# GREEN OR GREENWASHED? ORGANIZATIONAL STRAIN AS AN ANTECEDENT TO DECOUPLING IN CORPORATE ENVIRONMENTAL SUSTAINABILITY REPORTING

by

Barbara A. Boller Knight

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Approved by:

_____
Dr. Denis G. Arnold

_____
Dr. Jared M. Hansen

_____
Dr. Janaki A. Gooty

_____
Dr. Moutaz Khouja

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# ABSTRACT

BARBARA A. BOLLER KNIGHT. Green or greenwashed? Organizational strain as an antecedent to decoupling in corporate environmental sustainability reporting. (Under the direction of DR. DENIS G. ARNOLD)

Scholarly attention continues to focus on how organizations are responding to stakeholder demands for meaningful corporate social responsibility (CSR) impact. CSR empirical studies offer evidence of decoupling in corporate policies, implementation, activities, and reporting. Decoupling manifests in several forms; means-end decoupling; policy-practice disconnect; or selective decoupling, a practice where companies may choose to report only favorable aspects of their CSR efforts. When these practices focus specifically on environmental performance, this is typically known as greenwashing. Decoupling may be intentionally deceptive, and deception in corporate reporting is a form of corporate misconduct. Scholars have identified underlying drivers leading to corporate misconduct, including organizational strain.

This study integrates neo-institutional theory, institutional isomorphism, and general strain theory, and draws from literature in sociology, criminology, management, and finance/accounting for guidance on organizational misconduct, and early financial indicators of financial and organizational strain. The model examines oft-used financial ratio indicators of cash and debt, and goodwill impairment events to predict decoupling in corporate environmental reporting, and whether socially responsible investment (SRI) ratings moderate the relationships. The unique dataset combining financial data with SRI ratings for 177 firms in 15 environmentally impactful industry sectors yielded mixed results. Results indicated support for the cash ratio negatively related to decoupling and

support for an interaction effect with SRI ratings. Hypotheses regarding debt ratio were not supported. The direct effect hypothesis regarding goodwill was not supported, but the study found support for an interaction effect with SRI ratings.

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# LIST OF ABBREVIATIONS

| | |
|---|---|
| CFP | corporate financial performance |
| CSR | corporate social responsibility |
| FASB | financial accounting standards board |
| GHG | greenhouse gases |
| GST | general strain theory |
| IAS | international accounting standards |
| IPCC | intergovernmental panel on climate change |
| KLD | Kinder, Lydenberg, and Domini |
| SRI | socially responsible investing |
| S&P | Standard and Poor |

# CHAPTER 1: INTRODUCTION AND BACKGROUND

Global sustainable development is emerging as one of the defining challenges of our time. The United Nations report published in October 2018 by the Intergovernmental Panel on Climate Change (IPCC) warned that a 1.5$^{o}$ Celsius increase in global warming attributable to rising greenhouse gases (GHG) will likely have dire consequences including temperature extremes, drought, flooding, and rising sea levels. Since the advent of the Industrial Age, human activities are estimated to have caused approximately 1$^{o}$ Celsius of global warming, primarily attributed to anthropogenic emissions from burning fuels. At the current rate of increase and taking into account population growth, the IPCC predicts that the 1.5$^{o}$ increase could occur as soon as 2030 (Masson-Delmotte, 2018). Clarifying the definition of "sustainable development", as contrasted with the more familiar corporate social responsibility (CSR), Gro Harlem Brundtland described it in the Brundtland Report as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland, 1987). Her definition is built around three pillars: economic sustainability, natural resource sustainability, and social sustainability (Dyllick & Hockerts, 2002; Goodland, 1995).

Reconciling the bi-polar roles of industry and corporations as both users and potential custodians of the resources on our planet, the primary work of environmental sustainability has become the de-facto responsibility of industry (Jamieson, 2010). Robert Goodland concluded that we are not going to "grow" our way out of the situation, and because industry is at the root of the increase in greenhouse gases, he went as far as suggesting that reparations might be in order (Goodland, 1995). However, companies

have taken a business-oriented approach to CSR, and it is important to understand how firms choose sustainability activities. There has been much academic study into the relationship between CSR investment and company financial outcomes, with mixed results and little consensus (Aupperle, Carroll, & Hatfield, 1985; King & Lenox, 2001; Margolis, Elfenbein, & Walsh, 2009; McWilliams & Siegel, 2000). Ambec and Lanoie (2008) took a broader view of the impact of "green" activities on company financial performance incorporating potential for better access to markets, opportunities for expansion into pollution-control technology, lowered cost of inputs, and enhanced labor-related impacts, to seek a win-win approach. Initiatives consistent with core competencies, stakeholder priorities, and that can be funded are common criteria (Orlitzky, Schmidt, & Rynes, 2003). Organizations frequently choose environmental policies, activities, and goals based on norms within their specific industry, consistent with neo-institutional theory and the need for legitimacy, (DiMaggio & Powell, 1983). Institutional isomorphism suggests that over time, practices within industries tend to converge, through three underlying processes: coercive, mimetic, and normative. Extending this to environmental reporting, we would expect firms to adopt standard reporting protocols, driving isomorphic convergence in environmental reporting.

To meet stakeholder demands for accountability, annual sustainability reports emerged in the early 2000s as an important vehicle for companies to communicate sustainability policies, priorities, programs, goals, and progress. Sustainability reporting has greatly expanded. According to an annual KPMG survey, in 2000 about 15% of Fortune 500 companies reported on their sustainability programs, and by 2016, 75% of Fortune 500 companies reported, either in a standalone report or as part of the annual

report. Readers of sustainability reports rely on management to select relevant and comprehensive sustainability programs, and to report targets and progress fully and accurately (Cho, Laine, Roberts, & Rodrigue, 2015). However, unlike audited financial results presented in company annual reports, sustainability reports are not routinely subjected to the same level of vetting (Behnam & MacLean, 2011; Bilbao-Terol, Arenas-Parra, Cañal-Fernández, & Obam-Eyang, 2018).

With the increasing urgency around the consequences of global warming and calls for companies to lead the progress in sustainability efforts, scholars are beginning to examine the integrity of sustainability reporting and have found evidence of decoupling within sustainability reports (Behnam & MacLean, 2011; Dragomir, 2012; Graafland & Smid, 2019; Jamali, Lund-Thomsen, & Khara, 2017; MacLean & Behnam, 2010; Marquis & Qian, 2014). Decoupling manifests in two ways; first, as a disconnect between policy and implementation, and second, as inconsistency between implementation and results. Decoupling has been identified as one variety of greenwash (Lyon & Montgomery, 2015). The authors offer a definition of greenwash as “a range of communications that mislead people into adopting overly positive beliefs about an organization’s environmental performance, practices, or products” (p. 225). In an earlier work, Lyon and Maxwell (2011) employed a more narrow definition: “Selective disclosure of positive information about a company’s environmental or social performance, without full disclosure of negative information on these dimensions, so as to create an overly positive corporate image” (p. 9).

Drivers of greenwashing have been identified and fall into two categories, external and internal drivers (Delmas & Burbano, 2011). External drivers include

regulatory, stakeholder, and market forces, while internal drivers originate from organizational and individual characteristics. Greenwashing is sometimes embedded within a company's marketing message, with the intent of increasing sales to environmentally conscious consumers (Schmuck, Matthes, & Naderer, 2018). In some instances, greenwashing may be relatively benign, as in a 2005 case study of French wine producers who market to consumers with a claim of adhering to traditional winemaking techniques while, in reality, employing some modern manufacturing methods (Beverland & Luxton, 2005). The consequence of decoupling in the winemaking case was limited to the risk of self-inflicted consumer distrust, potentially eroding relationship marketing trust and commitment (Morgan & Hunt, 1994). However, in the case of decoupling within sustainability reporting, the outcomes are not benign. Decoupling in sustainability reporting may be characterized as deception, with the intent to mislead the reader by misrepresenting or entirely omitting the facts. This dissertation focuses on environmental sustainability reporting and, specifically, how fully and accurately companies report their sustainability efforts – do company environmental sustainability reports exhibit evidence of decoupling and can we predict conditions for decoupling?

Drawing from and integrating literature across multiple disciplines, I argue that decoupling in environmental sustainability reporting is deception and a form of organizational misconduct, and that certain antecedents of financial stress and organizational strain may predict selective decoupling, one variety of greenwashing (Crilly, Hansen, & Zollo, 2016; Greve, Palmer, & Pozner, 2010; Grover, 1993; Lyon & Montgomery, 2015).

Academic research across disciplines including criminology, sociology, finance/accounting, and management provides support for deception as a form of misconduct (Donegan & Ganon, 2008; Grover, 1993; Lokanan, 2014; Vaughan, 1999). In a conceptual paper, Greve et al. (2010) studied the causes, processes, and consequences of organizational misconduct and identified five drivers: rational choice, culture, networks, organizational strain, and accidents. Organizational strain can be at least partially explained through strain theory, which posits that actors resort to misconduct when they cannot achieve their goals through legitimate means (Merton, 1938). A recent example is the well-publicized case of the Volkswagen emissions scandal in which the firm engaged in a misconduct to avoid regulatory penalties (Aurand et al., 2018; Siano, Vollero, Conte, & Amabile, 2017). In this dissertation, I examine organizational strain as an antecedent to deceptive reporting and whether early indicators of financial strain may predict selective decoupling in corporate environmental sustainability reporting. Academics in criminology, sociology, and accounting have examined financial and non-financial indicators of strain to predict management misconduct in the form of misstatements of financial results, criminal activity, or malfeasance. Diverse conceptual and empirical studies in management, accounting, criminology, marketing, and healthcare management examined indicators including high debt load, deteriorating cash flow, and loss of market share or brand equity (expressed in the form of eroding goodwill value) as early warning signs of organizational strain that may lead to bankruptcy or deceptive financial reporting (Coyne & Singh, 2008; Donegan & Ganon, 2008; Zahra, Priem, & Rasheed, 2005). I extend this work into a study of greenwashing through decoupling in environmental reporting.

While financial statement certifications provided by public accounting firms provide readers with a reasonable level of reliability, corporate environmental reporting has no parallel requirement. To fill the void, independent sustainability ratings organizations emerged, for example, Kinder, Lydenberg, Domini Research & Analytics (KLD), and Sustainalytics, to provide insight on how companies rate in their sustainability efforts. The service is primarily directed to investors committed to socially responsible investment (SRI), and the ratings are often referred to as SRI ratings. SRI rating service providers have grown in both numbers and technical sophistication, assisting report readers, researchers, stakeholders, and investors in assessing the extent and reliability of corporate sustainability reporting and activities. In general, ratings are consolidated and synthesized from published reports, data surveys, and analysis of past events. While each ratings organization has its unique approach, all offer some insight into the intensity of company sustainability efforts. However, reliability and usefulness of the ratings themselves have been the subject of academic research, with mixed results (Chatterji, Levine, & Toffel, 2009; Delmas, Etzion, & Nairn-Birch, 2013; Sharkey & Bromley, 2015). Scholars have found that ratings have limitations, for example, detecting evidence of decoupling within the underlying sustainability reports used by ratings organizations (Behnam & MacLean, 2011; Crilly et al., 2016; Graafland & Smid, 2019; Jamali et al., 2017; Luo, Wang, & Zhang, 2017). While ratings and rankings are potentially useful, they can have unintended consequences. Empirical studies into the responses of business schools and law schools to rankings within their peer groups have found evidence of decoupling to sustain the façade of legitimacy (Rasche & Gilbert, 2015; Sauder & Espeland, 2009; Snelson-Powell, Grosvold, & Millington, 2016).

However, studies of ratings directed toward environmental performance found evidence that lower ranked companies improved actual environmental performance in response to low rankings (Chatterji & Toffel, 2010; Sharkey & Bromley, 2015). I extend this work to examine whether environmental ratings interact with financial indicators as a moderator decoupling in environmental sustainability reporting.

This study answers the call for further research to better understand why and when companies engage in greenwash through selective decoupling in corporate environmental reporting (Lyon & Montgomery, 2015). In an article framing future directions for CSR academic research, Aguinis and Glavas (2012) raised the need for theory-driven research, and in particular a call "to integrate theories that have previously been studied separately" (p. 954) Looking through the lenses of neo-institutional theory, institution isomorphism, and strain theory, I argue that decoupling in sustainability reporting is deception and misconduct. I examine misconduct in environmental reporting at the organizational level and focus on industry sectors with high environmental impact. Building on Greve et al. (2010), who described organizational strain as a driver of organizational misconduct, I hypothesize that indicators of organizational strain are antecedents to decoupling in corporate environmental sustainability reporting, and I examine whether SRI ratings moderate decoupling under conditions of organizational strain.

# CHAPTER 2: AN EMERGING THEORY OF DECOUPLING IN CORPORATE ENVIRONMENTAL SUSTAINABILITY REPORTING

## 2.1 Organizational Legitimacy Through Environmental Choices

This dissertation is an integrative work that draws from literature in management, sociology, criminology, and accounting/finance to explain a specific phenomenon – decoupling, a variety of greenwashing, in environmental sustainability reporting. In this chapter I review the literature on the theoretical foundations for this work.

### 2.1.1 Neo-institutional theory, isomorphism and the links to corporate environmental responsibility

The meta-theory underpinning this work is neo-institutional theory, rooted in organizational sociology. Second only to stakeholder theory, institutional theory is frequently cited as the lens for CSR research, when the research was theory driven (Frynas & Yamahaki, 2016). The authors called for more CSR research using a combination of theories to address both internal and external drivers related to CSR. A recent article examining the evolution of neo-institutional theory challenged researchers to “step outside the box” (p. 211) and combine specific aspects of neo-institutional theory with insights from a broader range of research (Alvesson & Spicer, 2019).

In a seminal work on neo-institutional theory published by John Meyer and his co-author Brian Rowan (1977), the authors argue that institutional rules are, in reality, myths through which organizations seek legitimacy, resources, stability, and a better chance for survival. Over time organizations’ structures and practices tend to converge with the myths of the prevailing rationalized institutional structures through

isomorphism, rather than through meeting the needs of technical production or marketplace activities. Unlike classic institutional theory where organizations are subject to the unilateral forces of the institutions within which they operate, neo-institutional isomorphism is bi-directional and not attributable to a single cause, but can be driven by three forces: coercive, mimetic, and normative (DiMaggio & Powell, 1983). Philip Selznick highlighted a key difference between "institutional theory" and 'neo-institutional" theory in the latter's focus on legitimacy (Selznick, 1996). He noted that legitimacy is now an "organizational imperative" (p. 273), driving isomorphism and mimicry. Meyer and Rowan (1977) suggested that convergence may be more ceremonial than actual, and as a result, structures may become decoupled from each other and from actual business activities, based more on the logics of confidence and good faith than meeting the needs of the business. This isomorphic convergence makes sense in executing the daily activities of the business; across the institutions within a market economy the actors understand the interrelationships that enable commerce. For example, the banking institution knows to work with company finance departments, and the corporate legal department is equipped to deal with regulatory requirements. However, convergence may become difficult or unrealistic when capabilities or priorities among competitors within an industry differ.

Applying this to the challenges of environmental sustainability activities, companies may find themselves out of line with others in their industry and thus, face legitimacy challenges. A study looking at the adoption of the international environmental management standard ISO 14001 found that during the emerging phase of the standard, lack of consensus within the national institutional environment could send mixed signals

about the value of the standard and its adoption. The authors suggested that regulative and normative forces within the institutional environment can work against each other and that coercive (regulative) forces played a relatively more important role in the early phase of adoption. Later phases were more influenced by normative forces, as well as factors related to trade in the marketplace (Delmas & Montes-Sancho, 2011). The authors extended their discussion to suggest that findings from the ISO 14001 study is likely to apply to broader CSR standards. It then follows a mimetic process by which companies adopt (and imitate) subsequent reporting protocols.

### 2.1.2 Environmental sustainability program choices

Much academic research has focused on how companies craft their CSR or environmental agenda, with mixed views. A significant body of work focused around a relatively teleological view, correlating investment in CSR activities with financial performance. At one extreme, Milton Friedman asserted that the "social responsibility of business is to make profit", suggesting that investment in CSR activities is not in the best interest of stakeholders, with scholars variously rejecting or defending the objective of the firm as related to investing in CSR activities (Jensen, 2002; McWilliams & Siegel, 2001; Sundaram & Inkpen, 2004). Perhaps at the extreme, Robert Goodland (1995) called for deep corporate responsibility for environmental sustainability, including extensive attention to preserving the origins of natural inputs ("sources"), and matching outputs ("sinks") to the assimilation capacity of the planet, which he characterized as a "monumental challenge" (p. 1). Goodland offers the possibility of implementing a "polluter pays" policy, in effect a reparations approach.

In a conceptual paper, J. L. Campbell (2007) offered a series of propositions reflecting an isomorphic approach to explain why corporations are likely to behave in socially responsible ways. He posited that economic conditions and corporate behavior are mediated by certain institutional conditions: public and private regulation (coercive), the presence of nongovernmental and other independent organizations that monitor corporate behavior (coercive), institutionalized norms regarding appropriate corporate behavior (normative), associative behavior among corporations themselves (mimetic), and organized dialogues among corporations and their stakeholders (coercive). Rivoli and Waddock (2011) echoed the impact of isomorphism on CSR choices, noting that the public view of what is considered responsible behavior by corporations shifts over time, calling it "time and context dependent". Industry-wide expectations and practices evolve in response to changing laws, regulations, and stakeholder demands and, consistent with the bi-directional nature of neo-institutional theory, with changes in laws often following evolving CR norms.

Industry priorities are a major influence on the design of an environmental program. In a study data drawn from Canadian firms in the oil and gas, mining, and forestry industries from 1986 to 1995, both resource-based and institutional factors influenced corporate sustainable development (Bansal, 2005). Media pressures were found to be important in early selection, and resource-based environmental sustainability activities endured over time, consistent with Goodland's urgency. The findings offered support for the broader perspective, beyond the business case, on how companies select sustainability activities.

Differences in the influence over corporate departments and external pressures from customers, regulators, legislators, local communities, and environmental activist organizations, interacting with influential corporate departments, have been shown to affect local facility managers' decisions to adopt sets of management practices that appeal specific external constituents (Delmas & Toffel, 2008). Investing a firm's resources in CSR initiatives remains a sensitive issue for CEOs, with a recent study suggesting that while firm financial performance is the primary driver of CEO dismissal, firms with greater prior investments in CSR but poor financial performance may expose the CEOs to a greater risk of dismissal (Hubbard, Christensen, & Graffin, 2017).

Regardless what approach a company adopts, firms have rapidly expanded communication of their environmental activities to stakeholders through either standalone sustainability reports or as part of the annual report, exhibiting an isomorphic process.

### 2.1.3 Sustainability reporting and reliance on management reporting

According to the Governance and Accountability Institute, 86% of the S&P 500 companies reported on sustainability in 2018, up from 20% in 2011 (*Flash report: S&P 500 Companies 2018 Sustainability Reporting*, 2019). Shabana, Buchholtz, and Carroll (2017) described the process through which CSR reporting has become widespread, with a three-stage model of how institutional isomorphic mechanisms shaped CSR reporting practices over time; first, through defensive reporting driven by coercive isomorphism, second, firms then adopt CSR reporting protocols through a normative process and finally, in the third stage, imitative diffusion creates a critical mass of CSR reporters, and the benefits of CSR reporting begin to outweigh any costs.

Sustainability report readers have diverse interests and rely on management for accurate and full reporting. Conversely, companies seek to enhance company legitimacy, build brand equity, sell more, or command a higher price through the process of creating a socially responsible corporate identity in the eyes of stakeholders (Hildebrand, Sen, & Bhattacharya, 2011; Torres, Bijmolt, Tribó, & Verhoef, 2012).

Morgan and Hunt (1994) posited that building trust is key to a successful long term relationship marketing approach, and this may be extended to how a company presents itself in sustainability efforts. Maignan and Ferrell (2004) introduced a framework depicting CSR initiatives as actions selected for conformity to both organizational and stakeholder norms to explain how CSR initiatives can generate increased stakeholder support. Agarwal and Osiyevskyy (2016) suggested that reputational CSR (R-CSR) positively affects customer-company trust, customer-company identification, and customer loyalty, leading to positive consumer response. However, consumer skepticism of corporate environmental activities ("green skepticism") can undermine consumer trust and impacts consumer commitment in buying decisions.

Researchers have examined skepticism among consumers who are concerned about environmental resources and found that more environmentally concerned consumers are more skeptical toward green claims on packages or ads (do Paço & Reis, 2012). Extending consumer skepticism about green claims in advertising or on packaging to consumer behavior, Goh and Balaji (2016) investigated the role of skepticism in green purchase behavior and found that the same environmental concern and knowledge fully mediated the relationship between green skepticism and green purchase intentions. These studies suggest that green claims may not be an effective marketing tactic as consumers

become more environmentally aware and educated, and better able to detect greenwashing.

The choice of presentation medium for web-based CSR and environmental sustainability disclosure has an impact on user trust, specifically the effect of media richness on user perception and trust about corporate social and environmental responsibility (Cho, Phillips, Hageman, & Patten, 2009). Researchers examined a variety of social media platforms and corporate social responsibility (CSR) reports used to communicate about sustainability. Segmenting the reporting companies into “green” and “not-green” subsets based on Newsweek 's Greenest Company 2012 rankings, results showed variation on all levels - across firm and industry, in the types of sustainability initiatives reported, in the metrics employed, and in the communication media utilized. Firms characterized as “green” were found to be more active than “not-green" firms both in addressing sustainability and in general social media activity (Reilly & Hynan, 2014).

Investors and shareholders have significant influence on corporate sustainability activities. In an ethics oriented article, Dyck, Lins, Roth, and Wagner (2018) framed the interaction between CSR activities and stakeholder evaluations as a contest over what it actually means to be socially responsible and concluded that context matters as stakeholders evaluate the authenticity of CSR activities by balancing external definitions of responsible behavior against their existing perceptions of firm identity. This suggests that stakeholders may take notice of differences in reporting against their expectations of what should be included.

Scholars suggest that there are limitations in sustainability reporting practices. Transparency has been identified as a key component of stakeholder trust in company

communications, however, the transparency construct in corporate communications around CSR activities lacks clarity, resulting in a significant gap (Leitch, 2017; Rawlins, 2009). Leitch examined this lack of an agreed transparency construct, finding that transparency in CSR marketing calls for a positive and proactive approach, with both good and bad news shared. She identified four criteria necessary for effective CSR-based marketing - accuracy, timeliness, balance, and unequivocality, all of which are required to fulfill the obligation to fully account to stakeholders.

Sustainability reporting inconsistencies persist despite efforts to develop standards, such as the Global Reporting Initiative (GRI). While the adoption of an agreed set of reporting standards would be expected to yield better consistency, Behnam and MacLean (2011) suggested that when organizations state their commitment (in this case to international accounting standards) but fail to put forth the effort necessary to operationally enact that commitment, a “credibility cover” is created, maintaining the appearance of the organization’s legitimacy but shielding it from closer scrutiny, and presenting the risk of adoption in form but not in function. Differences in reporting found by Reilly and Hynan (2014) raised the question of inconsistent boundary definitions for CSR reporting. Adoption of a narrow boundary allows firms to omit potentially relevant items from disclosure, compromising the reliability and usefulness of CSR reports. Historically, boundary conditions for environmental disclosure have been set using traditional financial reporting concepts of control and significance. Ringham and Miles (2018) suggested that boundaries should vary on an issue-by-issue basis. They examined 15 CSR reporting guidelines and classified 40 determinants into three boundary constructs: reputation management; ownership and control; accountability. Their analysis

indicated three trends: 1) the adoption of selective, narrow definitions of boundary; 2) an inverse relationship between boundary determination and stakeholder consultation, and 3) companies that claim compliance to GRI, on average, select narrower boundaries than non-signatories. These findings were consistent with a 2012 longitudinal study of environmental sustainability reporting focused on the five largest European oil and gas companies which revealed unexplained figures and methodological inconsistencies, despite availability of sophisticated emissions data collection and estimation tools such as the Greenhouse Gas (GHG) Protocol (Dragomir, 2012). The author highlighted the need for creating a context for discussing a firm's commitment to sustainability, to explain dissimilarities between incomparable cases. The issues of narrow boundary conditions, symbolic adoption of standards, selective or inconsistent reporting, and poor transparency suggest an increased risk of selective decoupling and, by extension, greenwashing.

#### 2.1.4 Assuring sustainability reports: SRI ratings organizations

To provide stakeholder assurance for the largely unregulated sustainability reporting process, a sizable cottage industry has emerged in which the players analyze sustainability policy, governance, claims, and reported results, and distill the data to a set of ratings. These ratings also provide a measure of legitimacy for report issuers. Investment in environmentally conscientious companies is both trendy and growing (Delmas et al., 2013). Investment funds dedicated to SRI use the ratings of corporations' environmental activities and capabilities published by outside consultants and specialty agencies to influence billions of dollars of investments (Delmas et al., 2013). Academic researchers have looked at the reliability of these ratings from different perspectives.

Chatterji et al. (2009) focused on how well the most widely used ratings (at the time) — those of Kinder, Lydenberg, Domini Research & Analytics (KLD) — use past events and performance to predict future environmental performance, with mixed results. The KLD "concern" ratings reasonably predicted future negative performance, however, "strength" ratings did not accurately predict pollution levels or compliance violations. They also found evidence that KLD's ratings did not optimally use publicly available data, calling into question the robustness of KLD ratings. A later paper looked at social sustainability ratings across six well-established raters and found a surprising lack of agreement (Chatterji, Durand, Levine, & Touboul, 2016). The differences were unexplained even after adjusting for differences in definitions of CSR held by different raters (a problem in itself). The authors suggested that the ratings have low validity and recommended users of social ratings to exercise caution in linking CSR ratings to actual corporate social responsibility performance. The authors also called for raters to re-assess their own processes.

Delmas et al. (2013) used a data set combining environmental ratings from three leading ratings to explore the correlation between firm environmental and financial performance. The authors found that, despite the abundance of information available for analysis, only two factors--the environmental processes and practices implemented by firms, and the environmental outcomes they generate--explained 80% of the variance of the data. They also found corporate financial performance to be associated with process but not to outcome measures. Their findings support criticism that firms' sustainability reporting is not only inconsistent but may contain information that raises issues of

commensurability, information overload, and attention distraction (Dragomir, 2012; Reilly & Hynan, 2014).

Bilbao-Terol et al. (2018) examined the divergent views of the various ratings agencies to propose an integrated decision-support system for different items of corporate social responsibility, a first step toward reconciling differences found in prior studies. Using the hierarchical structure designed by the Global Reporting Initiative (GRI), the authors constructed a multi-criteria model that combined financial and sustainability objectives. These studies indicate that not only are there chronic inconsistencies within and among the environmental reports, but that the assurance backstops are also inconsistent.

While ratings are useful for consumers and investors, they may also have an impact on firm behavior. Ratings and rankings of organizations by third-party evaluators have increased (Sharkey & Bromley, 2015). Ratings systems may indirectly trigger a response in organizations when higher rated peers impact the firm's perception of the institutional and competitive landscape. Rated firms may be more responsive to ratings systems when surrounded by more rated peers, and ratings may generate diffuse or spillover effects even among unrated firms (Slager, Gond, & Moon, 2010). Sharkey and Bromley (2015) found that rated and unrated firms changed their pollution behavior with measurable emissions reductions when more firms in their peer group were rated on environmental performance. This finding supports the theorized impact of coercive isomorphism among competitors.

## 2.2 Toward a Theory of Decoupling in Sustainability Reporting

### 2.2.1 Multi-discipline approaches to defining and examining decoupling

Boxenbaum and Jonsson (2017) suggested that decoupling is a core idea in neo-institutional theory. Decoupling allows organizations to maintain the appearance of legitimacy, while engaging in business as usual processes. There is growing pressure for homogeneous policies and practices and this extends to environmental sustainability actions and the related reporting. Decoupling in sustainability reporting can take two forms —as a gap between policy and practice or as a gap between means and ends. The first is easier to detect, but the latter is more opaque and easier to obfuscate. This "means-ends decoupling" occurs where practices, causality, and performance are hard to understand and chart. Institutional entrepreneurs may opt to create and maintain uniform rules, apply strong incentives, and disseminate "best practices" to increase compliance. However, firms may be ill-equipped to deal with the causal and practice complexity. The consequence may be increased organizational complexity and constant change, potentially diverting resources from core activities. (Bromley & Powell, 2012; Wijen, 2014).

Despite attempts to ensure standardization, as members of an institutional organization adopt practices, variations can arise. This phenomenon appears to be out of sync with institutional isomorphism, which predicts practices to converge. How a firm uses a standard practice may become embedded with symbolic meaning, extending understanding of micro-processes of variation and divergent outcomes (Bromley, Hwang, & Powell, 2012; Meyer & Rowan, 1977). The divergence may be benign, as in

the case of decoupling in a marketing message described in a study of the luxury wine producers in France (Beverland & Luxton, 2005), but it is nonetheless an example of policy-practice decoupling. In stark contrast, decoupling in the area of CSR and environmental sustainability is far from benign.

Earlier research on decoupling examined policy-practice decoupling in how firms respond to stakeholder expectations for socially responsible outcomes. Decoupling behavior between formal corporate ethics programs and how they are implemented is influenced by top management, who are major influencers of both easily decoupled and integrated processes (Weaver, Trevino, & Cochran, 1999). A recent revival in the study of decoupling has focused on the distinction between policy–practice and means–ends decoupling, with Schnyder (2018) arguing that decoupling is a multi-level concept and that differences in the macro-environment, influenced by government, legislation, and local firm level practices, influence the type and extent of decoupling. Decoupling may be not only multi-level, but time-context specific (Rivoli & Waddock, 2011). Context is important for organizations operating in institutional environments with multiple stakeholders, bringing pressure for firms to adopt and implement policies and practices that may have few if any benefits for their core functions. Conflicts can arise when confidence in and implementation of the firm's expressed policy/practice depends on whether the firm's actors believe the agenda is useful, relevant and important. Lack of congruence between belief and relevance may reflect as means–ends decoupling (Dick, 2015).

### 2.2.2 Decoupling in corporate sustainability reporting

Companies use sustainability reporting as a legitimacy strategy and reporting may be decoupled from actual sustainability performance. Tashman, Marano, and Kostova (2019) noted how the tension between isomorphic convergence within industries and locally divergent norms persists when companies, particularly MNEs, implement their environmental sustainability efforts, creating policy-practice decoupling and reflecting a "dual embeddedness". Institutional voids emerge, as can be seen in a study of soccer ball manufacturing in India, where policy-practice decoupling related to illegal child labor was enabled by leveraging local regulatory enforcement voids. By using cottage family labor enterprises, dependent on children as the primary workforce, the firm bypassed local labor laws creating the façade of compliance with its social responsibility policy (Jamali et al., 2017). Another example was a longitudinal study of a Malaysian forestry firm's operations in Guyana, South America. The study reports on the rape of girls and women and disregard for the environment, arising from policy-practice decoupling among a group of actors enabled through institutional voids. Despite the egregious violations, firm reporting met certification requirements in the face of social irresponsibility (Whiteman & Cooper, 2016).

Decoupling may manifest in ways less apparent than policy-practice or means-end, with intent to mislead stakeholders. Organizations that obtain prominent certifications may elect not to publicize them to avoid being perceived as hypocritical or when their actual results may directly contradict expectations implied by the certification (Carlos & Lewis, 2018). Government policy ambiguity may drive some forms of decoupling. In a study on publicly listed companies in China, conflicting demands

between central government and local governments were created by certain provincial governments' high priority focus on short-term GDP growth, resulting in early reporting adoption but low-quality reports reflecting a decoupling response (Luo et al., 2017). Firm characteristics including public versus private ownership, political activity among executives, and financial resources are factors that have been found to explain how different types of government dependency impact CSR reports, and that the risk of governmental monitoring affects whether CSR reports are symbolic or substantive (Marquis & Qian, 2014). The authors suggested that certain types of dependency on the government induce legitimacy pressures, and that firms may be more likely to decouple in CSR reporting when they are likely to be monitored if actual results are not in line with government objectives. While a few countries have adopted mandatory reporting, for the most part environmental disclosure remains voluntary. E.-H. Kim and Lyon (2015) examined firms' strategic disclosure of greenhouse gas (GHG) reductions to the U.S. government, and found participants in the program engaged in highly selective reporting disclosed by comparing voluntary GHG reporting to mandatory Federal Energy Regulatory Commission (FERC) reporting.

Although the challenges of voluntary disclosure are many, there is evidence that mandatory disclosure is not a panacea. While mandatory reporting will not address all the deficiencies, we do have some insight into what conditions may impact decoupling in various environmental and social issues. Complete decoupling, defined as a condition of full divergence among policies, programs, and impacts amounting to purely ceremonial CSR is rare, as found in a study based on ratings of 1,000 large companies from a sustainability rating agency (Graafland & Smid, 2019). The empirical evidence suggested

that four conditions appear to deter decoupling: 1) high quality and specific CSR policies; 2) implementation programs characterized by specific scope, targets, and deadlines; 3) lower quality programs or weak programs are better than no program at all; and 4) CSR responsibility vested at Board level. Their finding of responsibility at company board level presents its own risks. As board members publicly communicate their CSR commitments through aspirational talk, and substantive CSR implementation, there is a possibility that aspirational talk may lead to the reverse outcome in which a firm moves towards even more CSR talk, but is unable to deliver commensurate implementation, leading to the risk of decoupling. Firms risk falling into this cycle by seeking external validation and, by inference, legitimacy (Trittin, 2017). A further risk was identified in an Australian study linking executive compensation to CSR performance, and found that where company board level compensation remained solely focused on financial results, executives continued to focus on financial results at the expense of environmental sustainability performance, regardless of the degree of external CSR talk (Deegan & Islam, 2012).

Researchers have examined approaches for detecting decoupling through both qualitative and quantitative methods. Due to information asymmetry, stakeholders may struggle to understand firms' practices or changes in practices through sustainability report content alone. But through a cognitive-linguistic perspective we have better insight into why stakeholders are sometimes misled (Crilly et al., 2016). Crilly refers to this as the "grammar of decoupling" and used textual analysis to detect differing patterns of simple or complex language, respectively, between firms that decouple practice from policy and those that do not. Methods and techniques found in research analyses of CEO

letters may be of relevance for future work in this area, with content analysis and machine-enabled learning capable of detecting deceptive patterns of speech, differences in disclosure norms across cultures, and the level of heterogeneity among firm reports (de-Miguel-Molina, Chirivella-González, & García-Ortega, 2019; Hooghiemstra, 2010; McClelland, Xin, & Barker iii, 2010; Siano et al., 2017).

### 2.2.3 Greenwashing through decoupling

Greenwashing is most simply defined as communication that makes a corporation look more environmentally green than it really is. Delmas and Burbano (2011) characterized greenwashing as "misleading consumers regarding the environmental practices of the company" (p. 66). Corporate greenwashing incidents have accelerated in recent years (Aurand et al., 2018; Knufken, 2010; Lyon & Montgomery, 2015). Interest from scholars reflected the increase, and in their literature review of references to greenwash, Lyon and Montgomery (2015) noted a sharp increase articles since 2011, and suggested that this was a fragmented and multidisciplinary literature, and that greenwash is a broad and loosely defined term encompassing many forms of misleading environmental communication. They called for more research to identify varieties of greenwash and to model their mechanisms and impacts.

But why do apparently rational firms engage in greenwashing? The coercive pressure of institutional isomorphism may drive some firms to selectively disclose relatively benign impacts, creating an impression of transparency while downplaying their actual environmental or social performance. Corporations may disclose more benign environmental impacts while masking their true environmental performance, in an

attempt to greenwash their public image (Marquis & Toffel, 2011; Marquis, Toffel, & Yanhua, 2016). However, in a global study of selective disclosure, Marquis et al. (2016) suggested that firms are less likely to engage in such selective disclosure when institutional and organizational factors intensify scrutiny and expectations of transparency, particularly in firms that are more environmentally damaging, and in countries where they are more exposed to scrutiny and norms. The expectation of financial gain is a common explanation for greenwashing. Lyon and Maxwell (2011) developed an economic model of greenwash, balancing how a firm strategically discloses environmental information with the risk that an activist may audit and penalize the firm for disclosing only positive but not negative aspects of its environmental performance. The authors found that activist pressure deters greenwash but also drives some firms to disclose less about their environmental performance, a form of selective decoupling.

I touched earlier on consumer trust and green skepticism. Consumers have shown a willingness to pay higher prices for green products (Delmas & Burbano, 2011) and some companies have promoted conventional products as green by highlighting a few green attributes. However, research suggests that consumers notice the company's greenwashing tactics behind such practices and it impacts their trust in the company's ethical practices, creates consumer skepticism, and changes their price-value perceptions (E.-H. Kim & Lyon, 2015; Lee, Bhatt, & Suri, 2018). Scholars are beginning to look at both the drivers and deterrents of greenwashing, and its opposite phenomenon – "brown-washing", defined as an undue modesty in green communications. A combination of stakeholder interests at a specific point in time, corporate output growth, deregulation and

the lower profits under deregulation may significantly affect the choice between greenwashing and brown-washing (E.-H. Kim & Lyon, 2015).

Understanding the drivers is the first step toward mitigating greenwashing in an environment of voluntary disclosure, within a framework of limited, lax, or vague regulation. Delmas and Burbano (2011) echoed many of the same measures prescribed for curbing decoupling, including aligning activities and incentives across all levels of the firm, providing ethics leadership training relevant to the topic of greenwashing and called for clarifications of provisions in the Fair Trade Commission (FTC) Green Guides. A business strategy driver behind greenwashing through decoupling was described by Sethi (2014) in his article about Wal-Mart’s environmental and social sustainability performance. Sethi argued that Wal-Mart’s unique business model, built around everyday low price/low cost, continuous growth, and market share expansion, allowed for illegal and unethical behavior by some senior managers, including bribery, corruption, and misuse of their bargaining power and market control to pressure supplier host countries to overlook environmental degradation and violations of country laws regarding wages and working conditions. The author found that a large gap existed between Wal-Mart’s claims of commitment to socially and environmentally responsible conduct and its actual business practices. The recent and well-publicized greenwashing scandal involving Volkswagen (VW) displayed the company’s disregard for the environment, government regulations, and for the firm's own consumer base. Unable to meet diesel emissions standards through legitimate technology improvements, the company developed a “defeat” device to falsify emissions tests. VW used decoupling and greenwashing tactics, misleading the public and regulators, to position itself as one of the world's "greenest"

auto manufacturers. The authors linked the underlying driver of the scandal to VW's internal culture of setting unattainable goals and never admitting that anything is impossible (Aurand et al., 2018). The VW case uncovered more than just corporate communication as a means of greenwashing, as it involved developing an enabling mechanical device. Researchers Siano et al. (2017) extended greenwashing taxonomy by identifying a specific behavior called "deceptive manipulation", referring to the VW mechanical defeat device, and added a new term to Lyon and Montgomery's (2015) list of identified means of greenwashing. The embeddedness of the VW "no fail" culture was again cited as a factor.

## 2.3 Decoupling and Greenwashing as Deception and Misconduct

In the previous sections, I reviewed the growth in environmental sustainability reporting along with its challenges: the diverse interests and impacts of sustainability reporting on stakeholders, and definitions, manifestations, prevalence, and some antecedents or enabling conditions for decoupling and greenwashing in corporate sustainability reporting. Much of the literature reviewed to this point resides the management domain. In this section, having described both decoupling and greenwashing as activities as intended to mislead, I examine the body of literature addressing deception, and define deception as a form of misconduct. I then look at the literature for antecedents of misconduct and relate them to the observed decoupling and greenwashing found in environmental sustainability reporting.

### 2.3.1 Causes of organizational misconduct

Organizational misconduct became somewhat of a corporate phenomenon in the 1980s through the early 2000s with the deceptive practices of companies like Enron, WorldCom, and Tyco, and tragic environmental accidents like the grounding of the Exxon Valdez in Alaska, and a sweatshop fire in Bangladesh (Sethi, 2014). Tammy MacLean's (2003) study of deceptive sales practices at a large life insurance company, along with a companion article (MacLean & Behnam, 2010), spotlighted the power of large organizations to impact individual outcomes and suggested that organizational compliance structures that are decoupled from core business functions may de-legitimize rules and legitimize rule-breaking, creating a legitimacy façade. The company appeared to meet the regulatory demands of its institutional environment while simultaneously undermining the need for actual internal compliance, creating an environment for institutionalized misconduct. Researchers across multiple disciplines including management, sociology, and accounting have contributed to the body of literature explaining what causes misconduct at both micro (individual) and meso (organizational) levels.

An early and frequently cited article by Robert Merton (1938) questioned whether man's biological drives (the prevalent sociological theory at the time) when not adequately restrained by social control was the root cause of misconduct, implying that nonconformity was rooted in original nature and conformity the result of either a "utilitarian decision or unreasoned conditioning" (p. 672). Merton identified two phases of social structure 1) striving for attainment of aspirational references consisting of goals, purposes, and interests and 2) acquired through institutional norms that define, regulate, and control acceptable means of reaching the aspirational goals. The same "means-end"

justification has been identified as a driver behind decoupling in both corporate financial reporting (MacLean, 2003) and environmental sustainability activities (Aurand et al., 2018). Academics in management research applied Merton's sociological theories to examine the dark side of organizations. Diane Vaughan (1999) integrated literatures across disciplines and found that routine nonconformity, mistakes, misconduct, and disasters are systematically produced by interconnections between environment, organizations, cognition, and choice. She advocated for research to build a theoretical basis for the dark side as an integrated field of study.

A stream of research into misconduct examined moral disengagement as a possible process underlying corporate social irresponsibility at the organization level. Moral disengagement occurs in organizations when its products or activities produce harm to either humans or the environment, or both, yet the organization disengages itself of moral responsibility through false equivocations, denying or minimizing reports of harm, blaming victims, or diffusing responsibility (Bandura, 1996; White, Bandura, & Bero, 2009). Bandura (1996) examined the mechanisms of moral disengagement and found the underlying psychological drivers to be similar to those driving aggression and delinquent conduct, echoing some of the themes found in the early Merton (1938) work related to misconduct. Bandura found that linking harmful organizational activities to a worthy purpose was the most frequent underlying contributor to moral disengagement. This finding may be extended to imply the existence of a risk factor for decoupling in environmental sustainability reporting, or greenwashing, when companies represent themselves as greener than they really are in the name of corporate environmental responsibility.

While research has supported the potential impact of individual level values on management's environmental decisions (Shepherd, Patzelt, & Baron, 2013), my interest for this study is in organizational level strains that lead to decoupling in environmental sustainability reporting. Both Vaughan's and Merton's works were predecessors to a 2010 article by Greve et al. (2010) from which I draw the construct of interest, organizational strain, for this dissertation. Greve et al. examined the causes of misconduct in an organizational setting and the role of social control agents. Noting the lack of research on the spread of organizational misconduct and its consequences, the authors identified five causes of misconduct, followed by a call for research in all areas. Table 1 is a listing of the identified drivers.

**Table 1:** Greve et al. (2010): Five Causes of Misconduct

| Causes | Definitions | Consequences |
|---|---|---|
| Rational choice | Actions chosen because their benefit exceeds expected sanctions | Actors may choose misconduct when risk of detection is low; organizations may accept a level of misconduct when deterrence cost exceeds expected benefits |
| Strain | Actors resort to misconduct when goals cannot be achieved through legitimate means | Aspiration levels inconsistent with resources, peers, or past performance may create strain leading to misconduct |
| Culture | Consists of norms, values, beliefs, attitudes, behaviors | Organization may condemn some types of misconduct but support others |
| Networks | Multiple actors linked by social ties. Can be within or across firms | Creates influence toward misconduct and secrecy once misconduct starts |
| Accidents | Participants carry out an intended action that leads to unintended consequences or perpetuates an undesired result | Produces accidental misconduct up to wrongful conduct resulting in harm and potential prosecution |

A sizeable body of academic literature addressing strain as an antecedent to misconduct is found in the criminology literature. Much of it is focused on general motivations behind crime and general criminal behavior. However, there is a growing body of work using strain theory as an explanation for white collar crime, primarily at the individual level (see Trompeter, Carpenter, Jones, and Riley Jr (2014) for an extensive literature review of publications on theories behind white collar crime, including strain theory, along with variables, constructs and research findings). But few studies have examined strain as an explanation for behavior at the organizational level, and even fewer have looked at how organizational strain may impact CSR or sustainability activities. I begin to fill this gap by integrating literature across domains to examine the impact of organizational strain on decoupling in corporate sustainability reporting.

### 2.3.2 Organizational strain – sources, indicators, and consequences

Drawing on Merton's (1938) theory of strain as a driver of deviant behaviors, Agnew (1992) extended Merton's work, defining a broader general strain theory (GST) to describe three major types of strain: 1) actual or expected failure to achieve positively valued goals, 2) strain as the removal of positively valued stimuli, and 3) strain resulting from the introduction of negatively valued stimuli. Langton and Piquero (2007) examined the ability of general strain theory (GST) to predict white-collar crime and the results suggested that (GST) was useful for predicting a certain group of offenses, but might not be generalizable to individuals committing corporate crimes, that is, crimes at the organizational level. Agnew, Piquero, and Cullen (2009) later applied general strain theory at the individual level and looked at white-collar crimes including embezzlement

and fraud, as well as occupational crimes primarily committed by higher class individuals such, as money laundering, tax evasion or securities fraud, and found that strains or stressors, including an inability to achieve economic or status goals, often seen as drivers to the explanation of white collar crimes, were mediated by such things as coping skills, social support, social control, and the perceived costs and benefits of crime, along with network ties to criminal others, consistent with the Greve et al. (2010) drivers of organizational misconduct.

In a study that appeared to contradict some of the assumptions behind strain theory as applied in a corporate setting, Baucus and Near (1991) suggested that large firms operating in dynamic, munificent environments were the most likely to behave illegally, while firms with poor performance were not prone to commit wrongdoing. In a similar study, Mishina, Dykes, Block, and Pollock (2010) examined high-profile corporate scandals involving prominent, high-performing firms in the S&P 500 to test whether the costs of getting caught decreased the likelihood that high performers will act illegally. The authors explained this paradox through theories of loss aversion and hubris and examined a sample of S&P 500 manufacturers. Consistent with Baucus and Near (1991), the results suggested that both performance above internal aspirations and performance above external expectations increased the likelihood of illegal activities.

The research around corporate crime cited above dealt with acts that were clearly illegal and criminal. But studies have also examined strain as a driver behind unethical acts that are not in the category of criminal or illegal. Unethical behavior can result in severe consequences and costs for the organization, stakeholders, and society, as would likely be the case for decoupling behaviors in sustainability activities and reporting. In a

40-year longitudinal study on misconduct and infractions in Division I college football, clearly outside the realm of criminal activity, Cox and Davis (2011) looked for antecedents to organizational misconduct, building on strain theory and a pressure/opportunity model. The authors found that industry culture and an interaction between leadership continuity and performance expectations increased the probability of an organization engaging in misconduct. This finding was largely replicated in the VW "Dieselgate" case study where performance culture and a "no fail" value system contributed to the corporate misconduct (Aurand et al., 2018).

While not explicitly stated as an outcome of GST, the fundamental principles or governing values of companies may erode in times of crisis, leading to strategy or implementation shifts. Fehre and Weber (2016) examined CSR embeddedness in management's agenda during times of corporate stress by looking at the content of CEO shareholder letters and found that CEOs talk less about CSR in times of crisis, suggesting that CSR may not be fully embedded into corporate strategy, and that in times of crisis, other aspects of the business overshadowed management's attention to CSR disclosure. However, the authors cautioned that less talk about CSR does not automatically indicate less real CSR activity, and that the reduction in CSR disclosure in a strain environment may not indicate decoupling.

In the following chapter, I draw from extant research and integrate the theoretical underpinnings of neo-institutional theory, institutional isomorphism, and strain theory into hypotheses to support and test a group of antecedents, along with a moderator, that may offer insight into why firms engage in decoupling in corporate environmental reporting.

# CHAPTER 3: THEORY DEVELOPMENT AND HYPOTHESES

## 3.1 Antecedents of Organizational Strain

Management scholarship has long focused on the relationship between CSR and outcomes for the firm, especially firm financial performance (Margolis & Elfenbein, 2008; Margolis et al., 2009; McWilliams & Siegel, 2001; Orlitzky et al., 2003). But with the rise in corporate CSR communications to stakeholders (including the general public) through sustainability reporting, and with calls for deeper understanding of the micro-foundations and the impact of CSR toward the broader goal of a sustainable planet, academic research focus has begun to shift toward holding industry accountable for sustainability commitments and outcomes (Aguinis & Glavas, 2012; Bilbao-Terol et al., 2018; Graafland & Smid, 2019; Rupp & Mallory, 2015; Sethi, 2014).

Empirical studies of sustainability reporting have shown evidence of both policy-practice and means-end decoupling (Boiral & Henri, 2017; Dragomir, 2012; Graafland & Smid, 2019; E.-H. Kim & Lyon, 2015; Marquis et al., 2016; Tashman et al., 2019). Decoupling has been characterized in research as deception and misconduct (Crilly et al., 2016; MacLean, 2003; MacLean & Behnam, 2010; Weaver et al., 1999). Greve et al. (2010) identified five underlying causes of misconduct in organizations: rational choice, culture, networks, organizational strain, and accidents. Within the sociology and criminology literature, strain theory posited that actors resort to misconduct (also called deviant behavior) when they are unable to achieve goals through legitimate means (Merton, 1938). Greve et al. (2010) drew from both Merton (1938) and Agnew (1992) to extend strain theory into management, suggesting that individuals may resort to

misconduct on behalf of organizations when they perceive an actual or potential loss of valued outcomes, or an actual or perceived risk of negatively valanced outcomes (p. 64). In the context of corporate environmental sustainability reporting, I argue that firms may engage in selective decoupling through non-disclosure when they are unable or unwilling to achieve a desired sustainability goal and such reporting would result in the loss of stakeholder support, a valued outcome. Conversely, disclosing the inability to achieve a sustainability objective would risk a negatively valanced outcome, that is, stakeholders may see the firm as not green.

Greve et al. suggested that strain may occur at the organizational goal level, not at the individual goal level. Studies support the notion that financial problems at the organizational level create strain that leads to misconduct, as do threats to competitive position and market share (Agnew et al., 2009; Vaughan, 1999). Further, at industry level, misconduct may be driven by potential loss of status (Vaughan, 1999), an outcome in sustainability performance that may be reflected in poor ratings by SRI organizations. Organizations may choose to avoid the negative outcome through decoupling in sustainability reporting.

In this chapter I first hypothesize that certain financial problems at organizational level, specifically changes in cash flows and debt ratios, will be associated with decoupling in sustainability reporting, drawing from literature in accounting and finance. Next, I hypothesize that potential risks to competitive position and future profitability, or doubts about merger and acquisitions (M&A) strategy, as reflected in goodwill impairments, will be positively associated with decoupling, drawing from literature in marketing, management, and accounting.  And finally, I hypothesize that SRI risk ratings

will act as a moderator to decoupling behavior in firm sustainability reporting. There are two competing views in the area of how organizations react to rating or rankings. A small body of literature in the education field suggests that academic organizations may respond to poor rankings by decoupling policy from practice to create a façade of legitimacy (Espeland & Sauder, 2007; Gioia & Corley, 2002; Sauder & Espeland, 2009). However, in the CSR literature, research suggests that firms may increase their environmental performance in response to ratings that are lower than the peer group (Sharkey & Bromley, 2015). I found no example of sustainability ratings empirically tested as a moderator to antecedents of decoupling. This study begins to reconcile the divergent views on how organizations react to ratings. I hypothesize that a gap in ratings to the peer group leader moderates the impact of financial indicators on decoupling after a one-year lag period.

Figure 1 presents the model proposed to test indicators of organizational strain as antecedents to decoupling in environmental reporting.

### 3.1.1 Cash flow as a predictor of decoupling in sustainability reporting

The evidence for cash flow and debt as sources of financial strain at the organizational level is found in both the accounting and management literatures. However, there is ongoing debate among scholars on the predictive value of each measure. Financial strains on healthcare management groups in the U.S. were examined for predictors of financial failure based on a longitudinal matched pair sample analysis of solvent and bankrupt health systems to determine what financial measures might indicate a distinction between success and failure (Coyne & Singh, 2008). Early warning signals

were detected as early as five years before bankruptcy. This study is relevant for my objective to test potential leading indicators of financial strain that may lead to decoupling. The results showed distinctly different financial changes and trends between solvent and bankrupt health systems for three items: 1) operating cash flow percentage change from prior to current period; 2) operating cash flow as a percent of net revenues; and 3) cash flow to total liabilities. Item 3 reflects a unique feature of the healthcare industry, specifically, credit from third-party payers which is not relevant to the sectors of interest in this study, so I look to the operating cash flow metric as sufficiently relevant.

Keane (1993) used structural equation modeling to test four indicators of the latent variable financial performance, including working capital as a percentage of total assets. Working capital is a significant component of cash flow. As working capital increases, cash flow decreases. The study suggested that working capital was a statistically significant source of financial strain within organizations. Casey and Bartczak (1985) extended prior studies of whether cash flow had additive value in predicting financial stress and future bankruptcy. Contrary to prior studies, the authors found no incremental value in the cash flow variable in predicting financial stress or bankruptcy. However, they recommended future research of the predictive value the cash flow when used in conjunction with an alternate set of indicators, including non-financial ones. In a more recent study following methods from Casey and Bartczak (1985), Mazouz, Crane, and Gambrel (2012) used a neural network to test whether cash flow would predict bankruptcy, finding that the neural network did not predict bankruptcy better than the existing models, but did confirm that the existing model that uses cash flow as one of five indicators remains a good predictor of business failure.

While the empirical evidence of cash flow as a predictor of organizational financial strain shows some contradictory evidence, the preponderance of evidence suggested it has relevance as a predictor of financial stress.

Therefore:

Hypothesis 1: Cash flow ratio is negatively related to decoupling in environmental sustainability reporting.

### 3.1.2 Debt ratio as an antecedent and predictor of decoupling in sustainability reporting

The body of scholarly literature examining the impact of corporate debt ratios on organizational financial strain is surprisingly sparse, with mixed results. Much of the literature looked at risk identification arising from early indicators of financial strain leading up to the 2009 financial crisis as predictors of the changed business environment. After the financial crisis of 2009, The Dodd–Frank (D–F) Financial Reform Bill authorized the Federal Reserve to monitor the financial services marketplace to identify potential threats to the stability of the US financial system, focusing on desirable capital requirements, or leverage, for banks and financial intermediaries. However, existing tools were deemed inadequate to analyze what constitutes excessive debt or leverage (Stein, 2011). According to Stein, the optimal capital requirement (leverage) balances expected return against risk and provides a theoretically derived early warning signal of crisis. The author derived an excess debt ratio, equal to the difference between the actual and optimal ratios, where the probability of a debt crisis is directly related to the excess debt ratio. This work applied to the financial sector and was targeted to implementing the

Dodd-Frank bill. A contrarian view of debt was offered by Aney, Appelbaum, and Banerji (2019) based on a capital structure in which the cost of debt is cheaper than equity, and the equilibrium debt-equity ratio varies positively with cash-flow profitability. Firms and their stakeholders, e.g., suppliers, may interact opportunistically, leading to overall inefficiency, even leveraging down firms in an in-house vs. outsourcing environment. These exogenous forces may or may not be present in the companies within the sectors of interest in this study.

In using a debt ratio as an indicator of financial strain, the issue of company size may arise as to comparability across firms. A European study of energy firms in the post-privatized business environment since 1999 found that the size of energy suppliers did not significantly affect the performance of energy companies as measured by seven key financial indicators including debt-to-equity ratio (Iovino & Migliaccio, 2019). In a recent examination on whether increasing the debt financing (leverage) of firms in the innovation industry increased the risk of business failure, the authors segmented 395 American innovation companies based on the size of their debt ratio and, using the well-established CHS model for testing (J. Y. Campbell, Hilscher, & Szilagyi, 2008), found that companies with higher debt levels were not riskier than those with lower debt levels (My, Sayim, & Rahman, 2019).

While the research suggests that the debt ratios within the financial sectors may indeed be an early indication of financial strain in the broader economy, there is only weak support that debt ratios are associated with financial strain in other sectors, even in a highly leverage environment such as innovation technology. To further test the mixed results from extant literature, and drawing on institutional isomorphism theory, I argue

that firms will mimetically converge to adopt the measures used by the financial institutions with which they frequently interact, for example investment banks. In the banking sector, debt ratio has been found to predict financial strain.

Therefore:

Hypothesis 2: Debt ratio is positively related to decoupling in corporate environmental sustainability reporting

### 3.1.3 Goodwill impairment as a predictor of decoupling in sustainability reporting

Greve et al. (2010) and Vaughan (1999) noted that competitive status and market share pressures may contribute to organizational strain. Declining competitive status and loss of brand equity is partially manifested in goodwill impairment calculations, though overpayment for past acquisitions is the major driver (Feng & Lev, 2011; Li, Shroff, Venkataraman, & Zhang, 2011).

In accounting for the purchase price of acquisitions, goodwill is recognized and posted to the balance sheet as an intangible asset when an entity pays more for the acquisition than the fair market value its assets. Goodwill represents the implied value of the company’s brand, client base, and other factors. Up until 2001, goodwill was amortized on a straight-line accounting basis over a 40-year useful life. However, in 2001, the Financial Accounting Standards Board (FASB) declared in Statement 142, *Accounting for Goodwill and Intangible Assets*, that goodwill was no longer permitted to be amortized. (FASB allowed private companies to elect to amortize goodwill on a straight-line basis over 10 years, with a requirement to conduct impairment tests if and when a triggering event indicates that the company's fair value is less than its carrying

amount). Goodwill for public companies is evaluated for impairment at least once a year, within the first half of the company's fiscal year. If an impairment is found, the company reduces the goodwill carrying value and recognizes an impairment loss with a charge against current year income. The current accounting treatment of goodwill offers insight into a potential source of organizational strain, specifically an erosion of brand or business value, that will manifest as a financial indicator.

Goodwill impairment has been studied through a range of lenses. The value of market share is well studied by academics. A recent example is a study in which Bhattacharya, Rego, and Morgan (2016) identified a theoretically anchored framework, using the resource based view (RBV) of the firm as a theoretical lens, to understand and test the mechanism through which market share influences profit in firms. They found that increased market share led to increased profit for firms and thus had value as an asset. However, market changes, erosion of market share or brand equity, or change in client value may lead to impairment. A different perspective was offered by Feng and Lev (2011) who suggested that the root cause of many goodwill impairment events is the buyers’ overpriced shares at acquisition, leading buyers to pay more than the acquisition's synergies, and setting the stage for subsequent goodwill impairment. The authors concluded that, despite managers' arguments to the contrary, goodwill impairment is an important event shining a spotlight on questionable investment strategies or capabilities.

Agency theory has been an oft-used theoretical framework in accounting research, but researchers investigated a competing theory of cognitive dissonance to explain the decision to record an impairment of goodwill and found evidence that agency theory does not fully explain the results of management decisions as seen through

financial reporting data, with strong support that cognitive dissonance plays a role in addition to agency theory (S. Kim & Bay, 2017). Stakeholders react to the announcement of goodwill impairments. Li et al. (2011) suggested that both investors and financial analysts revise their expectations of future performance downward on the announcement of an impairment loss. The authors found that goodwill impairment serves as a leading indicator of a decline in future profitability, a frequent indicator of organizational strain. Drawing from this literature on causes and consequences of goodwill impairments, I hypothesize that a goodwill impairment may predict decoupling in environmental sustainability reporting.

Therefore:

Hypothesis 3: Goodwill impairment is positively related to decoupling in corporate environmental sustainability reporting such that when a goodwill impairment event occurs, decoupling increases.

## 3.2 SRI Environmental Ratings as a Moderator to Decoupling in Sustainability Reporting

There is evidence in the literature that ratings have an impact and that organizations react to them. I model SRI ratings as an exogenous factor that may moderate the relationships between the variables of interest and decoupling. Studies relating to how organizations react to ratings and rankings are found primarily in two bodies of literature: education and management. Studies in the education literature suggest that academic institutional embeddedness is associated with initial policy-practice decoupling in response to ratings, with buffering to allow time for eventual change. Rasche and Gilbert (2015) argued that schools may be unable to match rising

institutional pressures to publicly commit to responsible management education with their limited internal capacity for change. They raised two implications of this proposition. First, decoupling can cause dissonant legitimacy perceptions, leading to cynicism. Second, on the other hand, a temporary inconsistency between talk and action may prompt schools to articulate future ambitions which, over time, could inspire recoupling.

In a study of law schools, Sauder and Espeland (2009) explained why rankings have permeated law schools so extensively and why these organizations have been unable to buffer the institutional pressures. Rankings are just one example of the public measures of performance that are becoming increasingly visible and influential in many institutional environments. The authors argue that decoupling allows actors to buffer or hide some activities in the short term, but that actors' tendency to internalize these pressures will create anxiety and eventually, change. In the inaugural issue of the *Academy of Management Learning & Education* journal, Gioia and Corley (2002) called attention to the media rankings of business schools. They argued that the rankings are producing an accelerating transformation of business schools toward image change, rather than substantive program change, a policy-practice manifestation of decoupling, not unlike greenwashing.

In a study directly related to environmental performance, Sharkey and Bromley (2015) examined how firms deal with SRI risk ratings, and the findings suggest that the presence of rated peers is associated with emissions reductions. Additional evidence that firms respond to ratings was suggest by Chatterji and Toffel (2010), who found that environmental performance improved when an SRI ratings agency expanded the scope of

its ratings to include all companies in an oft-used Russell 1000 and Russell 2000 Index listings. These findings informed my hypotheses that SRI ratings may interact with the three variables of interest as a moderator to decoupling.

Therefore:

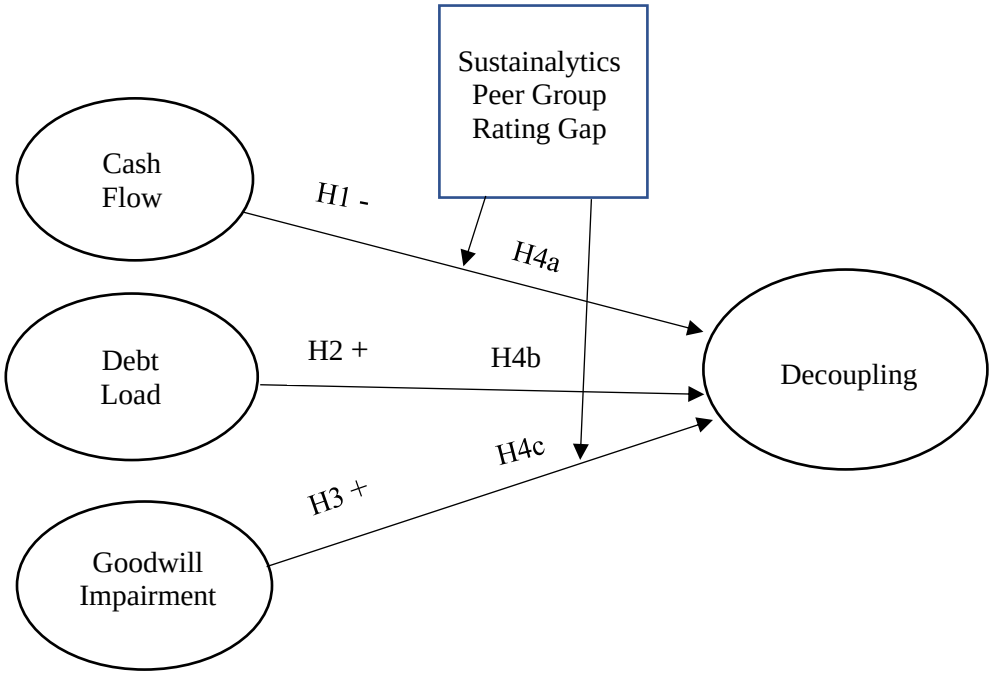
Hypothesis 4a: The hypothesized effect of financial strain (taking the form of a smaller cash ratio) on increased decoupling is moderated by the social responsibility investing (SRI) gap between the focal firm and its peer comparison (sector leader).

Hypothesis 4b: The hypothesized effect of financial strain (taking the form of a larger debt ratio) on increased decoupling is moderated by the social responsibility investing (SRI) gap between the focal firm and its peer comparison (sector leader).

Hypothesis 4c: The hypothesized effect of financial strain (taking the form of a goodwill impairment) on increased decoupling is moderated by the social responsibility investing (SRI) gap between the focal firm and its peer comparison (sector leader).

Figure 1 presents the model for testing the relationships of indicators of financial strain to decoupling and whether a gap in SRI ratings to the peer group leader moderates the relationships.

**FIGURE 1**




Model for Testing the Effect of Financial Indicators on Selective Decoupling and the Moderation Effect of an SRI Peer Group Ratings Gap

# CHAPTER 4: METHODS

## 4.1 Sample

The sample for this study was drawn from a Sustainalytics database of detailed ratings data for the years 2009 through 2015. Sustainalytics is an independent SRI investment service ratings provider and maintains a global database that measures company-level environmental, social, and governance sustainability indicators across industry sectors and countries. Sustainalytics compiles and analyzes information from a range of sources including publicly available environmental and annual reports, company supplied documentation, industry databases, and the media, supplemented with information provided by stakeholders and firms through interviews and surveys. Sustainalytics measures 211 individual indicators of CSR grouped into eleven (11) dimensions across environmental (E), social (S) and governance (G) categories, along with a weighted composite score (ESG) expressed as a risk percentage from 0 to 100. The Sustainalytics indicators measure company performance in establishing CSR policies, developing actionable programs, implementation performance. Each of the indicators is measured on either a Likert-type or a risk percentage scale. The higher the percentage, the greater the risk that the company may experience adverse CSR outcomes.

The scope of interest for this study is the comprehensiveness of environmental reporting regarding firm policies, programs, implementation, and performance. Some companies have more indicators than others, however, there is a core set of indicators common to all firms. Sustainalytics calculates composite percentage risk scores, with each of the indicators weighted according the importance of the item within the firm's

industry. For example, "environmental" items are weighted more heavily for forestry firms than for media firms. Previous work using Sustainalytics has relied on these weights to assess the importance of a particular indicator (Surroca, Tribó, & Waddock, 2010; Surroca, Tribo, & Zahra, 2013).

To define the sectors of interest and which companies to include in the sampling frame for in this study, I turned to Sustainalytics' definition for dimension E.1.1.1., an indicator suggesting selective decoupling, the dependent variable. Sustainalytics describes indicator E.1.1.1 as "an assessment of the overall quality of environmental data published by a company and of whether there is adequate disclosure on key performance indicators. It is only used for sectors that have a high environmental impact". To identify the specific companies covered by the E.1.1.1 indicator for inclusion in the sampling frame, I ran a query of the full Sustainalytics database, applying the geographic limitation of U.S. companies. The U.S. geographic boundary enables extraction from Compustat of the financial data needed to operationalize the independent variables, ensuring comparability. Limiting the sample to the U.S. also controls for inconsistencies in environmental sustainability reporting driven by varying national or governmental reporting requirements, as found in the literature (Boiral & Henri, 2017; Marquis & Qian, 2014). The query yielded a sampling frame of 258 companies in fifteen (15) Sustainalytics-defined sectors. These firms may have headquarters in the United States or may be U.S. subsidiaries of global companies. Only seven (7) companies in the sample have parent companies located outside of the United States, minimizing concerns over differences in national reporting requirements. In order to be included in the final sample, a firm had to meet the dual criteria of having key Sustainalytics rating data and complete

Compustat financial data related to the three financial variables of interest for the calendar or fiscal years of 2010 through 2015, a period of six (6) years. Sixty-two (62) companies did not have complete Sustainalytics data for the period and were eliminated. Nineteen (19) companies did not have the necessary financial data, largely due to acquisitions and bankruptcies within the timespan, and were eliminated. The final sample included 177 companies across 15 Sustainalytics-defined industry sectors, encompassing 64 unique 4-digit SIC codes, and 88 unique NAICS codes. With 6 sets of data points for each company, the final dataset contained 1062 independent observations.

## 4.2 Measures

To test my model of organizational strain as an antecedent to decoupling I created a unique dataset using a combination of data from two sources, Sustainalytics for SRI ratings data, and Compustat for financial data. The testing design includes examining the impact of a lagged moderator, specifically, whether the gap between a focal firm's SRI ratings as compared with the company's peer group (sector) leader has an impact on decoupling. The design tests a one-year lag period in between the year of the rating and the observation of the moderation effect.

### 4.2.1 Selective decoupling as the dependent variable.

Decoupling can manifest in multiple ways: as policy - practice decoupling, end - means decoupling, or as selective decoupling (Behnam & MacLean, 2011; Bromley & Powell, 2012; Dick, 2015; Westphal & Zajac, 2001). There is no single defined approach in the literature for measuring selective decoupling in reporting. Table 2 presents a

comparison of approaches found in prior studies. Dragomir (2012) studied GHG reporting within the same sectors as this study and operationalized his selective decoupling variable as non-compliance with Greenhouse Gas Protocol reporting conventions by comparing sustainability reports to the GHG Protocol required elements, and whether the firm used related the GHG calculators. While this approach disclosed compliance rates with a voluntary standard, it does not meet my need to compare among firms. Marquis and Toffel (2011) used specific dimensions of the Trucost S&P database of ESG ratings to create a "selective disclosure" variable, measuring the quality of disclosure in whether a firm was disclosing the most impactful (i.e. environmentally damaging) environmental measures. Tashman et al. (2019) created a decoupling variable to detect policy – practice decoupling by comparing a metric called "CSR reporting intensity" from content analysis of firms' sustainability reports, with the "CSR performance" rating from the IVA database, a part of MSCI (a Morgan Stanley company). IVA is an SRI rating service. E.-H. Kim and Lyon (2015) operationalized decoupling as a continuous variable measuring the deviation percentage between firms' reported emissions as reported in the voluntary Department of Energy GHG database and actual emissions data reported in FERC (Federal Energy Regulatory Commission) Emissions Reporting Form 1 for mandatory operational reporting. Boiral and Henri (2017) measured decoupling in 12 mining sector firms. They compared a 2-coder content analysis of sustainability reports to the GRI list of 92 sector relevant dimensions. In a recently published work, Graafland and Smid (2019) created a policy-practice decoupling variable by comparing two dimensions within the Sustainalytics database – 1) Quality of Policy, and 2) Quality of Performance.

The variety of approaches reflects the different contexts in which the variables were tested. Some studies (Boiral & Henri, 2017; Dragomir, 2012; E.-H. Kim & Lyon, 2015; Marquis & Toffel, 2011) compared sustainability reporting against an external known standard, for example GRI, GHG, or FERC, while others examined internal policy – practice decoupling within a firm (Graafland & Smid, 2019; Tashman et al., 2019). The present study does not use either criteria. Consistent with examining decoupling through the lens of isomorphism, I measure decoupling drawing from the literature on "selective decoupling" (Carlos & Lewis, 2018; E.-H. Kim & Lyon, 2011; Lyon & Maxwell, 2011; Marquis et al., 2016). Isomorphism suggests that, over time, practices among firms will tend to converge. In the case of environmental sustainability reporting, lack of convergence in reporting, as manifested by different or missing key environmental policies, programs, or metrics across firms within the same industry sector and context, suggests selective decoupling.

To operationalize the dependent variable, selective decoupling, I examined the Sustainalytics dimensions and indicators for environmental performance (E) to determine which ones suggest the presence of selective decoupling. Sustainalytics measures 68 indicators of environmental performance, with a few indicators being sector specific. Of the 68 indicators to the composite E Score, only seven (10.3%) were specific to industries or sectors outside of those included in the sample for this study. Given the high number of relevant indicators, I chose to use the overall weighted average of Sustainalytics total score for environmental performance, the "E Score", as a proxy for decoupling. Appendix A is a listing of the Sustainalytics definitions for indicators of environmental performance. It is important to analyze and connect Sustainalytics' dimensions of

environmental responsibility to the theoretical constructs of decoupling. It was important to assess the connections of the broad categories of Sustainalytics' environmental measures with their relevance as indicators of decoupling. Sustainalytics reflects company performance in environmental sustainability through a series of indicators grouped into three topics: operations, contractors and supply chain, products and services. Within each of the topics, indicators measure performance in three categories: preparedness, disclosure, and quantitative performance. Indicators capture environmental performance through measures such as the quality and comprehensiveness of policies and programs; completeness and accuracy of disclosure and reporting for emissions, effluents and waste, energy use, fines and penalties, and oil spills; the comprehensiveness and implementation of preparedness programs including environmental assessments for new projects, waste management, and site closures.

Prior studies of decoupling examined occurrences in these categories as examples of decoupling. For example, the Volkswagen scandal study detailed the company's intentional program to mislead both the public and regulators on vehicle emissions (Aurand et al., 2018). In other studies, selective decoupling was detected by differences between emissions reported in company annual sustainability reports and mandated emissions databases (Dragomir, 2012; E.-H. Kim & Lyon, 2011). These studies are examples of intentional decoupling intended to mislead report readers, which I argue is an act of organizational misconduct.

The Sustainalytics indicators comprising the E Score support the ability of the metrics to capture underlying risk conditions, suggesting that decoupling may occur. The E Score is calculated by Sustainalytics analysts on a monthly basis and is expressed as a

percentage between 0 and 100, with increasing scores representing increasing levels of risk for adverse environmental performance. To create a measure representative of performance for the entire year, I averaged the in-year monthly calculations into a single annual value.

**TABLE 2**: Prior studies using decoupling as a variable and the context in which used

| Reference | Context | Decoupling Operationalized |
|---|---|---|
| Dragomir (2012) | Examined compliance with GHG protocols in oil and gas sector | Content analysis for sustainability reports compared with GHG protocols and calculators |
| Marquis and Toffel (2011) | Whether firms disclose the most environmentally damaging measures | Composite of indicator from TruCost SRI ratings as selective decoupling proxy |
| Tashman et al. (2019) | Detecting policy-practice decoupling through content analysis | Calculated misalignment through content analysis of sustainability reports (reported) minus IVA performance scores (actual). |
| E.-H. Kim and Lyon (2015) | Examined under-reporting of environmental activities (“brownwashing”) | Calculated the percent difference between emissions reported in sustainability reports vs. emissions reported in FERC reporting. |
| Morales-Raya, Martín-Tapia, and Ortiz-de-Mandojana (2019) | Effects of environmental practices on firm reputation | Composite of Bloomberg ratings of environmental disclosure and content analysis of firms’ reports for rates of high/low impact disclosure. |
| Marquis et al. (2016) | Greenwashing by use of selective decoupling to mask more severe outcomes | Composite of two measures from TruCost as measure of selective disclosure magnitude. |
| Westphal and Zajac (2001) | Whether companies enact announced policies | Percent of implementation between content analysis of policy statements on share repurchase intent and actual shares purchased |

### 4.2.2 Cash flow as an independent variable

Cash flow is an oft-used and well-studied early indicator of financial stress and risk of bankruptcy in organizations (Bhandari, 2014; Casey & Bartczak, 1985; Coyne & Singh, 2008; Mazouz et al., 2012). The ratio of cash flow from operations divided by net sales (cash ratio) is an indicator of the ability of sales to generate cash. This ratio is sometimes referred to as the "cash power ratio". The interaction between CSR investment and company financial performance has been studied extensively, with mixed findings but clear suggestion that financial considerations are firmly part of the CSR investment decision (Aupperle et al., 1985; Kang, Germann, & Grewal, 2016; Margolis & Elfenbein, 2008; McWilliams & Siegel, 2001; Orlitzky et al., 2003).

Following prior studies, I extracted full year data from Compustat from the data field called Net Cash from Operations (Casey & Bartczak, 1985; Coyne & Singh, 2008). I operationalized the cash flow ratio as cash flow from operations divided by net sales. The ratio approach converts cash flow from absolute dollars to a standardized measure, overcoming issues of potential data skewing from factors including structural changes in the business, acquisitions and divestitures, and significant size differences among the companies in the sample.

### 4.2.3 Debt ratio as an independent variable

There are two widely used indicators of debt: the debt-to-equity ratio, and the debt ratio (Iovino & Migliaccio, 2019; Liargovas & Skandalis, 2010; Zahra et al., 2005). Debt-to-equity is an indicator generally used by investors to assess a company's "gearing" and is calculated by dividing the firm's total debt by its equity ownership. At higher ratios,

the company is considered subject to higher risk of financial failure, because during times of lower profits and higher interest rates, the company would be more susceptible to loan default and bankruptcy. The second measure, debt ratio, is calculated as either total liabilities divided by total assets, or total debt divided by total assets. It is the broad indicator of leverage, that is, what proportion of the firm's assets are financed by debt.

Because the debt ratio uses total assets as its denominator, it factors in the impact of all available resources (total assets) on its operations. I argue that debt ratio represents the more appropriate indicator variable in this study for two reasons. First, industries with volatile cash flows prefer to keep debt ratios down. The petroleum industry, for example, is subject to price volatility and is also a capital-intensive industry. This was illustrated in 2004 when the fracking industry suffered hard times from a combination of high capital investment and plunging energy prices, and again in 2014-2015 from a significant decline in crude oil prices. The price reductions triggered asset write-downs under the "ceiling test", an accounting standard for valuing oil producing assets based current prices to conservatively reflect future revenue potential from both exploration and producing wells. Second, the fallout from this volatility reduces the slack resources that researchers suggest enable CSR investment (J. L. Campbell, 2007; McWilliams & Siegel, 2001; Waddock & Graves, 1997). This relationship suggests that as slack resources are reduced, the firm may reduce certain CSR activities, which may be detected through decoupling.

The debt ratio variable for this study is calculated as in-year ratio of total debt to total assets. As in the cash ratio variable, the use of a ratio over absolute debt amounts standardizes the values, compensating for structural changes to the business, mergers, acquisitions, divestures, and size differences among companies in the sample.

### 4.2.4 Goodwill impairment as an independent variable.

The occurrence of a goodwill impairment may be indicative of risk of competitive threat from market share weakening, arising from incomplete or biased due diligence going into an acquisition, leading to poor post-acquisition performance. By extension, poor due diligence was found to be associated with doubts about management competence (Feng & Lev, 2011; S. Kim & Bay, 2017; Li et al., 2011). The threat of not meeting expectations has been supported as an antecedent to organizational misconduct in prior studies of organizational misconduct (Bhattacharya et al., 2016; Hill, Kelley, Agle, Hitt, & Hoskisson, 1992). The design of this study examines whether these findings may be extended to understanding organizational misconduct related to how companies report their sustainability activities, specifically in the occurrence of selective decoupling.

To operationalize this variable, I extracted annual data on goodwill impairment from the Compustat database. For each of the companies in the sample, I extracted data for “Goodwill Impairment Pre-Tax” for each of the years of the study (2010 to 2015). There were 51 occurrences of a goodwill impairment in the observations. Because goodwill impairment does not occur routinely, I operationalized it with a binary variable, with a value of 0 if there is no goodwill impairment, or 1 to indicate that a charge for goodwill impairment occurred in the reporting period.

### 4.2.5 SRI risk rating as a moderating variable.

The objective of this variable is to test whether SRI performance ratings as compared with members of a company’s peer group moderates the relationships between

the main variables of interest and the dependent variable such that it changes the level of decoupling. Early studies on the impact of ratings provided evidence that higher education institutions responded to business and law school rankings, finding that policy-practice decoupling occurred immediately following the rankings, followed by actions to narrow the gap and suggesting a time lag in the interaction (Espeland & Sauder, 2007; Gioia & Corley, 2002). Work on the impact of rankings was extended to the CSR context, finding that comparisons of individual companies to peer ratings are related to improvements in corporate CSR performance (Sharkey & Bromley, 2015; Slager et al., 2010). Given the inconsistent findings in prior work and the competing logics of isomorphism (to converge toward peers) and strain theory (to avoid negative outcomes), I argue that as firms recognize a gap between their own SRI ratings and those of members of their industry peer group, they may either work to close the gap, evidenced by a decrease in selective decoupling, or they may engage in greater levels of decoupling. This study seeks to advance the discussion with empirical evidence on whether SRI ratings moderate decoupling.

To operationalize this variable, I used Sustainalytics' environmental, social, and governance performance rating ("ESG Score"), the most visible measure of a company's overall sustainability performance. Sustainalytics calculates the rating for each company monthly. Ratings are expressed on a percentage rating scale from 0 to 100 percent, with the higher ratings indicating higher risk for adverse sustainability performance.

For consistency in comparing companies to industry peers, I used Sustainalytics' classifications of companies into their respective peer groups. Table 3 shows the number

of firms in each peer group. There are fifteen (15) peer groups in the sample, ranging in size from 1 company to 45 companies in each group.

To measure the gap in performance of each company relative to the leader in its

**Table 3 - Peer Group Populations**

| Sustainaytics Peer Group | Number of companies |
|---|---|
| Automobiles | 4 |
| Building Products | 5 |
| Chemicals | 23 |
| Construction Materials | 3 |
| Consumer Durables | 10 |
| Diversified Metals | 5 |
| Electrical Equipment | 7 |
| Industrial Conglomerates | 4 |
| Oil & Gas Producers | 33 |
| Paper & Forestry | 1 |
| Precious Metals | 2 |
| Refiners & Pipelines | 7 |
| Steel | 10 |
| Transportation | 18 |
| Utilities | 45 |
| Grand Total | 177 |

peer group, I performed an ordinal ranking of members within each peer group based on their average overall ESG Score for each year of the study. I then calculated the distance of each company's score (the gap) from the top performer in its peer group for each year. Following prior work on the effect of ratings, (Gioia & Corley, 2002; Sharkey & Bromley, 2015), the moderating effect of SRI ratings on decoupling is hypothesized to have a time lag between the year of the rating and when a change would be observed in the dependent variable, decoupling. Following Sharkey and Bromley (2015), I tested a one-year time lag.

### 4.2.6 Control variables

The design of this study is focused on three independent variables of interest: cash flow ratio, debt ratio, and goodwill impairment. Recognizing that many factors affect a company's CSR decisions and performance, and following prior studies of decoupling, the dataset captures additional frequently used control variables. Consistent with control variables in studies that used decoupling as the dependent variable, I included three control oft-used variables, firm size, profitability, and capital intensity (Graafland & Smid, 2019; E.-H. Kim & Lyon, 2015; Marquis et al., 2016; Morales-Raya et al., 2019; Tashman et al., 2019), and created a fourth control variable for the "ceiling test", a condition unique to the petroleum sector included in this dataset. First, firm size can indicate the availability of resources to develop and implement environmental initiatives. Sales and assets are frequently used to measure company size. However, both measures are used as either numerators or denominators in other variables in this study, which presenting multicollinearity risk. Therefore, I measured firm size as the number of employees. Second, the link between firm performance and CSR is well studied, with mixed results. (Margolis & Elfenbein, 2008; McWilliams & Siegel, 2001). Profitability is an indicator of short-term firm financial performance. I argue that profitability provides the immediate resources needed to fund CSR programs and that implementation of programs may change the tendency for greenwashing through decoupling (Delmas & Burbano, 2011; Marquis et al., 2016). I measured profitability using annual data from Compustat for each of companies and years in the study. It is calculated as net income divided net sales. Third, capital intensity is a longer-term measure of firm liquidity

needed to fund the operations of the firm as well as CSR programs. Following studies that used capital intensity as a control variable, I measured capital intensity as total assets divided by net sales. Fourth, within the oil and gas production peer group that makes up over 10% of my sample, there is an accounting requirement to value oil producing assets in line with expected future revenues. Called the "ceiling test", firms in the affected sectors must write-down asset values if market prices fall. Within the 2014-2015 timeframe, I observed sizable asset write-downs arising in the affected sectors, impacting other variables in this study that use asset values in the calculation. To control for the condition, I created a dummy variable to indicate whether a firm is subject to the ceiling test for asset impairment. The variable is a binary measure, coded "0" for no and "1" for yes.

## 4.3 Analysis

The analysis choice for this study is OLS (ordinary least squares) regression to test the data within the boundaries of the hypotheses. OLS regression assumes that all observations in the sample are independent of each other. I argue that a firm's financial indicators and the Sustainalytics scores for any given year are independent from the same measures in any other year. It is important to explain the nature of the data and the choice of analytic approach, given the characteristics of the dataset. The unique dataset for the study was constructed from two secondary data sources. First, data for SRI ratings and the values for the dependent variable, decoupling, came from a Sustainalytics database covering ratings on all 211 indicators over the period from 2010 to 2015. Second, financial data was extracted from the Compustat database. The resulting dataset looks

like panel data or repeated measures (the same variables for 177 companies over 6 years). However, the study design does not hypothesize or test for changes over time as one would in a longitudinal study. A panel analysis approach would assume that a firm's decoupling indicators behavior over the six years of the sample are not independent from one another. Instead, previous year scores on a given variable are assumed to be related to subsequent year scores, contrasted with cross-sectional OLS regression for which analysis assumes individual scores are unrelated.

I analyzed the data using IBM's SPSS 25.0 software and created a series of seven (7) models to test the hypotheses using OLS regression analysis. Models 0, 1, 2, and 3 are regressions on the dependent variable, decoupling. Model 0 includes control variables only, model 1 (H1) includes the control variables and the cash ratio, model 2 (H2) includes the control variables and the debt ratio, and model 3 (H3) includes the control variables and goodwill impairment. Models 4a (H4a), 4b (H4b), and 4c (H4c) test whether the SRI ratings gap to the best peer group performer moderates the relationship between each independent variable and the dependent variable, such that decoupling changes after a one-year lag period between the rating and decoupling. Model 4a includes the control variables, the cash ratio independent variable, the SRI ratings gap moderator variable, and an interaction variable between cash ratio and the moderator. Model 4a includes the control variables, the debt ratio independent variable, the SRI ratings gap moderator variable, and an interaction variable between debt ratio and the moderator. Model 4a includes the control variables, the goodwill impairment independent variable, the SRI ratings gap moderator variable, and an interaction variable between goodwill impairment and the moderator. In all cases, the dependent variable is decoupling.

# CHAPTER 5: RESULTS AND DISCUSSION

## 5.1 Results

Table 4 presents the descriptive statistics and correlations for each measure. Table 5 shows results of VIF testing indicating that multicollinearity is not likely to be an issue in the study, with results in the acceptable range of 1 – 10. Results of <1 or >10 would indicate potential multicollinearity among the variables.

Table 6 presents the results of hypotheses 1, 2, and 3. The analyses show mixed results, with support for the direct effects hypothesis 1 (cash ratio). Hypotheses 2 (debt ratio) and 3 (goodwill impairment) were not supported.

Table 7 presents the results of hypothesis 4a related to the moderating effect of SRI ratings interacting with cash ratio on decoupling after a one-year lag period. Hypothesis is supported. Table 8 presents the results of hypothesis 4b related to the moderating effect of SRI ratings interacting with the debt ratio on decoupling after a one-year lag period. Hypothesis 4b is not supported. Table 9 presents the results of hypothesis 4c related to the moderating effect of SRI ratings interacting with the goodwill impairment ratio on decoupling after a one-year lag period. Hypothesis 4c is supported.

Tables 8, 10, and 12 present the interaction graphs for hypotheses H4a, H4b, and H4c, respectively.

Hypothesis 1 predicted that the cash ratio is be negatively related to decoupling, such that as a company's cash ratio improves, decoupling will decrease. Hypothesis 1 was supported. Cash ratio is negatively related to decoupling (B -5.982, β -0.109, $p < .05$), supporting the predicted decrease in decoupling as the cash ratio increases. To

interpret, this means that for every unit increase in the cash ratio, decoupling decreases by 5.982 units. The model yielded an adjusted R squared of 0.134, indicating that the control variables plus the cash ratio independent variable account for 13.4 percent of the variance observed, a small increase from the 13 percent accounted for by just the control variables. The predictive power of the model (F 33.94, $p < .01$) and was statistically significant.

Hypothesis 2 predicted that the debt ratio is positively related to decoupling, such that as the debt ratio increases, decoupling increases. Hypothesis 2 is not supported. The debt ratio is positively related to decoupling as hypothesized, but the results (B 1.699, β 0.030) were not statistically significant. The overall model yielded an adjusted R squared of .130, indicating that 13 percent of the variance was accounted for by the model, the same as the R squared value with only the control variables, suggesting that the debt ratio variable did not further explain the variance. While the overall predictive power of the model was statistically significant (F 32.67, $p < .01$), the variable of interest was not.

Hypothesis 3 predicted that the occurrence of a goodwill impairment is positively related to decoupling, such that when a goodwill impairment occurs decoupling increases. This hypothesis is not supported. The relationship was found to be in the opposite direction from that hypothesized (B -0.491 β -0.015), a negative relationship, suggesting that an event of goodwill impairment may decrease decoupling. However, the result was not statistically significant. The overall model yielded an adjusted R squared of .129, indicating that 12.9 percent of the variance was accounted for by this regression, slightly less than the R squared value for just the control variables (R squared .130), indicating that the goodwill independent variable did not further explain the variance.

While the overall predictive power of the model was statistically significant (F 32.53, $p < .01$), the goodwill impairment variable of interest was not.

Hypotheses 4a, 4b, and 4c are tests for moderation of the relationships between the three variables of interest and the dependent variable, decoupling. I hypothesized that companies react to the gap in their SRI ratings when compared with the best performer in their peer group such that the relationship between the variables of interest and the dependent variable, coupling, would change. The hypotheses posit a one-year time lag between the year of the rating and its impact on decoupling.

Hypothesis 4a hypothesized that the effect of financial strain (taking the form of a smaller cash ratio) on increased decoupling is moderated by the social responsibility investing (SRI) gap between the focal firm and its peer comparison (sector leader). Hypothesis 4a is supported. Results of the interaction were statistically significant (B-0.449, β -0.112, $p = 0.054$) at the 90% level. The overall model yielded an adjusted R squared of .315, explaining 31.5 percent of the observed variance, an increase over the R squared of model (1) from hypothesis 1, which explained 13.4 percent of the variance without the moderation effect.

Hypothesis 4b hypothesized that the effect of financial strain (taking the form of a larger debt ratio) on increased decoupling is moderated by the social responsibility investing (SRI) gap between the focal firm and its peer comparison (sector leader). Hypothesis 4b is not supported. The interaction effect (B -0.179 β -0.057) was not statistically significant. The overall model yielded an adjusted R squared of .310, explaining 31 percent of the observed variance, an increase over the R squared of model

(2) from hypothesis 2, which explained 13 percent of the variance. The overall predictive ability of the moderation model (F 57.66, $p < .01$) was statistically significant.

Hypothesis 4c hypothesized that the effect of financial strain (taking the form of a goodwill impairment) on increased decoupling is moderated by the social responsibility investing (SRI) gap between the focal firm and its peer comparison (sector leader). Hypothesis 4c is supported. The interaction variable indicates a moderation effect (B-0.310, β -0.127, $p < .01$) and is statistically significant. The overall model yielded an adjusted R squared of .314, explaining 31.4 percent of the observed variance, an increase over the R squared of model (3) from hypothesis 3, which explained 12.9 percent of the variance. The overall predictive ability of the model (F 58.86, $p < .01$) was statistically significant.

## Robustness Check

The dataset for testing contained outliers among the cash ratio and debt ratio observations. Outliers may cause skewing of the data that can affect regression results. To test whether the outliers had a material impact on the results, I performed robustness checks by removing the outliers and running the models again. The results are presented on Table 13 and Table 14. There were no material changes to the results.

Table 4: Descriptive Statistics and Correlations

| | | N | Mean | Std. Deviation | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Decoupling | 1062 | 49.82 | 10.02 | 1 | | | | | | | |
| 2 | Size Employees | 1062 | 23.08 | 50.74 | 0.330 *** | 1 | | | | | | |
| 3 | Profitability | 1062 | 0.03 | 0.37 | 0.063 ** | 0.041 | 1 | | | | | |
| 4 | Capital Intensity | 1062 | 2.42 | 1.68 | -0.068 ** | -0.190 *** | -0.033 | 1 | | | | |
| 5 | Ceiling Test Dummy | 1062 | 0.23 | 0.42 | -0.202 *** | -0.164 *** | -0.175 *** | 0.292 *** | 1 | | | |
| 6 | Cash Ratio | 1062 | 0.22 | 0.18 | -0.172 *** | -0.194 *** | -0.013 | 0.637 *** | 0.555 *** | 1 | | |
| 7 | Debt Ratio | 1062 | 0.33 | 0.18 | 0.005 | -0.039 | -0.443 *** | 0.137 *** | 0.008 | 0.039 | 1 | |
| 8 | Goodwill Impairment | 1062 | 0.10 | 0.30 | -0.001 | 0.049 | -0.117 *** | -0.061 ** | -0.024 | -0.114 *** | 0.054 * | 1 |
| 9 | SRI Ratings Gap - 1 year lag | 885 | 10.29 | 7.34 | 0.464 *** | 0.145 *** | 0.031 | -0.018 | -0.069 ** | -0.064 * | -0.042 | 0.002 |

*** p < .01 level, ** p < .05 level, * p < .10 level

a) Employees in thousands

**Table 5: VIF Test for Multicollinearity Within the Variables of Interest**

| Variable | Unstandardized Coefficients | | Standardized Coefficients | | Collinearity Statistics | |
|---|---|---|---|---|---|---|
| | B | Std. Error | Beta | t | Tolerance | VIF |
| (Constant) | 0.126 *** | 0.029 | | 4.287 | | |
| Cash Ratio | -0.211 *** | 0.058 | -0.121 | -3.617 | 0.994 | 1.006 |
| Debt Ratio | 0.097 * | 0.056 | 0.058 | 1.724 | 0.997 | 1.004 |
| SRI Ratings Gap 1-year lag | 0.000 | 0.001 | -0.004 | -0.111 | 0.994 | 1.006 |

a. Dependent Variable: IV_GW_Binary

*** p < .01 level, ** p < .05 level, * p < .10 level

Note: VIF values < 1 or > 10 indicate risk of multicollinearity

**Table 5: Regression Coefficients for Hypotheses 1, 2, and 3**
**Direct Effects of Variables of Interest on Decoupling**

| Variable | Model | | | |
|---|---|---|---|---|
| | (0) | (1) | (2) | (3) |
| | Null | H1 | H2 | H3 |
| Constant | 48.695 *** | 48.989 *** | 48.178 *** | 48.756 *** |
| | (0.551) | (0.562) | (0.780) | (0.564) |
| Size (Employees) | 0.061 *** | 0.061 *** | 0.061 *** | 0.061 *** |
| | (0.006) | (0.006) | (0.006) | (0.006) |
| Profitability | 0.658 | 0.886 | 1.034 | 0.608 |
| | (0.784) | (0.787) | (0.880) | (0.790) |
| Capital Intensity | 0.224 | 0.557 ** | 0.196 | 0.220 |
| | (0.181) | (0.224) | (0.183) | (0.181) |
| Ceiling Test | -3.769 *** | -2.693 *** | -3.682 *** | -3.778 *** |
| | (0.732) | (0.846) | (0.738) | (0.733) |
| Cash Ratio | | -5.982 ** | | |
| | | (2.375) | | |
| Debt Ratio | | | 1.699 | |
| | | | (1.811) | |
| Goodwill Impairment | | | | -0.491 |
| | | | | (0.962) |
| Adj R Square | 0.130 | 0.134 | 0.130 | 0.129 |
| F Statistic | 40.628 *** | 33.935 *** | 32.674 *** | 32.531 *** |
| n | 1062 | 1062 | 1062 | 1062 |
| N | 1548 | 1548 | 1548 | 1548 |

*** p < .01 level, ** p < .05 level, * p < .10 level
Note: Unstandardized coefficients
a) Standard errors are shown in parentheses
b) N reflects geographical boundary of U.S. companies for sampling frame

**Table 7: Regression Effects for Hypothesis 4a**
**Effect of SRI Ratings Gap Moderator with Cash Ratio Variable: 1-Year Lag**
*(Comparison to H1 unmoderated model)*

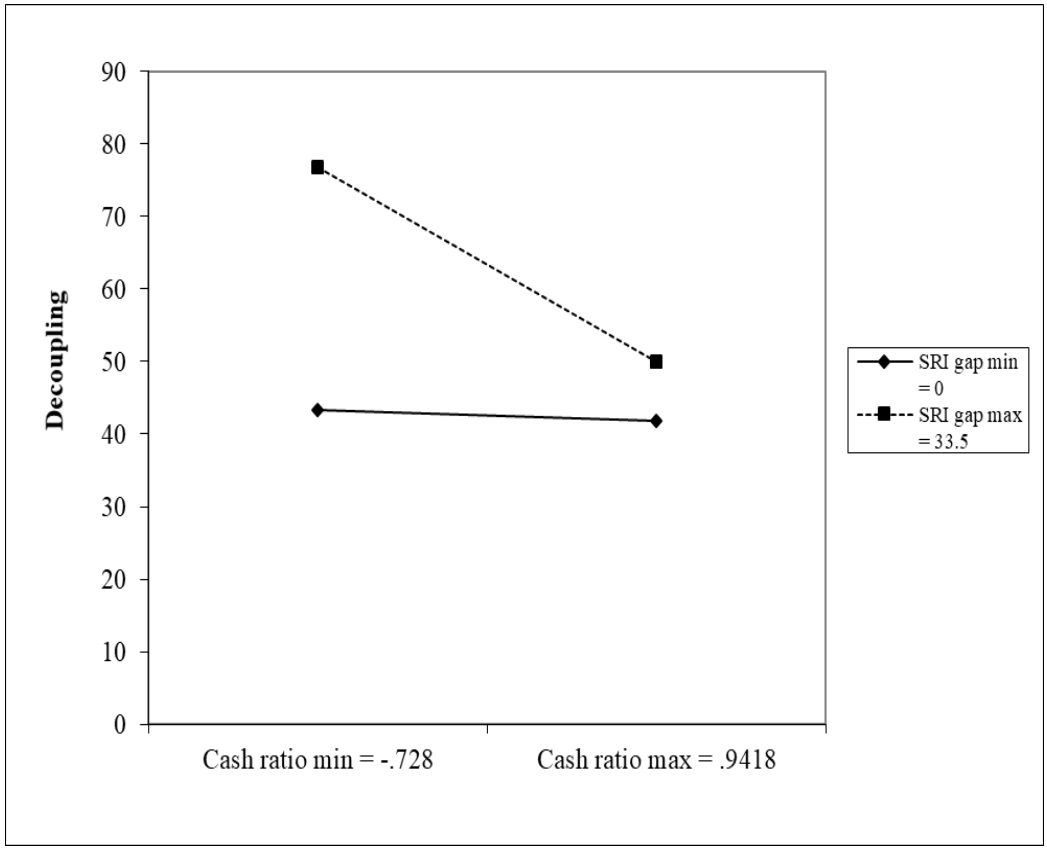
| Variable | Model | | | |
|---|---|---|---|---|
| | moderated H4a | | unmoderated H1 | |
| Constant | 42.659 | *** | 48.989 | *** |
| | (0.829) | | (0.562) | |
| Size (Employees) | 0.051 | *** | 0.061 | *** |
| | (0.006) | | (0.006) | |
| Profitability | 0.505 | | 0.886 | |
| | (0.728) | | (0.787) | |
| Capital Intensity | 0.482 | ** | 0.557 | ** |
| | (0.221) | | (0.224) | |
| Ceiling Test | -2.823 | *** | -2.693 | *** |
| | (0.842) | | (0.846) | |
| Cash Ratio | -0.946 | | -5.982 | ** |
| | (3.192) | | (2.375) | |
| SRI Rating 1 Yr Lag | 0.670 | *** | | |
| | (0.064) | | | |
| Cash Ratio x SRI Lag | -0.449 | * | | |
| | (0.233) | | | |
| Adj R Square | 0.315 | | 0.130 | |
| Δ in R Square | -0.445 | | | |
| F Statistic | 59.077 | *** | 40.628 | *** |
| n | 885 | | 1062 | |
| N | 1548 | | 1548 | |

*** p < .01 level, ** p < .05 level, * p < .10 level

Note: Unstandardized coefficients

a) Standard errors are shown in parentheses
b) N reflects geographical boundary of U.S. companies for sampling frame

**Table 8: Cash Ratio 2-way interaction graph**




*Source: www.jeremydawson.co.uk/slopes.htm*

**Table 9: Regression Effects for Hypothesis 4b**
**Effect of SRI Ratings Gap Moderator with Debt Ratio Variable: 1-Year Lag**
*(Comparison to H2 unmoderated model)*

| Variable | Model | |
|---|---|---|
| | moderated H4b | unmoderated H2 |
| Constant | 42.291 *** | 48.178 *** |
| | (1.028) | (0.780) |
| Size (Employees) | 0.052 *** | 0.061 *** |
| | (0.006) | (0.006) |
| Profitability | 0.818 | 1.034 |
| | (0.821) | (0.880) |
| Capital Intensity | 0.175 | 0.196 |
| | (0.182) | (0.183) |
| Ceiling Test | -3.492 *** | -3.682 *** |
| | (0.736) | (0.738) |
| Debt Ratio | 2.839 | 1.699 |
| | (2.259) | (1.811) |
| SRI Rating 1 Yr Lag | 0.640 *** | |
| | (0.076) | |
| Debt Ratio x SRI Lag | -0.179 | |
| | (0.187) | |
| Adj R Square | 0.310 | 0.130 |
| Δ in R Square | 0.180 | |
| F Statistic | 57.663 *** | 32.674 *** |
| n | 885 | 885 |
| N | 1584 | 1584 |

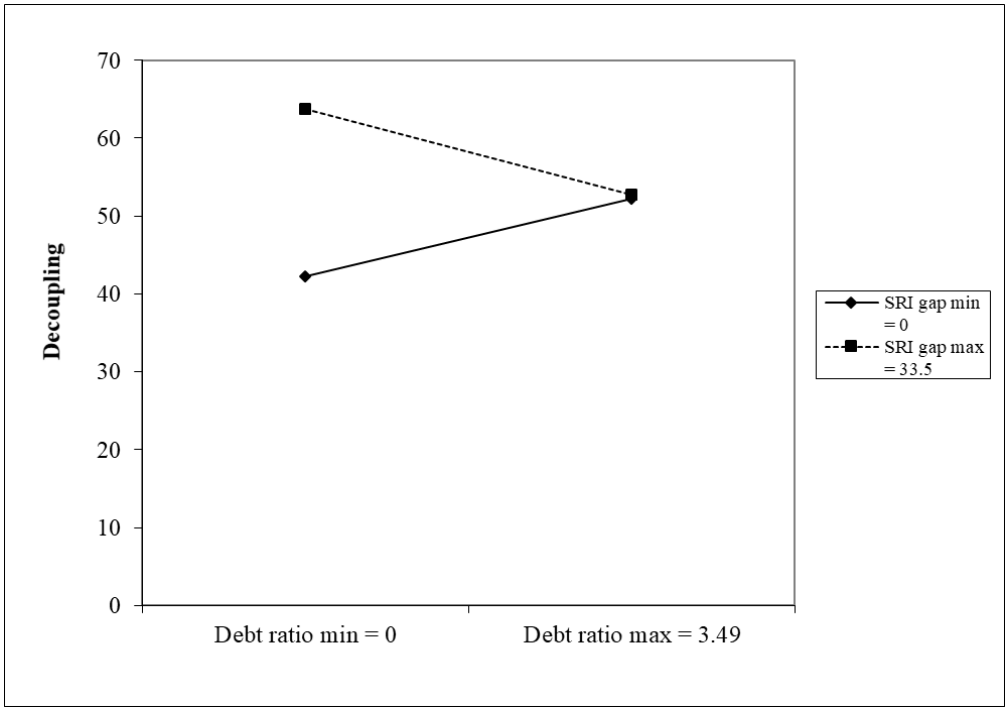
*** p < .01 level, ** p < .05 level, * p < .10 level

Note: Unstandardized coefficients

a) Standard errors are shown in parentheses

b) N reflects geographical boundary of U.S. companies for sampling frame

**Table 10**: **Debt Ratio 2-way interaction graph**




*Source: www.jeremydawson.co.uk/slopes.htm*

**Table 11: Regression Effects for Hypothesis 4c**
**Effect of SRI Ratings Gap Moderator with Goodwill Impairment: 1-Year Lag**
*(Comparison to H3 unmoderated model)*

| Variable | Model | | | |
|---|---|---|---|---|
| | moderated H4c | | unmoderated H3 | |
| Constant | 42.895 | *** | 48.756 | *** |
| | (0.696) | | (0.564) | |
| Size (Employees) | 0.053 | *** | 0.061 | *** |
| | (0.006) | | (0.006) | |
| Profitability | 0.531 | | 0.608 | |
| | (0.728) | | (0.790) | |
| Capital Intensity | 0.168 | | 0.220 | |
| | (0.180) | | (0.181) | |
| Ceiling Test | -3.476 | *** | -3.778 | *** |
| | (0.729) | | (0.733) | |
| Goodwill Impairment | 3.018 | ** | -0.491 | |
| | (1.495) | | (0.962) | |
| SRI Rating 1 Yr Lag | 0.616 | *** | | |
| | (0.042) | | | |
| Goodwill Impairment x SRI La | -0.310 | *** | | |
| | (0.114) | | | |
| Adj R Square | 0.314 | | 0.130 | |
| Δ in R Square | 0.184 | | | |
| F Statistic | 58.861 | *** | 40.628 | *** |
| n | 885 | | 885 | |
| N | 1548 | | 1548 | |

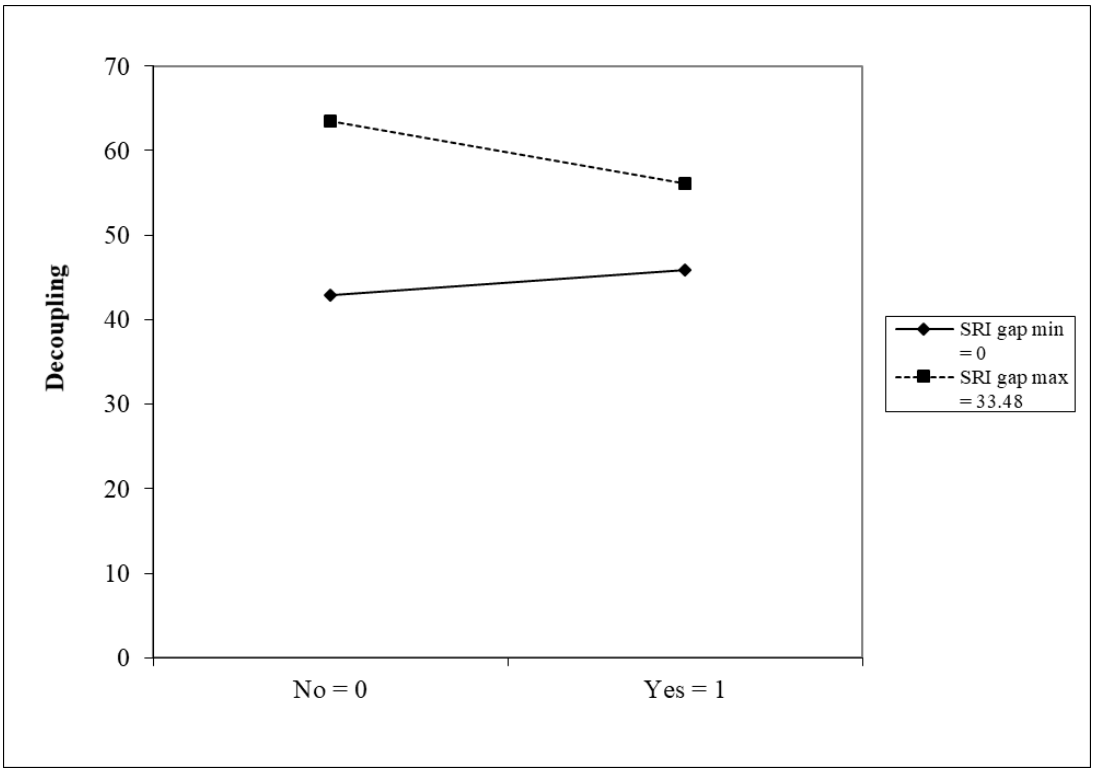
*** p < .01 level, ** p < .05 level, * p < .10 level

Note: Unstandardized coefficients

a) Standard errors are shown in parentheses

b) N reflects geographical boundary of U.S. companies for sampling frame

**Table 12**: **Goodwill Impairment 2-way interaction graph**




*Source: www.jeremydawson.co.uk/slopes.htm*

**Table 13: Robustness Check - Outliers Removed**
**Regression coefficients for Hypotheses 1, 2, and 3**
**Direct Effects of Variables of Interest on Decoupling**

| Variable | Model | | | |
|---|---|---|---|---|
| | (0) Null | (1) H1-R | (2) H2-R | (3) H3-R |
| Constant | 48.704 *** | 48.965 *** | 47.970 *** | 48.765 *** |
| | (0.552) | (0.564) | (0.831) | (0.565) |
| Size (Employees) | 0.061 *** | 0.061 *** | 0.061 *** | 0.061 *** |
| | (0.006) | (0.006) | (0.006) | (0.006) |
| Profitability | 0.613 | 0.865 | 1.013 | 0.558 |
| | (0.813) | (0.820) | (0.880) | (0.820) |
| Capital Intensity | 0.221 | 0.528 ** | 0.175 | 0.217 |
| | (0.181) | (0.229) | (0.185) | (0.181) |
| Ceiling Test | -3.817 *** | -2.811 *** | -3.678 *** | -3.825 *** |
| | (0.733) | (0.864) | (0.742) | (0.734) |
| Cash Ratio | | -5.472 ** | | |
| | | (2.499) | | |
| Debt Ratio | | | 2.481 | |
| | | | (2.097) | |
| Goodwill Impairment | | | | 0.490 |
| | | | | (0.964) |
| Adj R Square | 0.130 | 0.133 | 0.131 | 0.130 |
| F Statistic | 40.672 *** | 33.613 *** | 32.829 *** | 32.566 *** |
| n | 1060 | 1060 | 1060 | 1060 |
| N | 1548 | 1548 | 1548 | 1548 |

*** p < .01 level, ** p < .05 level, * p < .10 level
Note: Unstandardized coefficients

a) Standard errors are shown in parentheses

b) N reflects geographical boundary of U.S. companies for sampling frame

**Table 14: Robustness Check - Outliers Removed**
**Regression coefficients for Hypotheses 4a, 4b, 4c**
**Direct Effects of Variables of Interest on Decoupling**

| Variable | (1) H4a-R | | (2) H4b-R | | (3) H4c-R | |
|---|---|---|---|---|---|---|
| Constant | 42.665 | *** | 41.711 | *** | 42.896 | *** |
| | (0.831) | | (1.222) | | (0.698) | |
| Size (Employees) | 0.051 | *** | 0.052 | *** | 0.053 | *** |
| | (0.006) | | (0.006) | | (0.006) | |
| Profitability | 0.553 | | 0.819 | | 0.581 | |
| | (0.760) | | (0.821) | | (0.756) | |
| Capital Intensity | 0.482 | ** | 0.153 | | 0.170 | |
| | (0.228) | | (0.183) | | (0.180) | |
| Ceiling Test | -2.832 | *** | -3.472 | *** | -3.524 | *** |
| | (0.861) | | (0.741) | | (0.731) | |
| SRI ratings gap 1-year lag | 0.668 | *** | 0.674 | *** | 0.615 | *** |
| | (0.065) | | (0.085) | | (0.042) | |
| Cash Ratio | -0.997 | ** | | | | |
| | (3.252) | | | | | |
| Cash ratio x SRI ratings lag | -0.441 | * | | | | |
| | (0.065) | | | | | |
| Debt Ratio | | | 4.721 | | | |
| | | | (3.086) | | | |
| Debt ratio x SRI ratings lag | | | -0.282 | | | |
| | | | (0.216) | | | |
| Goodwill Impairment | | | | | 3.030 | ** |
| | | | | | (1.497) | |
| GW Impairment x SRI ratings lag | | | | | -0.309 | *** |
| | | | | | (0.114) | |
| Adj R Square | 0.314 | | 0.310 | | 0.314 | |
| F Statistic | 58.633 | *** | 57.636 | *** | 58.659 | *** |
| n | 1060 | | 1060 | | 1060 | |
| N | 1548 | | 1548 | | 1548 | |

*** p < .01 level, ** p < .05 level, * p < .10 level
Note: Unstandardized coefficients
a) Standard errors are shown in parentheses
b) N reflects geographical boundary of U.S. companies for sampling frame

## 5.2 Discussion

This study seeks to understand the circumstances under which companies engage in decoupling in corporate environmental sustainability reporting. Neo-institutional theory and its related theory, institutional isomorphism, can explain why a firm's apparent commitment to environment responsibility may appear consistent with industry competitors and stakeholder expectations, but it cannot explain why their communications, specifically, environmental sustainability reports, may not accurately reflect the company's sustainability efforts and progress. At its essence, this dissertation is about organizational misconduct and whether organizational strain helps to explain why apparently reputable corporations engage in the misconduct of decoupling for greenwashing in corporate environmental reporting. Misconduct is not well developed as a theory and is primarily framed by researchers through the lens of normative business ethics. Therefore, I turned to additional theoretical guidance from diverse bodies of literature. I drew from sociology and criminology to add general strain theory (GST), the underlying theoretical basis for organizational misconduct's driver, organizational strain. GST is found in studies of criminology and financial fraud, and is the theoretical foundation underlying financial stress, a construct found in the accounting literature and parallel to organizational strain. Integrating neo-institutional theory, institutional isomorphism, and general strain theory, I created a multi-theory model for testing. The work focuses on firms with high environmental impact, examining indicators of financial strain to predict decoupling in corporate environmental reporting, and whether environmental performance ratings exert a moderator effect on decoupling in the presence of organizational strain. The findings allowed me to discover predictive power

for decoupling in the cash ratio, and some support for SRI ratings moderating decoupling. The remainder of this chapter will elaborate on the findings, discuss implications on underlying theories, and highlight contributions to emergent literatures on organizational strain, decoupling, and greenwashing in corporate environmental reporting.

### 5.2.1 Theoretical contributions

Hypothesis 1 predicted that the cash ratio would be negatively related to decoupling, suggesting that as cash ratios improve, decoupling decreases. H1 is founded on the theory that strain, in this case, financial stress, is related to misconduct. Cash ratio has been studied, primarily in the financial literature, as an early predictor of bankruptcy and misconduct in the form of misstatement of financial results, with mixed findings and ongoing debate. The results of this study support the hypothesis, suggesting that a deteriorating cash position is related to increasing levels of decoupling, consistent with prior work in finance finding support for cash ratio as a predictor of financial strain. When compared to the management literature, the finding may be well-explained and consistent with CSR studies grounded in economic theory linking slack resources to the availability of funds needed for investment in environmental activities, reducing the motivation to engage in symbolic representations to maintain legitimacy (Kang et al., 2016; Mattingly & Olsen, 2018). Contrasted to prior studies grounded in economic theory and testing cash ratio as a predictor variable for business failure, in this study the same cash ratio framed in strain theory was found to predict selective decoupling in environmental reporting. I contribute to the literature by providing empirical evidence that a measure typically applied to economic theory can be extended to strain theory to

begin to explain when and why corporations may engage in decoupling. I also contribute to the ongoing debate whether cash ratio is an early predictor of organizational strain, finding support in a context extending beyond financial outcomes.

Hypothesis 2 predicted that the debt ratio was positively related to decoupling and was not supported. Results showed regression coefficients for the relationship between the debt ratio and decoupling directionally consistent with that hypothesized, but not statistically significant. I interpret the result to suggest that while the debt ratio as an early predictor of decoupling is not supported in this study, the direction of the relationship is consistent with the theoretical foundation of financial stress. This would further suggest that debt should not necessarily be ruled out as a predictor of decoupling and that further research might be of value exploring alternative approaches.

Hypothesis 3 of my integrated model tested goodwill impairment as an early predictor of decoupling, and posited that the occurrence of a goodwill impairment event would be positively related to decoupling. This hypothesis was not supported. Surprisingly, the relationship was in the opposite direction from that hypothesized suggesting that goodwill impairment was negatively related to decoupling, inconsistent with finance literature suggesting that goodwill impairment is an early indicator of future profit risk (Li et al., 2011). However, the literature on the causes and consequences of goodwill impairment is sparse and offers limited guidance for interpreting results. In thinking through this finding, three possible interpretations emerged. First, goodwill impairment is an accounting outcome. It is not related to the operational side of the business and it’s possible that because the accounting treatment of goodwill impairment is as a special item and not part of operating profit, the operational side of the business

responsible for environmental activities is not impacted in the short term by a goodwill impairment. This could bear further research by looking at the same indicator with a longer time lag because in the longer term, depending on the size of the impairment, the overall value of the business declines, putting pressure on management to deliver results for stakeholders, an outcome framed by organizational strain. Second, the literature around goodwill impairment suggested that its occurrence is often triggered by companies overpaying for acquisitions, with an implication of doubt about management's strategy or competence in M&A activities (Feng & Lev, 2011). Future research may shift to examining goodwill impairment through the lens of corporate reputation. Is it possible that a firm would increase its environmental activities and decrease decoupling to counteract the negative implications of goodwill impairment on firm reputation? Third, a possible interpretation is that there was not enough data in the sample to produce results (51 occurrences out of 1062 total observations). It is also possible that lack of granularity by using a binary measure was incapable of producing enough variability for meaningful statistical analysis. Future research might examine a sample of only firms that had goodwill impairment. Results could provide insight into whether strain theory is supported as the theoretical foundation for testing goodwill impairment as a predictor.

Hypotheses 4a, 4b, and 4c tested for moderation between the independent variables and their relationship with decoupling using the SRI ratings gap between members of peer group and the peer group leader as the moderator variable. This is an extension of prior work in which SRI ratings were modeled and tested as a direct effect, suggesting ratings as a driver to improving firm environmental performance. The moderation model in this study is a combination of neo-institutional theory and strain

theory. The testing design reflects the fundamental premise of isomorphism that, in the short term, firms may engage in decoupling to symbolically comply with industry norms. Integrating strain theory tests whether pressures arising from the gap in SRI ratings, suggesting organizational strain, may compel the firm to change its environmental performance, as measured by a change in the level of decoupling. The mixed findings suggest an SRI ratings interaction effect with cash ratio and goodwill impairment (although in opposite directions), but not with debt. Interestingly, the interaction effect with debt reversed the direction of the unmoderated debt ratio relationship with decoupling from a positive to a negative relationship, although the result was not statistically significant. The conflicting results offered insight into the existence of a moderating effect from ratings but failed to reconcile whether organizational strain or isomorphism had a greater impact. I contribute to the literature by testing SRI ratings as a moderator to decoupling, framed in the competing logics of institutional isomorphism and organizational strain.

Finally, this study answered the call to integrate theories from across disciplines to explain why and when greenwashing may occur. The work offers broader insights into divergent views on the ability of the cash ratio to predict misconduct, integrating economic and strain theory. My testing suggests that SRI ratings have a moderation effect on decoupling when interacting with variables indicating strain, however, failed to uncover a consistent pattern in the interaction effect, offering opportunity for future research. Overall, this work extends our understanding of organizational strain as a driver of corporate misconduct, specifically why and when companies engage in greenwashing through decoupling.

### 5.2.2 Limitations and future research

As is the case with all empirical studies, the work in this dissertation has limitations. Decoupling as a variable is difficult to measure and there is no established scale for it. Prior studies of decoupling related to environmental activity or reporting designed a decoupling measure specific to context of the testing design. Following that, I chose to use the Sustainalytics E Score, as a composite measure of decoupling. The E Score is a composite of 68 individual indicators, with indicators suggesting decoupling along multiple dimensions, including the existence and quality of environmental policy, programs, planning, and execution. Reviewers may argue that the composite measure is too broad. There are other viable approaches to measuring decoupling include creating a scale using only the most relevant measures, or using qualitative approaches including content analysis that may employ manual or machine-enabled techniques. Using Sustainalytics data as the source of the measure may also be a limitation of the study due to the documented differences among ratings providers. Future studies may choose to incorporate ratings from more than one agency.

This study used previously identified indicators of financial stress and, by extension, organizational strain as the variables of interest, testing them directly as predictors of decoupling. It is a limitation of this study that organizational strain as a construct lacks a validated scale with a broader range of indicators. The body of literature and empirical work examining organizational strain as a construct is surprisingly sparse. This offers future research opportunities to extend the work and build a more robust explanation of how and why organizational strain may help to explain organizational misconduct. The results of this study offer interesting future research opportunities to test

additional financial indicators, or alternative models. The model for this study tested the impact of individual financial indicators directly on decoupling, but this was a compromise approach. The theoretical model could have been structured to test the individual variables as indicators of a latent variable, organizational strain, using a PLS-SEM analytical approach. Future researchers could contribute toward increasing our understanding of the mechanics of organizational strain by developing an instrument to measure the construct.

Selection of the specific indicators I chose to predict decoupling may be a limitation of the study. There were many indicators appearing in the literature related to prediction of financial stress and organizational strain including both financial and non-financial measures. Future studies can build on this work by selecting from a broad range of non-financial indicators, including leadership change or style, merger and acquisition activity (M&A), the impact of restructuring, and a wider range of well-tested indicators of financial stress. The financial data used in this study has limitations. While every effort was made to ensure comparability of the data, certain industry sectors such as chemicals, and utilities, had a large amount of M&A activity within the testing timeframe. It is impossible to know whether the M&A activity constituted an omitted variable. Future testing design may choose to include M&A activity as a control variable. The financial data had the additional limitation that not all data was normally distributed. Future studies designs could standardize or transform the data in preparation for analysis. In this study, I chose two oft-used financial ratio calculations to operationalize the cash and debt measures. Future studies can use alternative approaches to the same measures, such expressing the data as a percent change to prior year, binning the data to a normal

distribution, or transforming the data as a logarithm. It is a limitation that this study tested a one-year moderation lag; future research might use a longer lag time or test the data longitudinally to see how isomorphism and strain develop and interact over time.

The geographic boundary condition of using companies designated by Sustainalytics as “United States” is a limitation to this study and to generalizability of the findings. Regulatory or cultural differences among countries affect decoupling behavior (Jamali et al., 2017; Marquis & Qian, 2014). Future researchers may leverage the global reach of ratings data provided by firms such as Sustainalytics, to examine decoupling on a global level, examining the roles of the regulatory environment, cultural norms, different social structures such as individualism versus collectivism, or the impact of political influences. Global analysis by sector and between sector differences also offer interesting future research opportunities.

## 5.3 Conclusion

This study is a first step toward understanding whether early indicators of organizational strain may explain why and when decoupling occurs in corporate environmental sustainability reporting. The multi-theory model provides richer insight and contributes to the literature by increasing our understanding under what conditions decoupling may occur. The findings of this dissertation offer fruitful paths for future research by academics to advance the literature on corporate misconduct, organizational strain, and selective decoupling. The persistence of selective decoupling and greenwashing violate the trust of customers, stakeholders, investors, and society-at-large. Time is running out for further debate over trade-offs between making money under a

stakeholder-dominant theory, or the imperative for corporations to take responsibility for environmental restoration and protection under stewardship theorist principles. While this is a single study and practical management implications are just emerging, the findings may begin to suggest that organizations suffering from financial stress may need to recognize an internal risk to environmental efforts, and take preventive steps to avoid selective decoupling and greenwashing in corporate environmental reporting that may undermine stakeholder confidence and potentially exacerbate the financial condition.

This dissertation suggests that institutions and organizations acting as social control agents, such as ratings firms, not only provide a service to their direct clients, but may have an indirect positive impact on the environmental performance of the firms they rate. I build on the work of other scholars and argue that integrating theory across disciplines provides the framework to accelerate and amplify our understanding of why corporate misconduct occurs in environmental sustainability activities, in this case, deceptive reporting. By building our understanding within academia, and rolling it out to management practitioners, we contribute to the mission that Gro Harlem Brundtland so clearly defined.

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**APPENDIX A**: Definitions of Sustainalytics Environmental Indicators

| Topic | Category | Indicator Name | Indicator Number | Description |
|---|---|---|---|---|
| Operations | Preparedness | Environmental Policy | E.1.1 | This indicator provides an assessment of the quality of the company's environmental policy. |
| Operations | Disclosure | Environmental Reporting | E.1.1.1 | This indicator provides an assessment of the overall quality of environmental data published by a company and of whether there is adequate disclosure on key performance indicators. It is only used for sectors that have a high environmental impact. |
| Operations | Quantitative Performance | Carbon Intensity Trend | E.1.10 | This indicator provides an assessment of the company's carbon intensity trend (t.CO2eq./USD m. revenues) over time. Currently, the 2012 data is compared to the average of the previous 3 years (2011-2009). |
| Operations | Quantitative Performance | Renewable Energy Use | E.1.11 | This indicator provides an assessment of the company's renewable energy consumption. |
| Operations | | Operations Related Controversies or Incidents | E.1.12 | |
| Operations | Preparedness | Environmental Management System | E.1.2 | This indicator provides an assessment of the quality and comprehensiveness of a company's Environmental Management System. |
| Operations | Preparedness | Biodiversity Programmes | E.1.2.1 | This indicator provides an assessment of the quality of programmes to protect biodiversity. |
| Operations | Preparedness | Biodiversity Policy | E.1.2.1.1 | This indicator provides an assessment of the quality of the policy on biodiversity |
| Operations | Preparedness | Site Closure & Rehabilitation | E.1.2.2 | This indicator provides an assessment of the guidelines and reporting on the closure and rehabilitation of sites. |

**APPENDIX A**: Definitions of Sustainalytics Environmental Indicators (continued)

| Topic | Category | Indicator Name | Indicator Number | Description |
|---|---|---|---|---|
| Operations | Preparedness | Sustainability Impact Assessments | E.1.2.3 | This indicator provides an assessment of whether the company conducts environmental and social impact assessments before projects are started, as well as of the quality of such assessments and related reporting. |
| Operations | Disclosure | Oil Spill Disclosure & Performance | E.1.2.4 | This indicator provides an assessment of the company's oil spill reporting and performance. |
| Operations | Preparedness | Cyanide Management | E.1.2.5 | This indicator assesses the strength of a company's initiatives to store, transport, use and dispose of cyanide in a way that is safe for the environment, workers and local communities. Cyanide, which is highly toxic to humans and wildlife, is commonly used in gold mining as a reagent to separate the metal from the ore. |
| Operations | Quantitative Performance | Waste Intensity | E.1.2.6 | This indicator provides an assessment of the company's external cost of waste-related impacts. |
| Operations | Preparedness | Solid Waste Management | E.1.2.6.1 | This indicator assesses the strength of a company's initiatives to manage and reduce solid waste generated through its own manufacturing process or during the provision of services. It does not address wastewater or mineral waste management, or product end-of-life management, which are assessed under different indicators. |

**APPENDIX A**: Definitions of Sustainalytics Environmental Indicators (continued)

| Topic | Category | Indicator Name | Indicator Number | Description |
|---|---|---|---|---|
| Operations | Preparedness | Mineral Waste Management | E.1.2.6.2 | This indicator assesses the strength of the company's initiatives to manage the risk associated with mineral waste, i.e. tailings, waste rock and overburden. The indicator focuses particularly on tailings because they can pose significant hazards to the environment and local communities due to their large volume and physical and chemical characteristics. |
| Operations | Preparedness | Effluent Management | E.1.2.6.3 | This indicator assesses the strength of a company's initiatives to treat effluent generated through its production process prior to release to the environment or to reduce the amount of effluents generated. |
| Operations | Preparedness | Offshore Well Management | E.1.2.6.4 | This indicator assesses the strength of an oil and gas producer's initiatives to manage the environmental risks associated with its deep-water drilling operations. |
| Operations | Preparedness | Radioactive Waste Management | E.1.2.6.5 | This indicator assesses the strength of a company's programme to manage the environmental risks associated with the storage, transportation and disposal of low - and medium level radioactive waste generated by nuclear power plants. High-level radioactive waste is not considered since it is highly regulated by governments and usually handled by third parties. |

**APPENDIX A**: Definitions of Sustainalytics Environmental Indicators (continued)

| Topic | Category | Indicator Name | Indicator Number | Description |
|---|---|---|---|---|
| Operations | Quantitative Performance | Water Intensity | E.1.2.7 | This indicator provides an assessment of the company's external cost of water-related impacts. |
| Operations | Preparedness | Water Risk Management | E.1.2.7.1 | This indicator assesses the strength of the company's initiatives to measure, disclose and manage the physical, operational, regulatory and/or reputational risks posed by water scarcity. The indicator does not cover the initiatives related to a company's reduction in water use (E.1.3.4 Water Management Programme), or initiatives to manage releases to water (Effluent Management). |
| Operations | Quantitative Performance | Forest Certifications | E.1.2.8 | This indicator provides an assessment of the extent that forests, which are managed by the company, are FSC certified or certified to other schemes. |
| Operations | Preparedness | EMS Certification | E.1.3 | This indicator provides an assessment of whether the company's Environmental Management System has received external certification (i.e. according to the ISO 14001 standard). |
| Operations | Preparedness | Emergency Response Programme | E.1.3.1 | This indicator assesses the strength of the company's programme to prepare for and respond to emergencies related to the use, transportation, production or disposal of hazardous substances (i.e. substances that are flammable, reactive, corrosive, explosive or toxic). |
| Operations | Preparedness | Hazardous Waste Management | E.1.3.2 | This indicator provides an assessment of the quality of programmes to reduce hazardous waste generation. |

**APPENDIX A**: Definitions of Sustainalytics Environmental Indicators (continued)

| Topic | Category | Indicator Name | Indicator Number | Description |
|---|---|---|---|---|
| Operations | Preparedness | Air Emissions Programmes | E.1.3.3 | This indicator provides an assessment of the quality of a company's programmes to reduce air emissions. |
| Operations | Preparedness | Water Management Programmes | E.1.3.4 | This indicator provides an assessment of the quality of programmes to reduce water use. |
| Operations | Preparedness | Other Environmental Programmes | E.1.3.5 | This indicator provides an assessment of specific environmental programmes and targets that address industry specific issues. |
| Operations | Quantitative Performance | Environmental Fines & Penalties | E.1.4 | This indicator denotes whether the company has received environmental fines or non-monetary sanctions in the last three years. |
| Operations | Disclosure | CDP Participation | E.1.5 | This indicator provides an assessment of whether the company participates in the Carbon Disclose Project (CDP). |
| Operations | Disclosure | Scope of GHG Reporting | E.1.6 | This indicator focuses on corporate reporting on GHG emissions. |
| Operations | Preparedness | GHG Risk Management | E.1.6.1 | This indicator assesses the strength of a company's initiatives to measure, disclose and manage the regulatory, market and reputational risks posed by climate change. The indicator does not address the risks related to physical climate change (i.e. extreme weather conditions, such as storms, floods, droughts) which are covered under E.1.6.2 Physical Climate Risk Management. |

**APPENDIX A**: Definitions of Sustainalytics Environmental Indicators (continued)

| Topic | Category | Indicator Name | Indicator Number | Description |
|---|---|---|---|---|
| Operations | Preparedness | Physical Climate Risk Management | E.1.6.2 | This indicator assesses the strength of a company's initiatives to measure, disclose and manage the physical risks posed by climate change (i.e. extreme weather conditions, such as storms, floods, droughts). The indicator does not address the risks related to regulatory, market and reputational business risks posed by climate change, which are covered under E.1.6.1 GHG Risk Management. |
| Operations | Preparedness | GHG Reduction Programmes | E.1.7 | This indicator provides an assessment of whether the company has taken initiatives to reduce its GHG emissions from sources that are owned or controlled by the company |
| Operations | Preparedness | Green Logistics Programmes | E.1.7.1 | This indicator provides an assessment of the quality of a company's programmes to improve the environmental performance of its own logistics and fleet management. |
| Operations | Preparedness | HCFCs Phase Out | E.1.7.2 | This indicator provides an assessment of the quality of programmes to phase out CFCs and HCFCs in refrigeration equipment. |
| Operations | Preparedness | Renewable Energy Programmes | E.1.8 | This indicator provides an assessment of whether the company has taken initiatives to increase the use of renewable energy. |

**APPENDIX A**: Definitions of Sustainalytics Environmental Indicators (continued)

| Topic | Category | Indicator Name | Indicator Number | Description |
|---|---|---|---|---|
| Operations | Quantitative Performance | Carbon Intensity | E.1.9 | This indicator provides an assessment of the carbon intensity of a company relative to its peers. The carbon intensity of a company is calculated by dividing the annual CO2 eq emissions of a company by annual revenues (t.CO2eq./USD m. revenues). All the revenue data is taken from Capital IQ. |
| Contractors & Supply Chain | Preparedness | Green Procurement Policy | E.2.1 | This indicator provides an assessment of the quality of a company's green procurement policy. |
| Contractors & Supply Chain | Preparedness | Supplier Environmental Programmes | E.2.1.1 | This indicator provides an assessment of whether the company has any programmes to improve the environmental performance of its suppliers. |
| Contractors & Supply Chain | Preparedness | Food Retail Initiatives | E.2.1.10 | This indicator provides an assessment of whether the company is a member of international food retail initiatives. |
| Contractors & Supply Chain | Preparedness | Shipbreaking Programme | E.2.1.11 | This indicator assesses the strength of the company's initiatives to manage the environmental and safety risks associated with the dismantling of vessels at end of their life, an activity largely conducted by suppliers. |
| Contractors & Supply Chain | Preparedness | Supplier Environmental Certifications | E.2.1.2 | This indicator provides an assessment of whether a company's (main) suppliers have an Environmental Management System that has received external certification (i.e. according to the ISO 14001 standard). |

**APPENDIX A**: Definitions of Sustainalytics Environmental Indicators (continued)

| Topic | Category | Indicator Name | Indicator Number | Description |
|---|---|---|---|---|
| Contractors & Supply Chain | Preparedness | Sustainable Agriculture Programmes | E.2.1.3 | This indicator provides an assessment of the quality of programmes to stimulate more sustainable agriculture. |
| Contractors & Supply Chain | Preparedness | Sustainable Aquaculture Programmes | E.2.1.4 | This indicator provides an assessment of the quality of programmes to stimulate more sustainable aquaculture and fishery management. |
| Contractors & Supply Chain | Preparedness | Food & Beverage Sustainability Initiatives | E.2.1.5 | This indicator provides an assessment of whether the company is a member of sustainability related industry initiatives. |
| Contractors & Supply Chain | Preparedness | Green Outsourced Logistics Programmes | E.2.1.6 | This indicator provides an assessment of the quality of a company's programmes to reduce GHGs from outsourced logistic services. |
| Contractors & Supply Chain | Quantitative Performance | Recycled Material Use | E.2.1.7 | This indicator provides an assessment of the company's data on its use of recycled and/or re-used raw material and on its performance in this matter. |
| Contractors & Supply Chain | Quantitative Performance | FSC Certified Sourcing | E.2.1.8 | This indicator provides an assessment of the company's data on the use of paper from FSC (or similar) certified sources. |
| Contractors & Supply Chain | | Contractors & Supply Chain Related Controversies or Incidents | E.2.2 | |
| Products & Services | Quantitative Performance | Sustainable Products & Services | E.3.1.1 | This indicator analyzes whether the company offers sustainability related products or services. |
| Products & Services | Preparedness | Credit & Loan Standards | E.3.1.10 | This indicator provides an assessment of the quality of a company’s environmental and social standards in its credit and loan activities. |

**APPENDIX A**: Definitions of Sustainalytics Environmental Indicators (continued)

| Topic | Category | Indicator Name | Indicator Number | Description |
|---|---|---|---|---|
| Products & Services | Quantitative Performance | Responsible Asset Management | E.3.1.11 | This indicator provides an assessment of the existence and the importance of responsible asset management within the company. |
| Products & Services | Preparedness | Real Estate LCA | E.3.1.12 | This indicator provides an assessment of the amount of new real estate projects to which the company applies a Life Cycle Analysis (LCA). |
| Products & Services | Preparedness | Green Buildings Investments | E.3.1.13 | This indicator provides an assessment of whether the company has any programmes to increase investments in sustainable buildings and whether it has defined any quantitative targets with clear deadlines for reaching these targets. |
| Products & Services | Quantitative Performance | Share of Green Buildings | E.3.1.14 | This indicator provides an assessment of the share of sustainable buildings as a percentage of the total property portfolio. |
| Products & Services | Quantitative Performance | Sustainable Financial Services | E.3.1.15 | This indicator provides an assessment of whether the company offers sustainability related financial services. |
| Products & Services | Quantitative Performance | Hazardous Products | E.3.1.16 | This indicator provides an assessment of whether the company offers products with important environmental or human health concerns. |
| Products & Services | Quantitative Performance | Energy Mix | E.3.1.17 | This indicator provides an assessment of the energy sources of a utility and determines how carbon intensive they are. |

**APPENDIX A**: Definitions of Sustainalytics Environmental Indicators (continued)

| Topic | Category | Indicator Name | Indicator Number | Description |
|---|---|---|---|---|
| Operations | Preparedness | Transmission Loss Rate | E.3.1.18 | This indicator assesses the extent to which the company experiences electric power transmission losses between sources of supply and points of distribution, as well as in the distribution to consumers, including pilferage. |
| Products & Services | Quantitative Performance | Clean Technology Revenues | E.3.1.2 | This indicator provides an assessment of whether a company has specific clean technology products or other particularly climate friendly products. |
| Products & Services | Quantitative Performance | Fleet Emissions | E.3.1.3 | This indicator provides an assessment of a carmaker's sales-weighted fleet average CO2 emissions. |
| Products & Services | Quantitative Performance | Fleet Efficiency | E.3.1.4 | This indicator provides an assessment of the change in a carmaker's fleet average CO2 emissions for the period 2005-2007. |
| Products & Services | Quantitative Performance | Sustainable Mobility Products | E.3.1.5 | This indicator provides an assessment of the company's initiatives to make products that improve sustainability in transport vehicles. |
| Products & Services | Preparedness | Eco-Design | E.3.1.6 | This indicator provides an assessment of whether there are policies and programmes to systematically consider environmental aspects at the R&D or design stage of products. |

**APPENDIX A**: Definitions of Sustainalytics Environmental Indicators (continued)

| Topic | Category | Indicator Name | Indicator Number | Description |
|---|---|---|---|---|
| Products & Services | Preparedness | Product Stewardship Programmes | E.3.1.7 | This indicator provides an assessment of whether the company has end-of-life product management programmes and targets, and whether initiatives are taken to take-back or recycle these products. This is relevant for certain industries in which consumer products can cause environmental harm at their end-of-life cycle. |
| Products & Services | Quantitative Performance | Organic Products | E.3.1.8 | This indicator provides an assessment of the contribution of organic products to the company's total revenues. |
| Products & Services | Preparedness | GMO Policy | E.3.1.9 | This indicator provides an assessment of the quality of a company's policy on GMOs. |
| Products & Services | | Products & Services Related Controversies or Incidents | E.3.2 | |