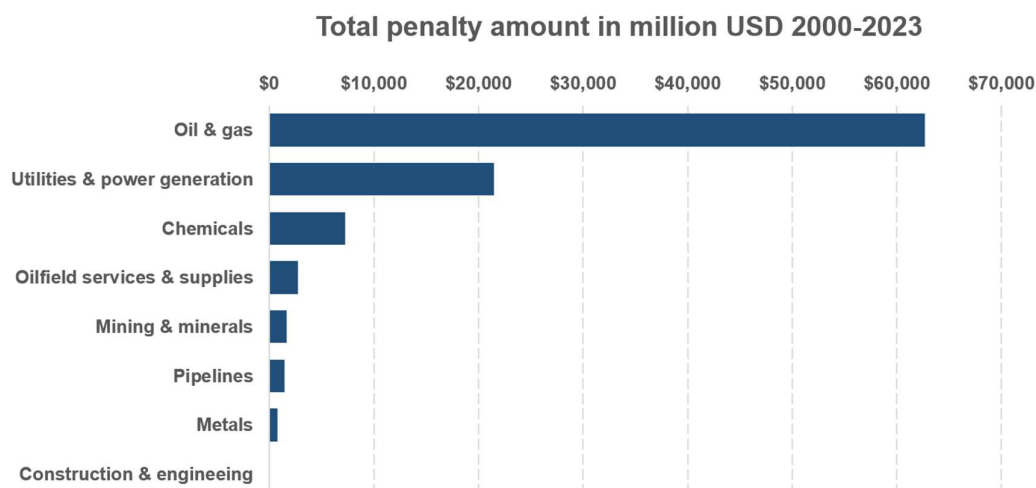
- Desai, H., Hogan, C. E., & Wilkins, M. S. (2006). The Reputational Penalty for Aggressive Accounting: Earnings Restatements and Management Turnover. *The Accounting Review*, 81(1), 83-112.
- Dupont, & Karpoff. (2019). The Trust Triangle: Laws, Reputation, and Culture in Empirical Finance Research. *Journal of Business Ethics*.
- Flammer. (2013). Corporate Social Responsibility and Shareholder Reaction: The Environmental Awareness of Investors. *The Academy of Management Journal*, 758-781.
- Flammer. (2015). Does Corporate Social Responsibility Lead to Superior Financial Performance? A Regression Discontinuity Approach. *Management Science*, 2549-2568.
- Freeman et al. (2004). Stakeholder Theory and "The Corporate Objective Revisited". *Organizational Science*.
- Freeman, & McVea. (2001). *A Stakeholder Approach to Strategic Management*.
- Friedman, M. (1970). *A Friedman doctrine-- The Social Responsibility of Business Is to Increase Its Profits*. Retrieved from The New York Times : <https://www.nytimes.com/1970/09/13/archives/a-friedman-doctrine-the-social-responsibility-of-business-is-to.html>
- Gibson, M. S. (2003). Is Corporate Governance Ineffective in Emerging Markets? *Journal of Financial and Quantitative Analysis*, 38(1), 231-250.
- Gray, S. J., Hellman, N., & Ivanova, M. N. (2019). Extractive Industries Reporting: A Review of Accounting Challenges and the Research Literature. *A Journal of Accounting, Finance and Business Studies*, 55(1), 42-91.
- Hambrick, & Mason. (1984). Upper Echelons: The Organization as a Reflection of Its Top Managers. *The Academy of Management Review*, 193-206.
- Hartzmark, & Shue. (2023). Counterproductive Sustainable Investing: The Impact Elasticity of Brown and Green Firms.
- Hartzmark, & Sussman. (2019). Do Investors Value Sustainability? A Natural Experiment Examining Ranking and Fund Flows. *The Journal of Finance*.
- Heinkel, Kraus, & Zechner. (2001). The Effect of Green Investment on Corporate Behavior. *Journal of Financial and Quantitative Analysis*.
- Hellman, N., Ivanova, M. N., & Pan, Z. (2023). Discretionary Accounting Choices and Financial Statement Comparability: Evidence from Extractive Industries Pre- and Post-IFRS Adoption.
- Hong, & Kacperczyk. (2005). The Price of Sin: The Effects of Social Norms on Markets.
- Hong, & Kacperczyk. (2007). The Price of Sin: The Effects of Social Norms on Markets.
- Kaplan, S. N. (1994). Top Executive Rewards and Firm Performance: A Comparison of Japan and the United States. *Journal of Political Economy*, 102(3), 510-546.
- Karpoff. (2012). Does Reputation Work to Discipline Corporate Misconduct? In T. G. Pollock, & M. L. Barnett, *The Oxford Handbook of Corporate Reputation* (pp. 361-382). Oxford Handbooks.

- Karpoff, J. M., Lott, J. R., & Wehrly, E. W. (2005, October). The Reputational Penalties For Environmental Violations: Empirical Evidence*. *The Journal of Law & Economics*, 48(2), 653-675.
- Karpoff, J. M., Scott Lee, D., & Martin, G. S. (2008, September). The Cost to Firms of Cooking the Books. *Journal of Financial and QUantitative Analysis*, 43(3), 581-612. Retrieved from <https://www.jstor.org/stable/27647364>
- Koller et al. (2020). *Valuation*.
- Maddala, G. S. (1991). A Perspective on the Use of Limited-Dependent and Qualitative Variables Models in. *The Accounting Review*, 66(4), 788-807.
- Mauboussin, & Rappaport. (2021). *Expectations Investing*.
- McGuire, W., Holtmaat, E. A., & Prakash, A. (2022). Penalties for industrial accidents: The impact of the Deepwater Horizon accident on BP's reputation and stock market returns. *PLOS ONE*.
- Moore, M. (2023, May 10). *BP and Shell go back to basics to boost shareholder returns*. Retrieved from Financial Times: <https://www.ft.com/content/5b9f4f0a-469d-4e65-a66f-98f498cc7e21>
- Murphy, K. (1999). *Executive Compensation*. Marshall School of Business, University of Southern California.
- Persons, O. (2006). The Effects of Fraud and Lawsuit Revelation on U.S. Executive Turnover and Compensation. *Journal of Business Ethics*.
- Posner, R. A. (1985, October). An Economic Theory of the Criminal Law. *Columbia Law Review*, 85(6), 1193-1231.
- Reuber, R., & Fischer, E. (2010). Organizations Behaving Badly: When are Discreditable Actions Likely to Damage Organizational Reputation? *Journal of Business Ethics*.
- Shapira, R., & Zingales, L. (2017). *Is Pollution Value-Maximizing? The DuPont Case*. Cambridge: National Bureau of Economic Research.
- Shevchenko, A. (2020). Do financial penalties for environmental violations facilitate improvements in corporate environmental performance? An empirical investigation. *Business Strategy and the Environment*, 30(4), 1723-1734.
- Stone, M., & Rasp, J. (1991). Tradeoffs in the Choice between Logit and OLS for Accounting Choice Studies. *The Accounting Review*, 66(1), 170-187.
- Tetrault Sirsly, & Lvina. (2016). From Doing Good to Looking Even Better: The Dynamics of CSR and Reputation. *Business & Society*.

Appendix

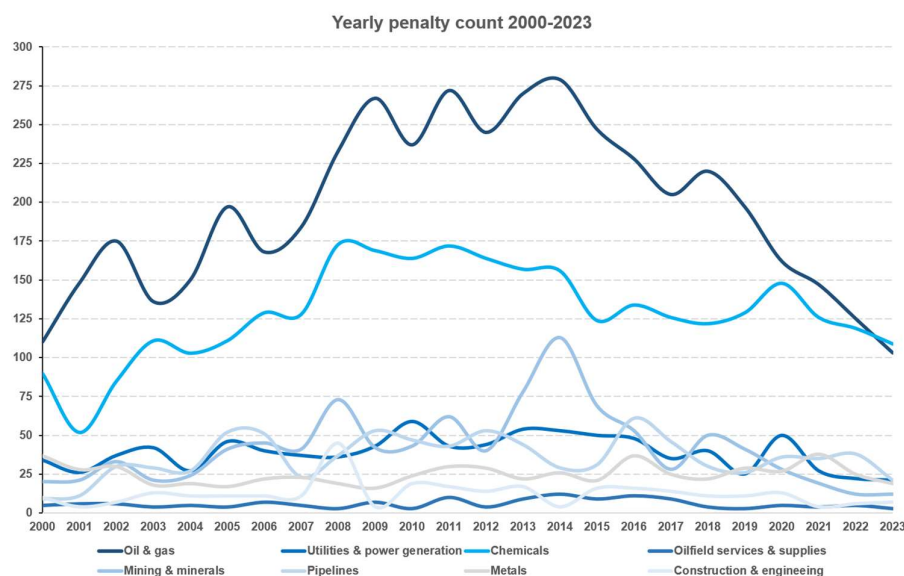
Appendix A: Violation Tracker Data - Nature of Environmental Penalties

The selection process of attaining the sample size was as follows; The initial data consideration set concerned all environmental violations for the full period 2000-2023 across eight industries: oil & gas, utilities & power generation, chemicals, oilfield services & supplies, mining & minerals, pipelines, metals, and construction & engineering (observations = 11,658). The total penalty amount for the period in the oil & gas sector dwarfed other sectors.



Source: Violation Tracker data compiled and visualized in Excel.

The annual penalty count told the same story, i.e. that the oil & gas sector is the most material.



AppenSource: Violation Tracker data compiled and visualized in Excel.

Appendix B: Variables

Variable	Definition	Remark
Executive Turnover	1 if a firm executive is no longer present at the company.	<i>Calculated – Compustat Execucomp</i> Executive turnover is identified when an executive is present at a firm in one year but absent the following year. The unique identifier, CO_PER_ROL, which combines both firm and executive information, was used to calculate turnover.
Environmental Penalty	1 if a firm has been subject to an environmental penalty.	<i>Calculated – Violation Tracker</i> A firm was recorded as having incurred an environmental penalty if its combined WRDS data (firm + year) matched with records of environmental violations
Size	The natural logarithm of a firm's assets. $\log(\text{assets})$	<i>Compustat, Fundamentals</i> Assets: AT
Leverage	$\frac{\text{Total long term debt} + \text{Current Liabilities}}{\text{Stockholders Equity}}$	<i>Compustat, Fundamentals</i> Long Term Debt: DLTT Current Liabilities: DLC Stockholders Equity: SEQ
ROA	$\frac{\text{Net Income}}{\text{Assets}}$	<i>Compustat, Fundamentals</i> Net Income: NI Assets: AT
ROE	$\frac{\text{Net Income}}{\text{Common Shares Outstanding} * \text{Price Close}}$	<i>Compustat, Fundamentals</i> Net income: NI Common shares outstanding: CSHO Price Close Annual Fiscal: PRCC_F
M/B	$\frac{\text{Market Value}}{\text{Book Value}}$	<i>Compustat, Fundamentals</i> Market value per share: mkvalt Book value per share: bkvlp
Δ MV of Equity	$\text{Market Value}_t - \text{Market Value}_{t-1}$	<i>Compustat, Fundamentals</i> Market value per share: mkvalt
EPS	Earnings Per Share (Diluted) – Including Extraordinary Items	<i>Compustat, Fundamentals</i> Earnings Per Share: epsfi
Δ Salary	$\text{Salary}_t - \text{Salary}_{t-1}$	<i>Compustat Execucomp</i> Salary: SALARY
Δ Bonus	$\text{Bonus}_t - \text{Bonus}_{t-1}$	<i>Compustat Execucomp</i> Bonus: BONUS
Δ Comp.	$\text{Comp}_t - \text{Comp}_{t-1}$	<i>Compustat Execucomp</i> Total current compensation: TOTAL_CURR

Appendix C: AI Disclosure

No generative artificial intelligence (AI) was used to create this thesis.