Shareholder Values and a Story of Corporate Social and Environmental Negative Events

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Abstract

This dissertation considers the entire process originated by corporate events that impact the environment and the society (ES events). Using a rich hand-collected dataset with 1139 chronological incidents originating from negative corporate social responsibility (CSR)-related events, it explores stock market reactions to each stage within a chain of successive events triggered by negative ES events, including the recurrent, follow-up (either favorable or unfavorable), as well as companies' response events.

We find that the investors respond strongly negatively to negative events (origin, negative subsequent, and negative responses) and strongly positively to positive events (positive subsequent and positive responses). We also find that investors react more negatively to the negative subsequent and recurrent events, as well as company negative responses when they occur sooner after the origin events, whereas promptness of positive subsequent events and positive responses heighten the favorable market reaction. The study also reveals the presence of expectancy violation as investors of high-CSR firm react more negatively to the negative events. In addition, it provides observations suggesting that: (1) investors do not regard positive responses as agency-motivated events, instead they are more concerned about the availability of financial resources when a firm makes remedial responses to a negative ES event; and (2) the market cares about CSR events not solely due to their financial implications, but also because it considers socially responsible operations as a value-enhancing corporate duty.

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Chapter 1 Introduction

Environmental and social sustainability is becoming an increasingly important corporate policy agenda as investors are progressively more apt to apply environmental, social and governance (ESG) factors in investment analysis and portfolio selection. In the U.S., assets managed by sustainable investment strategies reached $17.1 trillion in 2020, representing one out of every three dollars of funds under professional management.[1] This constitutes a growth of 42 percent from 2018 (The Forum for Sustainable and Responsible Investment Foundation, 2020). Similar trends are observed in Canada and globally. Canadian RI Trends Report (2018) shows that assets in Canada being managed using one or more Responsible Investment (RI) strategy increased from $1.5 trillion at the end of 2015 to $2.1 trillion by December 31, 2017. The increase in RI assets was 312 per cent between 2010 and 2017; 41.6 per cent during 2015-2017; and 37.8 per cent during 2017-2019. Canadian RI assets now account for more than 50 per cent of total Canadian assets under management. Globally, sustainable investment grew from USD 13.3 trillion in 2012 to US$30.7 trillion in 2018 in five major markets (United States, Europe, Japan, Canada, and Australia), a 131 per cent increase (GSIA, 2014; 2018).

"Corporate Social Responsibility (CSR)" entails simultaneous attainment of economic, social and environmental objectives (Aguinis, 2011), feasibility of which has been subject to academic debate. The existing theoretical literature has proposed channels through which CSR creates values, such as risk reduction, customer loyalty, trust, community supports (Dimson, Karakaş, & Li, 2015; Flammer, 2013; Servaes & Tamayo, 2013). At the same time, it also suggests a possibility that CSR is used as a tool for the management to exploit its own interest (Bénabou & Tirole, 2010; Kitzmueller & Shimshack, 2012; Krüger, 2015). The empirical literature generally reports findings consistent with these theoretical arguments in that CSR complements shareholder value maximization, while such a value-creating effect of CSR is weakened in the presence of agency concerns. Nevertheless, within this literature, there remain several research questions that have not yet been investigated. A few of such questions relate to the consideration of chronological chains of CSR events. Most existing empirical studies that examine the impact of CSR-related corporate events treat each accident as separate independent happening, yet in reality one CSR event often triggers a chain of successive events. For example, an oil spill is almost always followed by such events as authority investigations, lawsuits, fines, settlements, as well as the company's reactive announcements, which could be a denial of the responsibility or a release of an implementation plan to address issues raised by the oil spill. This dissertation aims to contribute to the literature by considering the entire picture constructed by such a chain (or a sequence) of CSR-related events. We believe that this is the first study that performs this type of investigation.

The novelty of this study is enabled by the hand-collected data. They record socially- or environmentally-harmful (ES) events (negative CSR events) experienced by US publicly traded companies in the period between April 2007 and August 2019, as well as successive events triggered by these original events. With this dataset, the study investigates market reactions to events within a chain comprised of its origin (e.g., an oil spill) and various follow-ups. The latter includes subsequences to the origin event that could either be negative (e.g., a lawsuit) or positive

[1] Sustainable investment (or RI – responsible investment) refers to the incorporation of ESG criteria in asset selection and fund management, enabling investors to identify potential risk of the asset based on how company's ESG practices affect its long-term sustainability. The term "responsible investment" and its principles came into existence with the establishment of a global organization, "The Principles for Responsible Investment" in 2005 (UNPRI, 2006).

(e.g., court settlement/resolution), as well as the company's responses that could also be either negative (e.g., refusal of responsibility) or positive (e.g., implementation of remedial plans). It is hoped that the investigation of these chains of events provides additional insights on the debate regarding ways by which corporations could be socially responsible.

Consideration of the entire chain of CSR-related events has two major advantages. First, it enables an attempt to extract a relatively "pure" impact of CSR on firm values. For example, extant studies (Ender & Brinckmann, 2019; Flammer, 2013; Krüger, 2015; Godfrey, Merrill, & Hansen, 2009) report negative market reactions to negative ES events. While these findings could be a manifestation that CSR matters on firm value, an alternative interpretation is also possible: the observed negative market reactions to negative ES events are due solely to investors' concern about financial damages these negative events imply. In this regard, we believe that the investigation of market reactions to company responses (the way the firm responds to the negative events) allows us to grasp stock price movements "relatively purely" due to the CSR engagement of the firm, as they carry relatively less (if not zero) financial implications (company responses include apologies, announcements of action plans that address the issues raised by the negative ES event, or denial of responsibility, uncooperative attitudes to authority investigations, among others).[2] Second, the examination of the entire chain of CSR events allows us to consider the impact of events subsequent to the original events, such as lawsuits, operational suspensions, boycotts, resolutions, authority approval, and positive investigation results. Third, it enables us to examine the influence of chronological distance from the original event when the market reactions to a follow-up event is considered.

This dissertation develops a conceptual framework that seeks to explain market reactions for each stage within a sequence of events, considering its impact from both the operating performance and the behavioral finance perspectives. The empirical tests of the framework have found that the market strongly penalizes firm for negative origin events, recurrent negative events, irresponsible attitudes to the negative event it brought about, and subsequent negative events (e.g., lawsuit). It also shows that investors strongly reward remedial actions the firm takes to address, as well as the favorable news regarding, the negative ES event it brought about. Moreover, the empirical analyses reveal that market reaction to the negative subsequent, responses and recurrent events is more punitive when they occur sooner than later after the origin events, and that the promptness of positive subsequent events and positive responses heighten their favorable valuation by the investors. This study also finds that: (1) the market reacts more favorably to positive responses by firms with more cash and less financial constraints, suggesting that investors do not regard company positive responses to the negative ES events as agency-motivated events, instead they concern more about the availability of financial resources when a firm makes remedial responses to a negative ES event; and (2) the markets react more negatively to the negative events of firms with higher *ex-ante* CSR performance, suggesting the presence of the "expectancy violation"

[2] For example, company negative responses include denial of responsibility, counter blame, refusal to comments, etc., which carry CSR implications but no financial (cost) implication. Company positive responses include additional investments in workplace improvements, agreements to proposed settlements, etc. Negative market reactions to the former (despite its no financial (costs) implication) and positive reactions to the latter (which often accompany with cash outflow) is consistent with the notion of "CSR matters" even after eliminating its financial implications. In addition, we consider the impact of harmful ES events that were legal and did not result in any direct fines or costs, such as, pushing suppliers for lower prices, rigid and poor pay/benefit structure for employees etc., separately from negative events with significant financial implications.

factor that influences market participants' assessments of such events (however, we do not observe a significant moderating effect of *ex-ante* CSR performance on the market reactions to positive subsequent/company response events). Lastly, we find that: (1) the impact of the costs of events on CARs is insignificant; (2) the geographical proximity of the events significantly influence market reactions (in that the market is more sensitive to events that took place within the U.S. than those outside); and (3) the market reacts positively to positive company responses even when such responses come with substantial cash outflows.[3] These findings suggest the possibility that the market cares about CSR events not solely due to their financial implications, but also because it considers socially responsible operations as a value-enhancing corporate duty.

The above findings suggest that: (1) socially responsible corporate actions are value-enhancing even when it carries financial implication or cash outflows; (2) attitudes towards the negative ES events appear to matter, as the market negatively (positively) reacts to the firm's negative (positive) responses to the negative ES events it brought about). Accordingly, it appears possible for the firm to recover its value lost by the negative ES event, by taking "appropriate" attitudes to the event; (3) quickness matters. It is better for the firm to address the negative ES events it brought about in a prompt manner; (4) it is important to avoid any negative ES accidents at any costs, as firms are penalized each time they experience negative events subsequent to the original negative events (such as a lawsuit after the oil spill). Firms retrieve their values when they experience positive subsequent events (such as a positive authority investigation result after the suspicion of product deficit), but the market reactions to positive subsequent events are smaller than those to negative (original and subsequent) events; and (5) it is also important for high-CSR performers to maintain the performance as misbehaviors are more punitive for such firms than low CSR performers. With these implications of findings, this work aims to make notable contributions to the literature and pose significant implications to practitioners and policymakers,

The paper proceeds as follows. Chapter II reviews salient literature, of which the first part elucidates the theoretical foundations pertaining to CSR, namely the stakeholder and shareholder theories. The second part discusses empirical observations on CSR-firm value/operating performance relationships. Chapter III establishes conceptual frameworks based on which testable hypotheses are developed. Chapter IV describes data and methodology. Chapter V presents the empirical results, and the concluding chapter discusses the contributions and limitations of this study, as well as the directions for future research.

[3] The market reacts more positively to company positive responses that do not come with cash outflows than to those coming with costs. Nevertheless, the average market reactions are significantly positive for both types of company positive responses.

Chapter 2 Literature Review

2-1 Theoretical Foundations

There has been a debate on the goal of a corporation. One school of thought advocates the "shareholder theory", which contends that the ultimate goal of a corporation is shareholder wealth maximization. One of the shareholder theorists, Milton Friedman, argued that "[t]here is one and only one social responsibility of business — to use its resources and engage in activities designed to increase its profits" (Friedman, 1962, p. 133). It is based on the premise that management teams are hired as the agent of the shareholders to run the company in the way that maximizes shareholders' wealth, being legally and morally obligated to serve the principal's interests. However, the validity of the shareholder theory has been put into question as corporate social responsibility is becoming a topic actively debated among academics and practitioners. It has been claimed that corporate irresponsible actions impact society and the environment to such extents that they confirm the limitations of shareholder theory. Accordingly, the *stakeholder* theory has developed as a major counter to the shareholder theory, positing that the goal of a corporation is not only shareholder value maximization but also being responsible to the society and the environment (that is, to all stakeholders including employees, customers, local communities and the environment), even if it reduces shareholder returns (Smith, 2003).[4] According to early scholars, CSR serves to maintain congruence with the prevailing social norms, values, and expectations (Sethi, 1975; Carroll, 1979; Carroll, 1999).

The natural question that arises, therefore, is whether being responsible to stakeholders is a complement or substitute to what the shareholder theory deems to be the ultimate goal of a corporation: shareholder value maximization. In other words, does CSR engagement have to be done at the expense of shareholder value, or is it rather a shareholder value-enhancing corporate action? One school of thought maintains that CSR maximizes shareholder value (Dimson, Karakaş, & Li, 2015; Flammer, 2013; Servaes & Tamayo, 2013). For example, Kitzmueller and Shimshack (2012, p. 59) maintain that firms' CSR engagements are "market driven [and] maximize monetary profits". Krüger (2015) views that managers engage with stakeholders simply because such projects are deemed to have positive net present value (NPV). Davis (1973) asserts the importance for business entities to adhere to the perceptions and norms of society: that "society grants legitimacy and power to business and (in the long run) those who do not use power in a manner which society considers responsible will tend to lose it" (p. 314).

Several studies endorse the notion that CSR is value-creating corporate action from the organizational and managerial efficiency standpoint. They assert that CSR is an instrument for managers to minimize conflicts with stakeholders (Harjoto & Jo, 2011) through nurturing mutual trust and cooperation, which is translated into greater operating efficiency and performance (Cho, Chung, & Young, 2019; Bartlett & Preston, 2000; Arouri & Pijourlet, 2017). A growing body of the literature has identified ways through which superior social and environmental performance is translated into better operating performance. Ambec and Lanoie (2008) group these under six distinct channels, as follows.

1. Access to new markets (expansion opportunities): Purchasing policies and specifications of most governmental organizations require suppliers and contractors to have a record of

[4] Freeman (1984) is the original proposer of the stakeholder theory.

responsible socio-environmental footprints.[5] Furthermore, with the increasing trend in firms' supply chain transparency, responsible operations have also become the norm on the supplier side (Bateman & Bonanni, 2019). As a result, firms with sustainable business practices have better chances to be chosen as a business partner. For example, *the EU Conflict Minerals Regulation* by European Commission (2017) *r*equires EU importers of tin, tantalum, tungsten and gold (3TG) to conduct due diligence and make certain disclosures to demonstrate that materials were mined, processed, and shipped in a responsible manner (Ropes & Gray, 2017).

2. Product differentiation: Siegel & Vitaliano (2007) argue that CSR helps firms in their differentiation strategies as it affects the purchasing decisions of customers in the product market (Du, Bhattacharya, & Sen, 2007), while facilitating unique brand image and brand loyalty (Dupire & M'Zali, 2018). Porter & Kramer (2002) propose a concept of "strategic philanthropy", which claims that both firm value and benefits to society are maximized when corporate philanthropy strategically improves competitive potential.

3. Innovation: As mentioned above, company efforts to have more "responsible" operations stimulate innovation-based solutions and competitiveness (Porter & van der Linde, 1995); examples include better pollution-control and waste management technologies (Ambec & Lanoie, 2008).

4. Lower cost of capital: CSR allows firms to reduce uncertainty related to legal costs or costs of compensation for social or environmental damages. Socially responsible firms are less likely to be criticized by ecological groups, government, media etc. (Ambec & Lanoie, 2008). This, along with better compliance with regulations and lower probability of social or environmental damages the firm could cause, lowers the litigation risk (Ambec & Lanoie, 2008). In addition, Werther and Chandler (2005) argue that CSR protects firm value by offering brand insurance through maintaining social trust and loyalty. Responsible firms may be less vulnerable to exogenous shocks due to greater customer loyalty and community support. Consequently, perceived riskiness is lower for high-CSR firms (El Ghoul et al., 2011; Goss & Roberts, 2011). Accordingly, firms with better prosocial performance could enjoy lower costs of equity (El Ghoul et al., 2011; El Ghoul et al., 2018; Goss & Roberts, 2011) and debt (Bauer & Hann, 2010; Attig et al., 2013).

5. Improved resource productivity: Firms' efforts toward responsible operations could lead to higher productivity through waste reduction, material re-use, energy savings, workers' satisfaction, etc. (Lanoie & Tanguay, 2000; Porter & van der Linde, 1995). Lanoie and Tanguay (2000) provide case studies of ten firms that achieved higher profitability through improved environmentally-concerned resource management: GenPak, for example, saved $32,000 annually only through reduction and re-use of residue.[6]

[5] For example, Federal Acquisition Regulations of the U.S. government requires that purchases be made from contractors with satisfactory performance record of integrity and business ethics. Similarly, the U.K. government adopted a model framework, *Greening of Government Operations,* which encourages suppliers to develop eco-friendly products and services. More specific example would be the U.K. Department of the Environment, Transport and the Regions' objective of buying at least 10% electricity from renewable sources (Kunzlik, 2003).

[6] In many cases, operational changes in compliance with social and environmental norms implies additional costs. However, Flammer (2013) argues that such changes could lead to operational efficiency. In other words, incompliance

6. Lower costs of labor: Socially responsible firms attract a better-quality workforce through conducive work environments and their corporate social performance, thereby nourishing employee ethics, motivation, and loyalty. This may result in reduced costs associated with of human resource turnover, absenteeism, strikes, workers' physical and mental health (Greening & Turban, 2000; Ambec & Lanoie, 2008). Guiso, Sapienza, and Zingales (2015) argue that resolving internal conflicts between managers and employees is facilitated by an organizational culture that espouses social norms: when employees perceive top management to be respectful of their social values and expectations, they are less likely to skimp on their effort and quality of services.

However, there is also a view that CSR engagement is not always complementary to shareholder wealth maximization, in that CSR is simply a manifestation of agency problems within the firm (Bénabou & Tirole, 2010). According to this line of thought, CSR primarily benefits managers who, at the expense of shareholders, are motivated to earn *their own* image and reputation among such key stakeholders as environmentalists, media, local politicians, non-governmental organizations, or labor unions (Kitzmueller & Shimshack, 2012; Krüger, 2015). Given this school of thought, it remains unclear that the theoretical literature has reached consensus regarding whether CSR engagement benefits shareholders or is at their expense.

2-2 Empirical Studies

Existing empirical studies on the CSR-firm value relationship can be divided into two groups: (1) those that use the third-party CSR ratings (mainly those provided by the Morgan Stanley Capital International (MSCI)) and scrutinize the link between stock return/operating performance and corporate social performance; and (2) those that employ the event study analyses to investigate market reactions to CSR-related corporate news and announcements.

Studies on the relationship between stock return/operating performance and CSR ratings: Existing studies in this group generally identify a positive correlation between the two. For example, Orlitzky, Schmidt and Rynes (2003) perform a meta-analysis of 52 studies published between 1972 and 1997. They confirm a positive and bi-directional correlation between CSR and accounting- and market-based indicators of corporate financial performance (CFP), that is: corporate social performance improves return on assets (ROA), return on equity (ROE), sales growth, and market returns, which, in turn, further facilitates firms' CSR engagement. A similar finding is reported by Margolis, Elfenbein and Walsh (2007), of which meta-analysis of 167 studies from 1972 through 2007 verifies a bi-directional positive (although small) relationship between CSR and financial performance. These observations are echoed in more recent studies. For example, Ameer and Othman (2012), Wang and Sarkis (2013), and Dimson et al. (2015) find that companies that emphasize sustainable social and environmental practices experience better operating performance (ROA, ROE, profit margin, and cash flow from operations, scaled by total

with social and environmental norms sometimes imply "incomplete or unnecessary utilization of resources, or resources not used to generate their highest value", which then require higher levels of inputs (Porter & van der Linde, 1995, p. 105). One of such examples is seen at a cement-manufacturing company (Ciment St-Laurent). A recycle of a hazardous waste (charcoal) allowed the company to save $605,000 annually. Another example is that reclamation of remnants and sub-products led Kimberly-Clark $53,000 and $200,000 annual savings, respectively (Lanoie & Tanguay, 2000).

assets) than those that do not commit to sustainable corporate practices. Boehe and Barin Cruz (2010) report that adopting CSR improves export performance through product differentiation, and El Ghoul et al. (2011) demonstrate a significantly lower cost of equity for high CSR performing firms than low-performing counterparts.[7]

It appears that firms with sustainability practices continue enjoying superior operating performance even during untoward periods. Lins, Servaes and Tamayo (2017) show that during the 2008–2009 financial crisis, high-CSR firms experience 4-7% higher stock returns than firms with low CSR ratings, and that profitability (measured by operating income on assets, gross margin, and sales per employees), sales growth, and account receivable to sales of high-CSR firms remain significantly higher than those of low-CSR firms. The differences in performance are particularly large during the crisis period, consistent with the view that organizational competencies nurtured by pro-social holistic engagement not only alleviate negative impacts from crisis situations but also increase firms' preparedness for external changes and instability (Russo & Fouts, 1997). In sum, the empirical literature on the relationship between CSR and operating/stock return performance generally supports the complementary role of CSR on shareholder value.

Studies on market reaction to CSR-related events, news, and announcement: Existing studies in this group generally report significantly negative market reactions to firms that experienced negative ES events. These observations are, similar to those presented by studies on the link between firm stock return/operating performance and CSR ratings, consistent with the view that firms' CSR engagement is a shareholder value-enhancing corporate attitude. For example, Flammer (2013) finds that announcements of eco-harmful (eco-friendly) corporate initiatives are associated with negative (positive) shareholder reactions. Dimson et al. (2015) reports a 7.1% positive cumulative average abnormal return after the alleviation of the environmental and social (ES) concern the firm previously had. As for the impacts of socially- or environmentally-harmful events, studies consistently detect negative market reactions. For example, Kruger (2015) reports significantly negative cumulative average abnormal returns (CARs) around the day when the firm encounters a negative ES events (±10- and ±5-day windows), and the reactions are particularly stronger when the events have stronger legal and economic severity as perceived by investors (measured by textual analysis of the event description).[8] Based on an analysis of 185 negative regulatory or legal events (lawsuits, announcement of investigation, fines, etc.), Godfrey et al. (2009) also uncover significantly negative shareholder reactions as captured by CARs with a two-day event window. Ender & Brinckmann (2019) observe similar results based on 44 negative CSR-related events under societal and governance categories.

Studies on agency theory perspective of CSR: Findings with this respect are mixed. Barrios, Fasan, and Nanda (2014) show that CSR is not related to managerial entrenchment and instead is positively associated with effective firm governance. Ferrell, Liang, and Renneboog (2016) find

[7] Survey-based studies also offer findings consistent with these CSR-rating based research. For example, based on a consumer survey, Du et al. (2007) shows that firm's actions that fulfill societal obligations and provide social/environmental benefits are associated with higher purchase likelihoods, long-term brand loyalty, and advocacy from consumers. Through focus group interviews and surveys, Carter (2000) reports that buyers' unreliable and unethical behaviors negatively affect suppliers' satisfaction and strain their relationships.

[8] This study is an extension of Kruger (2015), in a sense that it examines market reactions not only to negative ES events but also to their chronological development.

that firms with lower agency concerns engage more in CSR. On the other hand, Masulis and Reza (2015), Borghesi, Houston and Naranjo (2014) and Gul et al. (2020) report a positive correlation between the level of the firms' *ex-ante* agency concern and the level of the firm's prosocial engagement and annual contributions to charities and foundations. Cheng et al. (2013) find that the ownership stake of management (a proxy for managerial incentive) is negatively correlated with firms' goodness efforts. Kruger (2015) reports a significant moderating effect of agency concerns on the probability of firms' positive CSR initiatives (the higher the level of agency concern, the more likely it is that the firm takes a CSR initiative).

2-3 Summary

The existing empirical literature consistently presents a positive link between firm stock price/operating performance and CSR ratings, and significantly negative cumulative average abnormal returns on negative corporate ES news, supporting the view of CSR having a positive influence on operating performance and the firm value. However, there is an inconsistency among findings of studies that empirically test the agency theory perspective on CSR. While Barrios, et al. (2014) and Ferrell, et al. (2016) present the results not supporting the agency perspective, Kruger's (2015) observations suggest the possibility that CSR engagements are used by managements as a tool to enhance their own reputations.

Besides the examination on the agency perspective of CSR, regarding to which the empirical literature has not reached the consensus, there are areas of research that have not yet investigated. One of such areas is the consideration on the evolution of stock market reaction along with a sequence of related CSR events from the original socially- or environmentally-harmful event (e.g., the first oil spill) to its resolution (e.g., lawsuit settlement). This dissertation aims to address this gap in the literature. It investigates market reactions not only to an initial socially- or environmentally-harmful incident but also to multiple subsequent events. The latter include subsequent events triggered by the original (e.g., an authority judgement favorable (or unfavorable) to the firm) and those that reveal corporate attitudes towards the negative ES event it brought about (e.g., refusal of the acknowledgement of the responsibility). By doing so, it attempts to provide insights on the following research questions: (1) whether CSR truly matters to the value of the firm even when it carries no financial implication; (2) whether it is possible for firms to recover the damage to stock prices resulting from socially- or environmentally-harmful incident; and (3) whether the firm is penalized each time it faces a negative subsequent event and whether it retrieves its value when it encounters a positive subsequent events. By doing so, this dissertation attempts to consider the best approach for corporations to be "socially responsible, especially after they have brought about a socially- or environmentally-harmful incident. The analyses include variables indicative of the firm's level of agency concerns, in an attempt to shed additional light on the ongoing debate on the agency theory perspective of firms' CSR engagement.

Chapter 3 Conceptual Framework

This study considers the entire chronological sequence of environmentally- or socially-harmful (ES) events brought about by corporations, investigating market reactions to each within the chronology. An event that initiates the chronology is referred to as an "origin" event (e.g., the first oil spill). An origin event may be followed by: (1) a "recurrent" event (e.g., the second oil spill); (2) a "negative subsequent" event (e.g., investigations by the authority, lawsuits, suspension orders); (3) a "positive subsequent" event (e.g., investigation results favorable to the company); (4) a "negative company response" (e.g., responsibility denial), and (5) a "positive company response" (e.g., an announcement of contamination cleanup plans). A succession of these events in chronological order is delineated by Figure 1, and the definitions and examples of each of these chronological event categories are listed in Table 1.

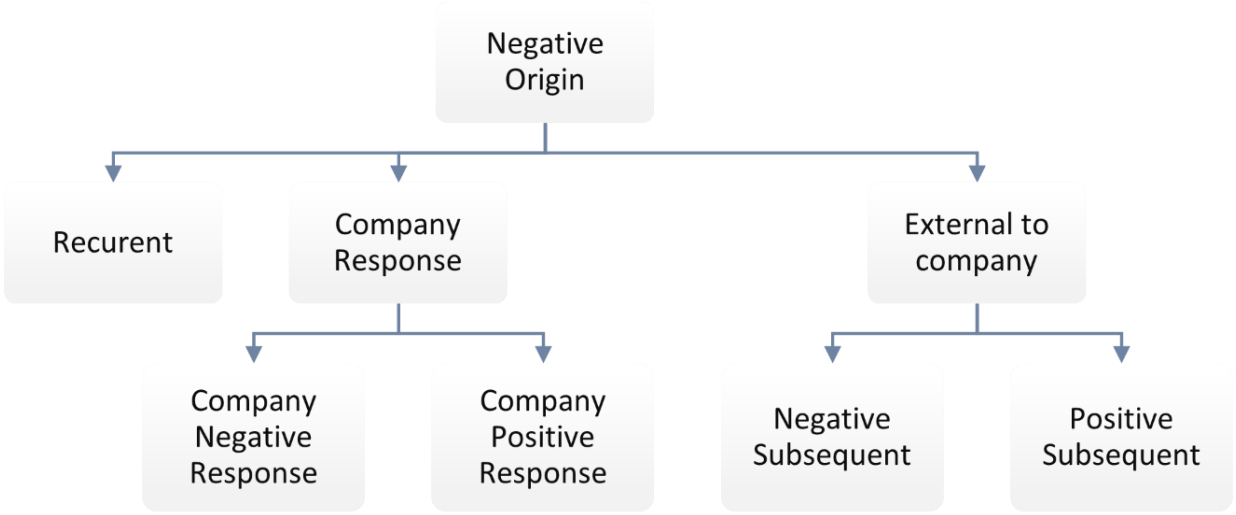

Figure 1: Succession of events and event categorization

		Event Category	Definition	Example
Negative Events	**1.**	**Origin Event**	A negative event that initiates a series of subsequent events, such as additional (recurrent) negative events, positive events subsequent to the negative event, negative/positive company responses (see below)	Data breach, discovery of oil spill, explosion in factory, hazardous working conditions, use of child labor disclosed, employee protests, customer accusations, Product recall/Voluntary recall
	2.	**Recurrent**	Additional negative events or negative event that recurs	A second time oil spill, strikes, more data breach, further recalls etc.
	3.	**Negative Subsequent**	Negative incidents subsequent to a negative origin (not company responses)	Resultant investigations, subsequent protests by employees or customers, guilty verdict, penalty in money, subsequent lawsuits, boycotts, rejection of court requirement
4.		**Positive Subsequent**	Positive incidents subsequent to negative origin (not company responses)	Dismissal of lawsuit, reduction in settlement amount, approval to restart operations, positive investigation report or investigation dropped, rulings in favor of the companies, verdict issued in favor of company concerning voluntary recall
5.		**Negative Company Response**	Company's negative response to a negative event, or negative actions taken by the company after a negative event	Inappropriate approaches to address issues raised by the original event; rejections to proposed settlements, failure to disclose information, appeals, denial of responsibility, refuting claims, plea of guilty to criminal charges, counter blaming, fine contestation, refusal to comment, seeking dismissal for negative practices
6.		**Positive Company Response**	Company's positive response to a negative event, or its remedial actions after a negative event	Issuance of public apology, commitment to compliance plan after complaints, commitment to refund wrongly charged customers, agreeing to settlement and pay, discharging accused employee, achieving supply chain transparency, removal of malware after breach, plan for more CSR-aligned policy, Company explanation after voluntary recall, launching investigation to find defect after recall

Table 1: Definition and examples of each event category

Although an origin event can either be negative (an incident that has (or manifests the firm's operation that has) negative impacts on the environment or the society) or positive (an initiative that has (or attempts to give) positive impacts on the environment or the society), the focus of this study is placed on negative origin events and those that follow, partially due to the small number of chronologically trackable chains of ES events originated by positive events. Also note that "origin", "recurrent", and "negative subsequent" events are collectively referred to as "*negative events*". This chapter develops the conceptual framework regarding the market reactions to each of these chronological ES event types.

3-1 Hypothesis 1: Market reactions to Negative Origin Events

Following the existing studies, we expect that the market responds negatively when a firm is responsible for event that harms society or the environment or when the firm manifests poor operations that negatively impacts society or the environment (i.e., negative ES events), for three reasons.

Additional costs: Substantial amounts of direct costs can be expected when firms experience negative ES events. Costs may include litigation expenses, criminal fines, compensation for property damage, cost of operational changes in compliance with regulations, etc.[9] Anticipation of future costs shapes investors' reaction to such events (Blacconiere & Patten, 1994). In the wake of a negative ES event, pressure for compliance increases, forcing firms to invest in better plant and equipment, implement measurable standards and upgrade processes (Joshi, 2001).

Loss of relational wealth and reputation: Firms may lose their brand image, loyal customers, motivated employees, business partners, government procurement contracts, and expansion opportunities due to the negative ES event. Relational wealth, characterized as trust, is strengthened when firms accrue positive attribution (moral capital) or "organizational legitimacy" through CSR activities that signal firm's responsible disposition towards various stakeholders (Godfrey, 2005; Godfrey et al., 2009; Lins et al., 2017; Suchman, 1995).[10] Reputation is also built by positive attitudes to society and the environment (Gassenheimer, Houston & Davis, 1998; Fombrun, Gardberg, & Barnett, 2000). The loss of relational assets and reputation, caused by negative ES incidents can dissuade customers (Klein, Smith, & John, 2004) and strain strategic relationships with suppliers, distributers, vendors, communities, public entities, etc. (Carter, 2000). Additionally, perceived social unfairness can significantly impact employees' job satisfaction and organizational commitment, constraining their performance and productivity (Aguilera et al., 2007; Guiso et al., 2015). These events also make the firm vulnerable to wide ranging systematic economic shocks as they result in a loss of loyal customers and employee/community supports (Oikonomou, Brooks, & Pavelin, 2012). All of the above arguably induce additional volatility, impacting negatively not only future cash flows but also the cost of capital (El Ghoul et al., 2011; El Ghoul et al., 2018; Goss & Roberts, 2011; Bauer & Hann, 2010; Attig et al., 2013).

Impacts on risk: Third, negative CSR-related events directly impact the risk of the firm (Luo & Bhattacharya, 2009; Mishra & Modi, 2013; Oikonomou et al., 2012; Salama, Anderson, & Toms, 2011).[11] This is due to increased uncertainty associated with future litigation, (recurrent) labor strikes, lawsuits, boycotts, etc., all of which bear (often substantial) costs to the firm (Boutin-Dufresne & Savaria, 2004; Lee & Faff, 2009; Chollet & Sandwidi, 2018), and, as mentioned above loss of loyal customers and community supports (Oikonomou et al., 2012)..

[9] For example, according to The Washington Post (2016) the cost of BP's 2010 oil spill reached $61.6 billion (The Washington Post, 2016). More recently, Chipotle Mexican Grill was fined $1.4 million for violation of Massachusetts child labor laws in January 2020.

[10] "Organizational legitimacy" is a "generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions" (Suchman, 1995, p. 574).

[11] While traditional asset pricing models do not price idiosyncratic risks, more recent studies show, in fact, firm-specific risk matters (Malkiel & Xu, 1997; Campbell, Lettau, Malkiel, & Xu, 2001; Lee & Faff, 2009)

The above argument forms the expectation that a negative ES event drives the stock price downward as it increases the risk while decreasing the prospect of future cash flows, as reported by previous studies. This leads to the following hypothesis:

Hypothesis 1*: Incidents that have negative environmental or social impacts or that manifest firms' environmentally or socially unfavorable operations are, on average, associated with negative cumulative abnormal returns for the firm.*

3-2 Hypothesis 2: Recurrent/ Subsequent Negative Events

When a firm causes an incident that harms society or the environment, or that manifests its poor operations in terms of the impacts on the society or environment, such a negative ES event itself is not always the end of the story. Such an event is often followed by other negative events. For example, an oil spill is sometimes followed by another spill (a recurrent event); investigations, subsequent protests by employees or customers, and subsequent lawsuits may also follow (negative subsequent events).

3-2-1 Hypothesis 2a: Market reaction to Recurrent/ Subsequent Negative Events

Recurrent and subsequent negative events also come with additional expected costs, loss of reputation and relational capital, and increased operating volatility. As noted, these affect future cash flows negatively while increasing the cost of capital. In addition, we argue that cognitive biases could also play a role when the market reacts to a negative subsequent/recurrent event, that are attributional and anchoring biases.

Attributional bias: According to the attribution theory (Weiner, 1985; Kelley & Michela, 1980) people attribute causes to events in two ways: either internally or externally. When an entity repeatedly acts in the same manner, attribution theory predicts that internal attribution is most likely.[12] It therefore suggests that previous instances of negative events, or existing crisis histories, intensify investors' attribution of crisis responsibility internally, i.e., to the management (Coombs & Holladay, 1996; Coombs & Holladay, 2004; Coombs, 2007; Kelley & Michela, 1980; Lange & Washburn, 2012).

In case of the initial negative occurrence, firms may be afforded the "benefit of the doubt"; however, re-occurrence of the event (or other subsequent negative incidents) might trigger attributions to managerial intentions or negligence (Shiu & Yang, 2017, p. 458), due to the target firm's "tendency to act in this way over time" (Lange & Washburn, 2012, p. 306). Further erosion of trust and social legitimacy also facilitates the internal attribution (Shim & Yang, 2016; Skarmeas & Leonidou, 2013), which is more likely to result in punitive responses (Bae & Cameron, 2006; Coombs, 2007). We therefore expect that the market penalizes a firm more severely for recurrent and subsequent events than it does for the original event.

Anchoring bias: The cognitive bias known as *anchoring* further supports our proposition about the relative impact of recurrent or subsequent negative incidents. According to the theory of

[12] For example, if an athlete consistently wins several tournaments, observers will attribute success to ability and effort (internal) rather than to good fortune (external). Similarly, if a manager repeatedly forgets to report workplace hazards, it could be attributed to negligence (internal) rather than some unusual situation that makes the reporting difficult (external).

anchoring bias, a previous event serves as a cognitive anchor (a reference point), based on which assessors adjust beliefs related to a new event (Tversky & Kahneman, 1974). In the case of recurrent/negative subsequent events, the original negative event acts as a cognitive anchor: due to the unfavorable nature of the previous event (i.e., origin negative event), assessments of follow-up negative incidents would be more negative.

An empirical observation of an existing study supports the above argument. Shiu & Yang (2017) explore the impact of the number of negative events, occurring over a period of nine years, on stock returns. Although it does not consider the succession of the events within a particular string, Shiu and Yang (2017) report that the market reacts significantly more negatively to a negative ES event when the firm has experienced a greater number of negative incidents during the previous nine years. They argue that the protection arising from trust and moral capital disappears after a second or further occurrences of negative events as shareholders become rapidly unforgiving for repeated violations.[13] Accordingly, we offer:

Hypothesis 2a*: On average, the market reacts more negatively to subsequent and recurrent negative events than to the origin negative event.*[14]

3-2-2 Hypothesis 2b: Timing of recurrent/subsequent negative events

To consider the moderating effect of the chronological distance from the original negative event on the impact of subsequent/recurring negative events, we rely on two cognitive theories: (1) the "theory of the availability heuristic" that suggests "recency bias"; and (2) the "concentration in time" theory.

Recency bias and concentration in time: Tversky and Kahneman (1973) propose the theory of the availability heuristic to consider how individuals process information for their decision making, focusing on the aspect of "recency," the ease of recalling. It argues that individuals tend to overweigh recent information because "recent occurrences are likely to be relatively more available than earlier experiences" and coins this tendency as the "recency bias" (Tversky & Kahneman, 1974, p. 1127).[15] Based on this "theory of the availability heuristic" Lange & Washburn (2012) propose the "concentration in time" theory, arguing that such concentration makes each negative event within a string be perceived more undesirable and attention-drawing. When negative incidents are dispersed over time or occur infrequently, the impact of the individual event tends to be regarded less seriously since the impact of the original incident becomes less visible.[16] Cognitive availability amplifies the perceived impact of a negative event and heightens its subjective undesirability (Tversky & Kahneman, 1974). Internal attribution is accelerated when the prior instance is more visible due to its temporal proximity to the previous one (Lange &

[13] No other existing studies treat negative ES events as independent of each other and no empirical study has considered that events may be part of a chain initiated by an original negative event.

[14] In other words, cumulative abnormal returns are, on average, lower for recurrent events than for the first event within a chain of unfavorable events

[15] For example, investors overweigh the weakness of a firm when the firm's current performance is indeed weak, leading to pessimistic forecasts of firm's growth (Lee, O'Brien, & Sivaramakrishnan, 2008).

[16] For example, temporally dispersed motor vehicle-related fatalities in the US escape widespread attention although they represent tens of thousands of annual deaths – 36,835 in 2018 and 36,096 in 2019 (NHTSA, 2020). But if the accidents were concentrated over a period of a day or a week, such incidents would draw immediate public alarm since the effects would be more salient and cognitively available (Lange & Washburn, 2012; Gattig, 2002).

Washburn, 2012). Gattig (2002) provides evidence that weights of reference events on decision making diminish with increasing temporal distance from a reference point.

Hence, it is expected that investors perceive a recurrent or subsequent negative event as more undesirable when it occurs sooner after the original negative event, due to the recency bias and the effect of the concentration in time. This leads us to the following testable hypothesis:

Hypothesis 2b*: Recurrent negative events are more negatively received by the market when occurring sooner after the origin event than later after the origin event.*

3-3 Hypothesis 3: Positive subsequent events

A negative ES event is often followed by another event that wipes off the issues the event has raised, or alleviates the suspicion of the firm's social culpability. Such "positive subsequent events" include dismissal of lawsuit by the court, settlement, approval to restart operations, positive investigation report or dropped investigation, rulings in favor of the company, reduction in settlement amount.

3-3-1 Hypothesis 3a: Market reaction to Positive subsequent events

Anticipated cost cutback, regain of relational wealth and reputation, and reduction of uncertainty: It is hypothesized that the market reacts positively to these positive subsequent events, based on the other side of the coin of the framework for our first hypothesis. First, such events likely reduce the anticipated amount of costs associated with the original negative event; second, they help the firm for its recovery of relational capital and reputations; both improve operating performance while reducing volatility and uncertainty (Ameer & Othman, 2012; Wang & Sarkis, 2013; Dimson et al., 2015). For example, dismissals of lawsuits, positive investigation reports or dropped investigations, rulings in favor of the company, and reductions in settlement amount, all could decrease or rescind expected costs associated with the original negative event such as litigation expenses, criminal fines, cost of compliance. Permissions to restore operations and releases from sanctions allow firms to restore revenue generation and its possible growth. Dismissals of lawsuits, positive investigation reports or dropped investigations correct the earlier unfavorable evaluation of the firm. These events also help restore previously dissipated trust and social legitimacy among different stakeholder groups—employees (Guiso et al., 2015; Aguilera et al., 2007), customers (Du et al., 2007; Servaes & Tamayo, 2013), vendors (Carter, 2000), and other business partners. Accordingly, we anticipate positive market reactions to positive subsequent events.

Hypothesis 3a*: On average, the market reacts positively to occurrences that reduce the negative social/environmental impacts caused by previous negative events.*

3-3-2 Hypothesis 3b: Timing of Positive subsequent events

Anticipated cost, relational wealth and reputation, and uncertainty: It is expected that the quicker the positive subsequent events ensue, the sooner all the operational, relational/reputational, and financial benefits discussed above begin to accrue. In other words, the sanctions continue to hurt sales, employee morale and strategic relationships as long as the organization is associated with corporate irresponsibility. For example, delayed de-escalation of tension provides customers a reason to try competitors' products and drive loyal and satisfied customers away (Klein et al.,

2004). As "satisfied customers can be viewed as economic assets that yield future cash flows" (Fornell, 2002, p. 41), the longer sanction halters sales and revenue growth for a longer period of time. The loss of revenues from the operational suspension and the direct cost of ongoing lawsuits also keeps adding up as the time accumulates. For example, a survey of Fortune 200 companies on long-term litigation cost reveals that the average annual cost (excluding settlement and damage awards) of litigation per firm was $140 million in 2008. The opportunity cost of executives' time and effort also keeps piling up, further degrading managerial efficiency and productivity. In addition, firms and their shareholders must stay in a high-uncertainty environment as long as the lawsuit, operational suspension, dispute, etc., continues. Hence, shareholder value keeps diminishing with the increased temporal distance between the initial negative instance and subsequent positive ES events. Thus,

Hypothesis 3b: *On average, occurrences that reduce the negative social/environmental impacts brought by negative events are more positively received by the market when they occur soon after the negative event.*

3-4 Hypothesis 4: Negative Company responses

Up to this point, we have considered the impacts of negative ES events and positive subsequent events on firm value. However, as mentioned in Chapter 1 (Introduction), negative market reactions to negative ES events and positive reactions to positive subsequent events (if detected) are not necessarily the evidence of "the market caring CSR", as an alternative interpretation is possible. That is: market participants do not care CSR but react negatively (positively) to negative ES events (positive subsequent events) simply due to the financial implications associated with these events (e.g., additional (reduced) costs). Accordingly, the estimates CARs may not be regarded as "pure" CSR effects.

This and the following subsection (3-4 and 3-5) consider the impacts of company responses (or attitudes) towards the negative ES events they brought about on the firm value. Since these responses carry little (if any) financial cost implications, we argue that the estimated CARs on these responses could gauge relatively "pure" impacts of CSR on firm value. Thus, by exploring the market reactions to company responses this study attempt to shed additional insights on such research questions as: (1) whether CSR truly matters to the value of the firm even when it carries no financial implication; and (2) whether the stock price is influenced by the firm's attitudes after it experienced a socially- or environmentally-harmful event.

3-4-1 Hypothesis 4a: Market reaction to Negative Company responses

This study expects negative market reactions when the company negatively responds to the negative ES event it brought about. The rationales underpinning this expectation include that: (1) they are likely regarded as a sign of corporate irresponsibility; and (2) such corporate actions likely prolong the settlement process of the original negative events.

Signs of corporate irresponsibility: Arguably, a company's negative response such as denial of responsibility for the negative ES event it brought about, are often perceived as signs of social irresponsibility, incompetency in handling crisis situations, insincere and evasive attitudes towards, and apathy towards, affected parties. All of these could lead to the loss of relational assets

and reputation.[17] Lyon and Cameron (2004) support this view by reporting evidence that defensive and self-serving responses erode experiment participants' faith in the firm's managerial competence and integrity. Noncooperation with investigations and refusal to disclose information could also hint at the presence of questionable practices (e.g., inadequate safety measures, non-compliance with guidelines etc.), further facilitating internal attribution. Negative or irresponsible company responses to a negative event should trigger the market's punitive reactions (Bae & Cameron, 2006; Coombs, 2007).[18]

Erosion of benefit of the doubt, internal attribution, anchoring bias: As discussed previously, Shiu and Yang (2017) argue that when a corporation takes a socially and morally undesirable action (or it causes a negative ES event) for the first time, it is granted the "benefit of the doubt" (p. 458) with regard to its intentions (that is, assessors are more likely to assume that the action or the event was accidental, rather than intentional). However, when the company demonstrates such undesirable actions or causes negative ES events repeatedly, assessors are more likely to assume intentionality behind. This argument is also consistent with the attribution theory which maintains that internal attribution is more likely when the event exhibits recurrency. The notion of anchoring bias also supports this argument. Market participants tend to adjust their evaluation based on the anchor – i.e., the previous reference event. Since the anchor in this case corresponds to the negative event, the reactions to negative responses would be strongly negative.

Bad acts by bad actors: Godfrey (2005) argues that when a bad actor commits a bad act, s/he is more severely punished than a good actor who commits the same bad act. He incorporates the concept of *mens rea* from criminal law to understand stakeholders' attribution of a misconduct. Under the *mens rea* doctrine, stakeholders not only evaluate the consequences of misdeeds but also consider the intentions or attitudes of the firm. The appropriate punishment is then determined based on both the act the defender committed and his/her intention to commit it perceived by the assessors (Godfrey, 2005; Godfrey et al., 2009). Godfrey (2005) note that stakeholders assess the defender's intentions/attitudes by seeking answers to such questions as: "did the organization take all appropriate steps to remedy the harms created by the offense?" and "did the organization voluntarily disclose the offense and cooperate in resulting investigations?" (p. 788). Since negative corporate responses are likely viewed as corporate social irresponsibility (even in the presence of possible legitimacy), they are likely to give the firm a public image of "bad actors", to which, according to Godfrey, expect a punishment.

[17] For example, following the 2010 Deep Water Horizon oil spill, US public opinion polls reported severe public displeasure and frustrations with BP's self-serving responses to the spill. These involved extensive counter blaming, lying to congress to limit liability, incomplete disclosure of information, etc. (The Guardian, 2010). 73% respondents of the USA Today/Gallup's poll assessed BP's response as "poor/very poor." The dissatisfaction is reflected in the decline of 10 to 40 percent of sales (NBC News, 2010). In another example, Sears' stock price declined by a further 11% over the week following the Sears Holding Corp. initial decline of April 15, 2013 regarding compensation for the victims of a factory fire producing its merchandise. The fire took place in November 2012 at a garment factory in Bangladesh and killed more than 100 people. The garment factory, Tazreen Fashions, had been manufacturing clothes for Wal-Mart, Disney, Sears and other major global retailers (The New York Times, 2012).

[18] For some company responses it is difficult for outsiders to judge whether they are manifestations of the firm's irresponsibility, or they are legitimate, justifiable answers. For example, Tokyo Electric contested the assertion that attributed the Fukushima meltdown to the company's failure to prepare for tsunami, arguing that the 14-meter tsunami went beyond all "conceivable possible" accidents. However, existing studies (Ware & Linkugel, 1973; Coombs, 1995; Lyon & Cameron, 2004; Ihlen, 2002) suggest that even this type of company response tends to be viewed as signs of the organization's failure to own up to their mistakes and its irresponsibility.

Prolonged settlement processes. Fine contestation, appeal against verdict, rejection of settlement, violation of settlement conditions, etc., often involve perpetuation of resolution processes. In other words, negative company responses are likely to leave the overall business environment unsettled for a longer time period, which is associated with additional costs, delayed retrieval of relational capital and reputation, and elongated "highly uncertain" period, shouldered by investors (Chollet & Sandwidi, 2018).[19]

Accordingly, negative corporate responses are expected to generate negative market reactions through: (1) the loss of relational assets and reputation resulting from: (a) the signal of social irresponsibility; (b) erosion of "benefit of doubt" and resulting internal attribution; and (c) the resulting image of "bad acts" by "bad actors." All these could negatively impact the operating performance and increase uncertainty; and (2) complication and length of the settlement process resulting from a response. Based on this logic, this dissertation asserts:

Hypothesis 4a*: On average, the market reacts negatively when companies respond negatively to negative environmental/social incidents for which they are at fault.*

3-4-2 Hypothesis 4b: Timing of negative company responses

The conceptual framework related to hypothesis 2b (subsection 3-2-2) argued that temporal proximity makes the overall picture of a chain of events more cognitively available. This amplifies the impact of an event within the chain and facilitates internal attribution. This argument could also be applicable to the case of negative company responses. It is expected that temporal proximity to the initial negative event emphasizes these effects. Therefore:

Hypothesis 4b*: On average, negative company responses to negative events are more negatively received by the market when such responses are made sooner after the Origin event than later after the Origin event.*

3-5 Hypothesis 5: Positive Company responses

This subsection considers companies' positive responses, i.e., the firm's actions that (manifest its intension) to address issues raised by the negative ES events it experienced. Such responses might include issuance of a public apology, commitment to a compliance plan, adaptation to a more CSR-aligned policy, an increase in supply chain transparency, a refund for wrongly charged customers, or removal of factors that caused a previous negative ES event, among others.

3-5-1 Hypothesis 5a: Market reactions to positive company responses

This subsection first considers the effect of positive corporate responses on firm value, then contemplate the possible moderating effect of agency issues on the positive response-firm value relationship.

[19] For example, a survey of Fortune 200 companies on long-term litigation cost reports that the average annual transaction cost (excluding settlement and damage awards) of litigation per firm was $140 million in 2008, whereas attorney time and vendor bills incurred in just pursuing or retrieving electronic information, in preparation of trial, averaged $3.5 million per case (Searle Center on Law, Regulation, and Economic Growth, 2010).

3-5-1-1 Main effect: positive corporate responses

Regain of relational capital and reputation and reduction of uncertainty: Existing studies suggest that companies' remedial responses to the negative ES events are value-enhancing corporate actions. For example, Xie and Peng (2009) and Lyon and Cameron (2004) argue that a corporate apology to the general public and stakeholders, clarification of the facts, and actions remedial to trust-violating incidents convey signals of courtesy and remorse towards affected parties. Such actions are regarded as "affective" recovery responses that rehabilitate mutual trust (relational wealth) and reputation after catastrophic ES incidents. Heal (2005) argues that revamping managerial and operational processes minimizes costly conflicts between society and the organization.[20] In particular, firms' acceptance to proposed settlements can be interpreted as the acknowledgement of their mistakes, representing firms' agreement to make amendments in their operations that caused prior episodes of corporate wrong, thus expected to help them to regain relational wealth and reputation (Lin-Hi & Blumberg, 2012). Since a settlement often accompanies with substantial cash outflows (fines, criminal charges, reimbursements or compensations), the firm's agreement to such court decisions implies its sincerity. It also means the end of prolonged controversies, which reduces the unpredictability associated with criminal charge amounts, expenses resulting from ongoing and could-be-prolonged lawsuit, opportunity costs incurred by the management (Boeschen, 2000; Brown, 2019).

Erosion of "bad actor" image: Acknowledgements of, and remedial efforts towards, the negative events disassociate the actor from doubts of irresponsible intent behind the original event (Lange & Washburn, 2012; Xie & Peng, 2009). Hence, the question of "bad intention" from *mens rea* doctrine is eliminated from stakeholders' cognitive assessment processes (Godfrey P. , 2005). Empirical observations consistent with the above argument include those of Lyon and Cameron (2004) and Xie and Peng (2009) who, in classroom experiment settings, find that firms that sent apologetic or accommodative responses after the negative ES events are more likely to be rated as more ethical, prosocial and virtuous entities. Such firms benefit from more positive attitudes from stakeholders (in terms of, for example, purchasing the product, providing capital, and recommending products to friends) than those that respond defensively. Elsbach (1994) reveals, also in a classroom experiment setting, that acknowledging a negative event leads to higher legitimacy rating than denial of responsibility, finding that "most subjects reported strong negative reactions to the press releases containing denials because of their "defensive' tone" (p. 81). Dimson et al. (2015) provide empirical evidence of significantly improved return on assets, profit margin, sales per employee, and asset turnover and *entrenchment index* [1] one year after positive environmental and social changes.

The above argument leads to the following hypothesis:

Hypothesis 5a-1: *On average, the market reacts positively when the company takes actions that reduce negative social/environmental impacts it previously brought about.*

[20] Heal (2005) uses, as an example of the impact of a corporate proactive and reformative response, Heinz's response to the environmental conflict regarding the killing of dolphins while fishing for tuna, which not only earned goodwill from consumers, politicians and environmentalists but also enabled the firm to avoid a costly confrontation.

3-5-1-2 Moderating effects of agency issues

As discussed, some studies point out the possibility that firms' engagements in socially- or environmentally friendly activities may be used by management as a tool to earn a good reputation among prominent stakeholders at the expense of shareholders (Bénabou & Tirole, 2010; Cheng, Hong, & Shue, 2013; Masulis & Reza, 2015; Borghesi, Houston & Naranjo, 2014; Gul et al., 2020). This suggests that market reactions to remedial activities may depend on the firm's risk level with respect to agency problems (Krüger, 2015). When remedial actions are taken by firms with lower risk of agency issues, investors react favorably, yet when they are taken by those with higher likelihood of management's pursuit of self-serving activities, they are less favorably received by investors.[21] Accordingly:

Hypothesis 5a-2*: There is a moderating effect of agency risk on market reactions to positive company responses.*

3-5-2 Hypothesis 5b: Timing of positive company responses

Regarding the impact of the speed of remedial actions, existing theories lead to two opposing scenarios through which such timing influences the market reactions.

Quick regain of relational capital and reputation, reduction of uncertainty: The first argument suggests that the sooner company positive responses the more favorable the market reaction. This is because quickness of positive corporate responses may represent managerial efficiency and competence (Moorman, Deshpandé, & Zaltman, 1993; Kim et al., 2004), as well as the extent to which the company takes the negative event seriously (Lins et al., 2017; Xie & Peng, 2009). Timely communication also assists in shortening the length of disputes and periods of misunderstanding. Prompt communication and recovery attempt "enhances the perception of corporate trustworthiness" (Xie & Peng, 2009, p. 577). Conversely, an elongated period of reticence signals the firm's indifference to, or incapability to address, the negative event it brought about, thereby aggravating suspicion and uncertainty (Ferrin et al., 2007). These suggest that firms' prompt (delayed) actions to remedy the negative ES event could lead to quick (slow) recovery of the relational capital and reputation, prompt eradication of image of a "bad actor", and a shorter time of uncertainty, and thus of the operating performance damaged by the negative event.

Hypothesis 5b-1*: On average, company actions that reduce negative social/environmental impacts it previously brought about are more positively received by the market when such responses are made soon after the event.*

Recency bias and concentration in time: On the contrary, it might be possible to hypothesize that the quickness of company remedial actions results in less positive market reactions. A shorter time to a positive response could mean that the company takes remedial actions when people still have a clear memory of the negative ES event. As argued in hypotheses 2b and 4b, in such cases the recency bias and the concentration of time may prompt the impression that the remedial action is not sufficient given the magnitude of the negative impacts of the negative ES event on society

[21] Another possibility is that the market considers the remedial actions taken by the firm is insufficient to recover the social/environmental/company operational damages of the negative ES event it brought about. This suggests the necessity to control the types of company positive responses in the empirical examinations.

and the environment. In this case, positive market reactions to positive corporate responses might be diminished by quick responses:[22]

Hypothesis 5b-2*: On average, positive market reactions to company remedial actions are smaller when such actions are made soon after the event.*

3-6 Hypothesis 6: *Ex-ante* CSR performance

3-6-1 Hypothesis 6a: Impacts of *ex-ante* CSR performance on negative events

This subsection considers the impacts of *ex-ante* CSR performance on market reactions to: (1) negative ES events (origin, recurrent, subsequent) and (2) company negative responses simultaneously, as it believes that similar arguments could apply to both. As for the effect of firms' CSR history on market reactions to negative ES events, two opposing theoretical arguments could be developed leading two hypotheses competing with each other.

3-6-1-1 Rationales for positive impacts being expected

The first hypothesis expects a positive correlation between *ex-ante* CSR performance and market reaction to negative events and negative company responses. Existing research has proposed the view that high *ex-ante* CSR performance mitigates the negative consequences of negative ES events, both conceptually (Werther & Chandler, 2005; Peloza, 2006; Fombrun et al., 2000; Lin-Hi & Blumberg, 2018) and empirically (Godfrey et al., 2009; Vo, Xiao, & Ho, 2019; Vanhamme & Grobben, 2009; Shiu & Yang, 2017; Flammer, 2013).

Relational capital and reputation: Studies have argued that firms' high *ex-ante* CSR performance acts as safeguards against negative ES events and irresponsible company responses because, as discussed earlier, corporate responsible attitudes build relational wealth and reputation. These intangible assets are externalized in forms of employees' commitment, suppliers' trust, favorable perception held by communities and brand loyalty. Thus, stakeholders' assessment of culpability and related sanctions may be less severe for high *ex-ante* CSR performing firms, as they believe that the firm will take actions for their benefits even when the firm encounters a negative ES event (Godfrey, 2005; Godfrey et al., 2009; Lin-Hi & Blumberg, 2018).[23] As a result, the earnings potential might be less vulnerable and more resilient for firms with more tenacious reputational capital and relational wealth, when encountering negative ES events (Fombrun et al., 2000; Peloza, 2006; Eisingerich et al., 2011; Klein & Dawar, 2004).

The above logic of "relational assets and reputation as buffers that lead to less vulnerability of earning potential" can also be applied to negative corporate responses. First, stakeholders are more willing to overlook negative responses that come from a firm with high repute for CSR, since people tend to discount information that is inconsistent with their prior knowledge (Nickerson, 1998), stick to their long-held image of the company (Grunig, 1993), and circumvent unfavorable public evaluations of irresponsible corporate responses (Coombs, 1995). Second, a CSR-generated

[22] As discussed in the hypothesis 5a-2, there is a potential moderating effect of agency issues on the relationship between time to corporate positive response and the marker reaction. The analyses of hypothesis 5b-1 and 5b-2, therefore, include the level of agency concern associated with the firm as a control variable.

[23] Consistent with these argument, Kitzmueller and Shimshack (2012) maintain that socially responsible consumers may be especially loyal and robust to negative information on firms to which they are loyal.

"reservoir of goodwill" (Peloza, 2006) can lead stakeholders to become resilient to firm-related negative information (Bhattacharya & Sen, 2004; Eisingerich et al., 2011).

Attribution theory, bad acts by bad actors, and anchoring bias: Responsibility of a negative event is more likely attributed to management in the presence of poor *ex-ante* CSR performance (Coombs & Holladay, 1996; Coombs & Holladay, 2004; Coombs, 2007). This is also true for negative company responses through the lens of the *mens rea* doctrine. When stakeholders evaluate corporate action, the negative response would be perceived relatively more unfavorably for a firm with a weak CSR record because the firm have alreacy been characterized as "bad actors" (Godfrey et al., 2009). Furthermore, a firm's history of socially irresponsible behavior acts as a cognitive anchor, based on which individuals assess the firm associated with a negative event (Tversky & Kahneman, 1974). As a result, weakly CSR-compliant firms would be punished more for their associations with negative events or responses than *ex-ante* high CSR performers.

There are empirical observations consistent with the above view. Those include higher level of CSR engagement leads to a smaller loss in shareholder value at negative event occurences (Shiu & Yang, 2017; Godfrey et al., 2009), at the announcements of eco-harmful behaviors (Flammer, 2013), and in an adverse situation such as a service delay (Vo et al., 2019).[24]

Based on the above argument, less (more) decline in shareholder value is expected for high-(low) *ex-ante* CSR performing firms when they experience a negative ES event or when they respond negatively to ES -related crisis situation.

Hypothesis 6a-1*: Negative cumulative abnormal returns associated with negative events are smaller (in absolute term) for firms with ex-ante superior ES performance manifested by higher CSR ratings than those with ex-ante low CSR ratings.*

3-6-1-2 Rationales for negative expected impacts

Theory of expectancy violations: On the other hand, the theory of expectancy violations (EV) suggests the opposite effect of *ex-ante* CSR performance on market reactions to negative ES events and negative company responses. The theory contends that pre-interaction expectancy triggers *ex-post* evaluation in such a way that "positive and negative violations (disconfirmation) lead to more positive and negative interaction outcomes respectively than does conformity to expectations" (Burgoon & LePoire, 1993, p. 69). Drawing on this EV theory, another strand of literature (e.g., Sohn & Lariscy, 2015; Baron, 2009; Coombs & Holladay, 2015) maintains that strong CSR engagement exposes firms to greater public scrutiny and more severe reputational damages when the firm becomes embroiled in a negative event. Because stakeholders have an *ex-ante* elevated level of expectations on firms with high repute, they perceive a larger magnitude of expectancy violation when these firms experience negative ES events as well as when they make insincere or evasive responses to the negative event.

There are also empirical observations consistent with the above argument, although they are obtained from classroom experimental settings. Sohn and Lariscy (2015) show that post-CSR crisis

[24] However, to our knowledge, no study has empirically explored the moderating role of the *ex-ante* CSR performance on market reactions to negative company responses, which are clearly distinguished from negative ES events. This study addressed this gap in the literature.

evaluations by participants of highly reputable firms were significantly lower than those of low-repute firms. Dean (2004) finds that an inappropriate corporate response to a negative event leads to a stronger decline in participants' evaluations of firms with a pre-existing favorable reputation for their prosocial activities than firms with reputation of irresponsibility.
Given this opposite theoretical context, we propose:

Hypothesis 6a-2*: Negative cumulative abnormal returns associated with negative events are bigger (in absolute term) for firms with ex-ante higher CSR ratings than those with ex-ante low CSR ratings.*

3-6-2 Hypothesis 6b: Impacts of *ex-ante* CSR performance on positive events

This part considers the impacts of *ex-ante* CSR performance on market reactions to: (1) positive events subsequent and (2) company positive responses to the negative ES event simultaneously, as it believes that similar arguments could apply to both. Similar to the previous subsection (6a), two opposing theoretical arguments could be developed leading two hypotheses competing with each other.

3-6-2-1 Rationales for positive impacts being expected

We expect a positive correlation between *ex-ante* CSR performance and market reaction to positive follow-up events as well as company positive responses, for the following reasons.

Cognitive anchor, internal attribution, Relational wealth and reputation, and reduction of uncertainty: A firm's favorable *ex-ante* disposition (relational capital and reputational capital built through CSR) acts as a cognitive anchor (Tversky & Kahneman, 1974), renders credibility to the firm's action (in the case of company positive responses), facilitates attributions of good news to the company internal, ushers in cooperation and support from all stakeholders (in both cases of positive company responses and positive subsequent events). Because of the anchor, a positive company response or positive subsequent event is viewed more favorably when it occurs to good *ex-ante* performers than when it does to poor *ex-ante* performers. In addition, high-CSR firms are regarded as possessing competencies, corporate culture and experience in socially-responsible operations (Lin-Hi & Blumberg, 2012). These, again, enhance credibility with respect to: (1) the successful implementation of the reparative action plans the firms proposed in their positive responses; and (2) quick recovery to normal (pre-negative event) operations. This essentially allows the firms to reduce costs (Geoffrey, 2005) while lowering the risk.

The firm's authenticity in stakeholders' assessment of actions taken by the firm in its attempt to address the negative event is emphasized when the firm has exhibited better ES efforts previously. As a result, a public-serving (rather than management self-interest) motive is likely attached to positive ES engagement, when they have good (and a long term (Vanhamme & Grobben, 2009)) *ex-ante* CSR performance (Yoon, Gürhan-Canli, & Schwartz, 2006; Shim & Yang, 2016). Accordingly, highly CSR-compliant firms would be rewarded more for their remedial or reparative initiatives and for positive follow-up events than *ex-ante* low CSR-rated counterparts.

Hypothesis 6b-1*: Firms with ex-ante high CSR ratings experience higher positive abnormal returns on positive follow-up events and positive company responses than firms with ex-ante low CSR ratings.*

3-6-2-2 Rationales for expected negative impacts

The second theoretical argument leads to an opposing hypothesis – i.e., a negative correlation between *ex-ante* CSR performance and the market reaction to positive follow-up events/company positive responses.

Theory of expectancy violations: The expectation violation (EV) theory points out that greater positive expectancy violation is likely to result in more positive outcome than conformity to expectations. Based on this, it is possible to expect that high *ex-ante* CSR performing firms experience lower stock price appreciations when positive subsequent events occur, or when they take remedial actions to address negative ES events they brought about.

Marginal return on CSR: For corporate positive responses, the notion of decreasing marginal return on CSR resources also supports the above expectation. According to this view, the higher the CSR level, the lower the additional benefits generated by a marginal increase in CSR. Since high-CSR firms have already utilized their resources in a sustainable way and accrued the financial benefits of CSR, an introduction of additional CSR initiative would benefit them less than firms with previous weak CSR records (Flammer, 2013). As a result, the market reacts less positively to a company's positive responses when it is taken by firms with stronger *ex-ante* social and environmental performance than those with weaker *ex-ante* performance. Krüger (2015) argues that when a firm is known to have a history of being a good corporate citizen, additional positive CSR initiatives might be viewed as a result of agency problems and thus detrimental to firm value. The above arguments suggest that a history of higher CSR performance lowers the magnitude of positive market reaction to positive follow-up events and company responses. Accordingly:

Hypothesis 6b-2*: Firms with high ex-ante CSR ratings experience lower positive abnormal returns on* positive follow-up events and positive company responses *than firms with low ex-ante CSR ratings.*

Chapter 4 Data and Methodology

4-1 Data

4-1-1 Event Data and Summary Statistics

The analyses of this study mainly rely on a hand-collected and hand-corrected dataset that contains environmental and social (ES) events experienced by U.S. publicly listed firms during the period from 2007 to 2019. The hand-collection was a two-step process. First, ES events were collected from the MSCI newsletters that reports environmentally- or socially -related corporate events, published to the subscribers of MSCI ESG Research Intangible Value Assessment (IVA) data platform during the 2007-2014 period. Second, ES events in the Factiva database were searched and recorded based on a keywords search. The keywords include "environment", "public relation", "disaster", "fraud", "climate", "spill", among many others (see Appendix I: Keywords used for ES Event Search). The second step was undertaken because: (1) it was discovered that MSCI reports did not always cover all ES-related corporate events; and (2) MSCI stopped the newsletter publication at the end of 2014. Once an "original" ES event was identified, events that follow the original ones (subsequent/recurrent negative events and company responses to the events) were also searched in Factiva and recorded. As mentioned, this study investigates chronological chains of ES-related events originated by negative origin events. The hand-collected process identified a total of 2,014 such events, including origins. From those, we excluded: (1) 187 events for which stock market information was not available; (2) 688 events that occurred simultaneously with other corporate events, such as an M&A announcement or another ES-related event. This yields a final sample of 1139 ES events originated by negative origin events. These are classified into six categories based on their positioning within the chronologic chains, as: origin, recurrent, negative subsequent, positive subsequent, company positive responses, and company negative responses (see Figure 1 and Table 1 in Chapter 3). There are 345 negative origin events, 35 recurrent, 321 negative subsequent, and 74 positive subsequent events. There are also 243 company positive and 121 company negative responses (Table 2).

	Event Category	Number of events	Proportion
1.	Origin Event	345	30%
2.	Recurrent	35	3%
3.	Negative Subsequent	321	28%
4.	Positive Subsequent	74	6%
5.	Negative Company Response	121	11%
6.	Positive Company Response	243	21%
Total events (observations)		**1139**	**100%**

Table 2: Distribution of events by event category

The 1139 events comprise 384 chronological chains associated with 168 unique companies. The industry distribution of the 168 firms is shown in Table 3. Among 384 chronological chains, 334 (87%) are related social issues and 50 (13%) have environmental impacts.[25]

[25] Note that the number of origin events and the number of chronological chains do not match, as a few origin events are eliminated because there are 39 chains for which the negative origin events were eliminated due to possible confounding events (e.g., M&A announcement, other ES-related events etc.)

	Environmental		Social		All chains	
	Number of chains	% of chains	Number of chains	% of chains	Number of chains	% of chains
Basic Materials	2	4%	3	1%	5	1%
Communication Services	0	0%	83	25%	83	22%
Consumer Cyclical	1	2%	72	22%	73	19%
Consumer Defensive	3	6%	31	9%	34	9%
Energy	37	74%	7	2%	44	11%
Financial Services	0	0%	49	15%	49	13%
Healthcare	0	0%	20	6%	20	5%
Industrials	1	2%	21	6%	22	6%
Real Estate	0	0%	2	1%	2	1%
Technology	0	0%	38	11%	38	10%
Utilities	6	12%	8	2%	14	4%
Total	50	13%	334	87%	384	100%

Table 3: Distribution of chains of events by sector

Table 4 presents summary statistics of firm-level variables in Panel A based on the 384 unique chains, in comparison with the Compustat universe (Panel B) during the period same as the dataset covers (2007-2019).

Panel A: Sample firms							
	Mean	S.E.	SD	Median	P25	P75	N
Market Cap (in millions)	141,467.31	9,436.664	184,920.1	55,569.12	16,945.92	196,134.13	384
Ln(Market Cap)	10.81075	.08819	1.72835	10.92522	9.73778	12.18654	384
Total Assets (in millions)	215,543.4	24,429.34	478,715.4	49,729	15,143.5	184,769	384
Book Leverage	.60181	.01720	.33700	.59500	.44819	.76006	384
Liquidity	.17941	.00907	.17767	.12352	.03831	.25548	384
Panel B: All Compustat firms							
	Mean	S.E.	S.D.	Median	P25	P75	N
Market Cap (in millions)	4,180.90	64.18	20,067.01	241.19	41.14	1,390.40	97,751
Ln(Market Cap)	5.46692	.00830	2.59606	5.48560	3.71692	7.23735	97,751
Total Assets (in millions)	14,998.32	442.27	121,390.81	502.19	61.49551	2,756.90	75,336
Book Leverage	5.50926	.57176	156.93412	.58035	.34750	.85633	75,336
Liquidity	.21154	.00092	.25291	.10316	.03478	.28783	75,336
Market cap is the product of stock price and number of shares outstanding, both at one-year lagged calendar year-end, of which natural logarithm transformation is specified as Ln(Market Cap). Total assets is the total assets in millions of US dollars at one-year lagged calendar year-end. Book leverage is the ratio of total liabilities to total assets, and Liquidity is the ratio of cash and short-term investments to total assets, both one year lagged from the event-year. S.E. is the standard error of mean, and S.D. is the standard deviation, and P25 the first and P75 the third quartile of the respective variable.							

Table 4: Summary statistics of firm-level variables

The mean Market cap of firms that experienced the 384 unique chains in the dataset is 141.47 billion, with the median of $61.3 billion. The mean (median) total assets is $215.54 ($60.3) billion.

These suggest the skewness of the size distribution and the necessity of natural log transformation. The sample also represents larger firms within the Compustat universe, as in the case of the sample used by Kruger (2015). However, firms in the sample and those in the Compustat universe are similar in terms of liquidity and leverage (based on median values – as means for Compustat are affected by very small firms that are not in the sample).

4-1-2 CSR Ratings[26]

To measure the *ex-ante* CSR performance of a firm, we mainly rely on firm's CSR ratings from MSCI ESG Stats database, formerly known as KLD Stats database. This database has been used by multiple studies at the nexus of CSR and firm performance (Krüger, 2015; Flammer, 2013; Lins et al., 2017; Godfrey et al., 2009; Shiu & Yang, 2017; Attig et al., 2013; El Ghoul et al., 2011; Bauer & Hann, 2010; Cheng et al., 2013; Goss & Roberts, 2011). Waddock (2003, p. 369) notes that it is "the *de facto* CSR research standard at the moment", and Godfrey et al. (2009) argues that its constructs have been regarded as being robust and valid. The data provide yearly ESG ratings on roughly 3000 US companies by identifying "strengths" and "concerns" for seven major areas: (1) Community, (2) Corporate Governance, (3) Diversity, (4) Employee Relations, (5) Environment, (6) Human Rights and (7) Product (MSCI ESG Research , 2016). A firm is assigned a binary score (0=absence/1=presence) to a set of strengths and concerns for each category. The database also reports the total strengths and total concerns for each of these seven dimensions.

Because the governance does not fall within the CSR domain, we eliminate this category when constructing our own overall CSR score[27]. Eliminating the governance category also enhances a focus on issues associated with non-shareholding stakeholders, since it remains debatable whether shareholders should be regarded as stakeholders in the context of CSR (Krüger, 2015). The remaining six CSR-related dimensions are used to calculate an overall CSR score. We calculate firms' CSR scores, our primary explanatory variable for the Hypotheses 6a~b, in the spirit of studies that construct a net CSR measure by subtracting total number of concerns for a firm-year from the total number of strengths. As the maximum number of strengths and concerns within a particular category varies each year, the same score in different years may represent different levels of CSR strengths and concerns. To overcome this drawback, we scale the raw scores for each category following the approach used by Lins et al. (2017). First, we divide the total number of strengths (concerns) for the *i*th firm in year *t* by the maximum possible number of strengths (concerns) for that category *c* in year *t*. This operation, denoted by equations 1 and 2, yields indices that range from 0 to 1 for strengths and concerns for each of the six categories.

$$Scaled\ Strength_{i,t,c} = \frac{Total\ number\ of\ strengths_{i,t,c}}{Maximum\ number\ of\ strengths_{i,t,c}} \qquad (1)$$

$$Scaled\ Concern_{i,t,c} = \frac{Total\ number\ of\ concerns_{i,t,c}}{Maximum\ number\ of\ concerns_{i,t,c}} \qquad (2)$$

[26] Depending on the availability, the data source from which the *ex-ante* CSR performance is derived, might be switched from the MSCI to other databases such as Bloomberg or Factset.

[27] This reflects common practice as reflected by the work of Attig et al. (2013), El Ghoul et al. (2011), Krüger (2015), Lins et al. (2017) and Cheng et al. (2013).

The net score is then computed by subtracting the scaled score for concerns from the scaled score for strengths for each category *c*, as shown in equation 3. Hence, the net CSR score ranges from -1 to +1.

$$Net\ Score_{i,t,c} = Scaled\ Strength_{i,t,c} - Scaled\ Concern_{i,t,c} \qquad (3)$$

Finally, the overall CSR score for firm *i* in year *t* is the sum of the net scores of all six categories, as expressed in equation 4. The Overall CSR Score is a truncated continuous variable as it takes on any values from -6 to +6.

$$Overall\ CSR\ Score_{i,t} = \sum_{c=1}^{6} Net\ Score_{i,t,c} \qquad (4)$$

4-1-3 Firm-level financial Data

Firm-level financial data are retrieved from several sources. First, we collect corporate accounting and market-based financial variables from Compustat North American Data. These are essentially used as control variables. Second, stock return data, based on which cumulative abnormal returns are estimated, are obtained from the Center for Research in Security Prices (CRSP) daily and monthly stock files. Following Krüger (2015), firm's credit rating is proxied by Standard & Poor's (S&P) domestic long-term issuer credit rating derived from Bloomberg and transformed into numeric ratings based on Ferri, et al. (2001), as described in Table 5.

4-2 Methodology

4-2-1 Event Study Analysis

This paper employs event-study methodology to assess the impacts of ES events (of various chronological types discussed above) on stock returns, as well as to estimate the role of firms' *ex-ante* CSR performance (proxied by the Overall CSR Score described above) on market reactions to ES events. As event study invalidates the possibility of reverse causality and captures a more immediate and direct effect of an event, it has been widely conducted in the study of investors' reaction to CSR-related news. The stock market reaction is captured by mean cumulative abnormal return (CAR) during an event window. CAR is the cumulative difference between the observed return on day *t* ($R_{i,t}$) and the counterfactual (or expected) return on day *t,* $E(R_{i,t})$, during a specific event window around the event day. Following Krüger (2015), we use 11-day [-5,5] and 21-day [-10,10] event windows, setting event date at day 0.

To estimate CARs, the first step is to estimate the counterfactual return or the return that would have occurred in the absence of the event. Following the majority of studies (Flammer, 2013; Krüger, 2015; Lins et al., 2017; Godfrey et al., 2009), we use the following market model to estimate the parameters (α_i , β_i) for each firm-event pair based on the estimation period of 200 trading days ending 100 days before the event date and using daily return data from CRSP. CAR for firm *i* for event *k* over the event window centered on event day *t=0* is defined as:

$$CAR_{i,k} = \sum_{t=0}^{t} AR_{i,t,k}$$
$$= \sum_{t=0}^{t} \{R_{i,t,k} - E(R_{i,t,k})\}$$

$$= \sum_{t=0}^{t} \{R_{i,t,k} - (\alpha_i + \beta_i R_{Mt})\} \quad (5)$$

where: $R_{i,t,k}$ is the actual return on stock *i* for event *k* on day *t*, $E(R_{i,t,k})$ is the expected return on stock *i* on day t surrounding the *k*th event, α_i is the intercept and β_i is the systematic risk of stock *i* estimated using market model; R_{Mt} is value-weighted market index return on day *t*.

4-2-2 t-test

We use one-sample t-test for testing *Hypotheses 1*, *2a*, *3a*, *4a*, *5a-1*. It examines whether, and to which extent, ES events of each type significantly impact stock returns on average. From the statistical point of view, the t-test check whether the mean CAR of one event type is less than (*Hypothesis 1*, *2a*, *4a*), or greater than (*Hypothesis 3a*, *5a-1*), zero at a statistically significant level. With mean CAR for *j*th category denoted by X_j, $\bar{X}_J < 0$ should be observed if hypotheses 1, 2a, and 4a hold, and $\bar{X}_J > 0$ should be observed if hypothesies 3a and 5a-1 hold. That is:

$$H_A: \bar{X}_J < 0; \quad where\ j = \begin{bmatrix} 1 & if\ jth\ event\ is\ a\ negative\ event\ (origin, recurrent, and\ subsequent)\ (H1) \\ 2 & if\ jth\ event\ is\ a\ negative\ recurrent\ or\ subsequent\ event\ (H2a) \\ 3 & if\ jth\ event\ is\ a\ negative\ company\ response\ (H4a) \end{bmatrix}$$

$$H_A: \bar{X}_J > 0; \quad where\ j = \begin{bmatrix} 4 & if\ jth\ event\ is\ a\ positive\ subsequent\ event\ (H3a) \\ 5 & if\ jth\ event\ is\ a\ positive\ company\ response\ (H5a1) \end{bmatrix}$$

4-2-3 Regression Specification

We also employ the multinomial ordinary least squares (OLS) regression method to examine the remaining hypotheses, as well as some of the hypotheses already tested with t-test more rigorously.

Model 1: For Hypothesis 2a, we compare the impact of negative recurrent and subsequent events with that of negative origin events. This investigation corresponds to a full sample regression with independent variables being a set of dummy variables indicative of the event types (Model 1):

$$Ln(CAR_{i,j,k}) = \alpha + \beta_1 C_{k,1} + \beta_2 C_{k,2} + \cdots + \beta_j C_{k,j} + \gamma \tilde{\boldsymbol{X}}_{i,k} + \varepsilon_{i,j,k} \quad (6)$$

where $CAR_{i,j,k}$ is the cumulative abnormal return on firm *i* from the *k*th event categorized as being an event type *j*; $\tilde{X}$ is a vector of control variables, lagged one year from the year in which the *k*th event takes place; and ε is the error term. $C_{k,j}$ is the independent variable (a set of dummy variables, each of which takes value of one when the *k*th event belongs to category *j*, with the negative origin event category being the reference – see Table 5 for variable explanations). Hypothesis 2a predicts negative and significant coefficient for the negative recurrent/subsequent event category dummy.

4-2-3-1 Impact of Time

Model 2: For Hypotheses 2b, 3b, 4b and 5b, the following OLS regression model (Model 2) will be estimated. Note that the variable, $Time_k$, is incorporated here:

$$Ln(CAR_{i,k}) = \alpha + \beta \times Time_k + \tilde{X}_{i,k} + \varepsilon_{i,k} \quad (7)$$

where $Time_k$ is the time elapsed between the origin event and the *k*th event in days. Testing hypotheses 2b, 3b, 4b and 5b, uses the estimation of the same model (Model 2) but different samples. For hypothesis 2b, the sample of only recurrent/subsequent negative events is used; for

3b the sample of positive subsequent events, for 4b the sample of company negative responses; for 5b the sample of positive company responses are used.

Hypotheses 2b and 4b predict that the shorter the time between the original and the recurrent /negative subsequent events, as well as between the origin and negative company responses, respectively, the more negatively the market reacts to the latter. Accordingly, a positive coefficient for $Time_k$ is expected (the smaller the time lapse, the lower the CAR). Hypothesis 3b states that the market reacts more positively when a positive subsequent event occurs sooner, thus, predicting a negative coefficient of $Time_k$ is. Hypothesis 5b-1 (5b-2) expects a negative (positive) coefficient for $Time_k$, which indicates that the market reacts less positively when the longer (shorter) time has been elapsed from its origin event.

4-2-3-2 Moderating effect of agency risk

Since the level of agency concern (the extent to which the agency risk (the risk that management takes positive CSR initiatives for their self-interests) is a concern) is unobservable, proxy measures are used to test hypothesis 5a-2, i.e., the moderating effect of agency problem on market reaction to positive company responses. In the spirit of Kruger (2015), we use Book Leverage (total liabilities) and Liquidity (cash and short-term investment), both relative to Total Assets, as the proxy measures. When liquidity or cash holding is high (when the firm has substantial free cash flows in excess of those required to finance all positive NPV projects), managers might seek to use the abundant cash for private benefit through the channel of capital expenditure, whereas resources are constrained demanding efficiency when firm is ridden with debt (Jensen, 1986). Thus, high leverage and low liquidity may signal a low level of agency concerns while the opposite combination may imply high agency risk (Krüger, 2015).[28]

Model 3: To test hypothesis Hypothesis 5a-2, we run the following model (Model 3) with the sample of company positive responses after negative event. Note that the variable, $Agency_{i,\,k,\,T\text{-}1}$, is introduced in order to test the moderating effect of agency concerns on market reactions to positive company responses:

$$CAR_{i,k,} = \alpha + \beta\, Agency_{i,k,T-1} + \delta\, Credit\ Rating_{i,k,T-1}\, \gamma\, \boldsymbol{X}_{i,k,T-1} + \varepsilon_{i,k,T} \quad (8)$$

where $Agency_{i,\,k,\,T\text{-}1}$ is the level of agency concerns for firm i, proxied by size-denominated book leverage and liquidity. To avoid the endogeneity issue, the variable is lagged one year from the event-year (T) for event k; and $Credit\ Rating_{i,k,T-1}$ is the firm's one-year lagged credit rating. The credit rating variable is added to this particular model, to control for the alternative explanation of the Agency variable (high leverage and low liquidity could also mean financial distress), as it was in Kruger (2015). Hypothesis 5a-2 predicts that stock market reaction to positive company responses would be more favorable for firms with less agency concerns (higher *Book leverage* and lower *Liquidity*). Thus, we expect a positive coefficient for *Book leverage* and negative coefficient for *Liquidity*.

[28] Leverage and liquidity could also be indicators of financial distress. Thus, the significant coefficients of these variable might not be manifestations of the moderating effect of agency concerns but those of financial distress. To rule out this alternative interpretation, we control for credit rating of the focal firm (an indicator of financial distress but not of agency concerns), following Krüger (2015).

Also note that the variable, $Agency_{i,\,k,\,T\text{-}1}$, is added to the vector of control variables for Model 2 to capture the moderating effect of agency issue, when the model is used to test hypothesis 5b on the impact of time to company positive responses on market reactions.

4-2-3-3 Impact of ex-ante CSR

Model 4: This model, specified below, examines whether stock market reaction to ES events depends upon *ex-ante* CSR performance of the firm; it is therefore used to test hypotheses 6a and 6b. The independent variable is the level of *ex-ante* CSR engagement of the firm, proxied by the CSR score we derived from MSCI ESG KLD Stats and adjusted using a procedure discussed above.

The model is estimated based on different samples based on the event category of interest under a hypothesis: the sample of only negative events to test *Hypothesis 6a*, and the sample of only positive events to test *Hypothesis 6b*.

$$CAR_{i,k,t} = \alpha + \beta\, CSR_{k,t-1} + \gamma\, \boldsymbol{X}_{i,k,t-1} + \varepsilon_{i,k,t} \qquad (9)$$

where $CSR_{i,k,T\text{-}1}$ is the overall CSR Score for firm i . To ensure that our ratings for CSR is not affected by the event itself, the variable is lagged by one year from the event-year (T) for event k. The coefficient of interest is β, which represents how stock market reactions to ES events is moderated by the firm's *ex-ante* CSR performance. Hypothesis 6a-1 predicts less severe market reactions to negative events for firms with better *ex-ante* CSR performance scores; thus, β is predicted to be positive. Alternatively, for Hypothesis 6a-2, β is expected to be negative as we theorized a negative relationship between CARs on negative events and *ex-ante* CSR performance. While, for hypothesis 6b-1, we expect a positive β indicating that CAR from positive events is higher for firms with higher *ex-ante* CSR score. As 6b-2 anticipates an inverse relationship between CAR from positive events and *ex-ante* CSR, β is expected to be negative.

4-2-3-4 Control Variables

The regression models include a vector of the following control variables:

- Firm size (the natural logarithm of market capitalization): it is well known that this variable affect stock returns (Fama & French, 1993). Moreover, it is likely that ES events brought about by large corporations attract greater media coverage than those by small counterparts. It is therefore important to control for firm size, in order to extract a pure impact of an ES event on firm value, isolating it from media influence.
- Event subject matter type: Kruger (2015) reports significant differences in market reactions among different ES events types based on subject matters (Kruger divided his sample, consisting of only origin events (both negative and positive), into six categories.[29] Accordingly, we classify our events into two broad (social or environmental) and six narrow issue areas that roughly correspond to the six issue areas mentioned in Kruger (2015).
- Event location: it is possible that market participants are more sensitive to ES events that occurred near their locations than those that took place far away from where they live.

[29] Due to the possible collinearity with issue area dummies, the industry of the firm is not included in the vector of control variables. However, the model that uses the industry dummies (instead of subject matter dummies) and the one that includes both industry and issue area dummies will be run as robustness checks.

Accordingly, a location dummy (= 0 if the event occurred within the U.S.; 1 = otherwise) is included in in the Model.

Table 5 summarizes the variables used for the analyses.

Variables	Description
Dependent	
Cumulative Abnormal Return (CAR)	Estimated based on [-299,-100] estimation window and 11-day [-5, 5] and 21-day [-10, 10] event windows
Independent	
CSR scaled score	Measures *ex-ante* CSR performance of the firm based on the MSCI ESG KLD Stats, and scaled using the procedure described in 4-1-2
Event Category Dummies (chronological)	Events are categorized based on their chronological characteristics into: origin, recurrent, negative subsequent, positive subsequent, negative company response, and positive company response events.
Time	Number of days lapsed between the event and its origin (available for all but origin events).
Book Leverage	Total liabilities divided by total assets. One of the two variables used to measure the level of agency concern associated with the firm.
Liquidity	Cash and short-term investments divided by total assets. One of the two variables used to measure the level of agency concern associated with the firm.
Control	
Firm Size	Natural logarithm of market capitalization of the firm, one-year lagged.
Issue Area Dummies	Events are categorized based on broad issue area: Environmental, and Social; and on narrow issue area: Contamination, Financial/Accounting, Impact to customers, Impact to labor, Legislative change, and Privacy.
Location Dummy	= 0 if the event took place within the U.S.; 1 = otherwise.
S&P issuer Credit rating	The median S&P domestic long-term issuer credit rating in the event-year. Following Ferri, et al. (2001), letter ratings are transformed into numeric as follows: 100= "AAA", 95= "AA+", 90= "AA", 85= "AA-", 80= "A+", 75= "A", 70= "A-", 65= "BBB+", 60= "BBB", 55= "BBB-", 50= "BB+", 45= "BB", 40= "BB-", 35= "B+", 30= "B", 25= "B-", 20= from "CCC+" to "CCC-" , 15= "CC", 10= "C", 5= "D". This variable is included only when agency concern measures are in the Model.

Table 5: Description of variables

Chapter 5 Empirical Findings

5-1 Results of t-tests: Market Reactions to Categories of CSR Events

Table 6 presents the results of:

(1) one-sample t-test on mean CARs (reported as percentage), each associated with each of the five event categories (negative origin, negative subsequent, positive subsequent, as well as negative and positive responses), corresponding to testing Hypotheses 1, 3a, 4a, and 5a);
(2) Two sample t-test that compares CARs between negative origin and negative subsequent/recurrent events, which corresponds to testing Hypothesis 2a.

We also performed three additional analyses in our attempt to distinguish market reactions due to financial implications in negative CSR events from those due purely to the market's care about corporate social responsibility.

5-1-1 t-test results (Hypothesis 1, 2a, 3a, 4a, and 5a)

Table 6 presents one- and two-sample t-test results. As Hypothesis 1 predicts, Row A indicates that the market reacts significantly negatively when a company brings about an environmentally or socially harmful incident or encounters an event that reveals its environmentally or socially harmful operations negative CSR (an "Negative Event", which includes not only the original event (e.g., the first oil spill) but also the recurrent (e.g., the second oil spill) and its subsequent (e.g., a lawsuit) event). It appears that such an event leads the market to anticipate additional costs (Joshi, 2001) as well as loss of relational capital and reputation the company will incur (e.g., Godfrey, 2005; Godfrey et al., 2009; Lins et al., 2017; Suchman, 1995), while perceiving increased risk of the company due to the uncertainty associated with upcoming legal costs and loss of loyal customers (Luo & Bhattacharya, 2009; Mishra & Modi, 2013; Oikonomou et al., 2012; Salama, Anderson, & Toms, 2011).

However, row A-1, A-2, and A-3 show that the mean CAR for origin events is lower than those for the recurrent and subsequent negative events, inconsistent with the Hypothesis 2a. In fact, the pairwise two sample t-tests (row B) indicate no significant difference in market reactions between origin and recurrent/negative subsequent events (along with the finding that the mean CAR for origin events is significantly lower than that for recurrent ones (although the significance level is marginal) when the [-10, +10] estimation window is used (row B-2). We will scrutinize this point with the OLS regression analyses in section 5-2-1.

Table 6 also shows that the market reacts positively when a positive event occurs subsequent to the negative origin event (e.g., a release of positive investigation results after the possible violation of product safety raised), as Hypothesis 3a predicts. It appears that positive subsequent events lower the expected costs the company will incur in relation to the origin it brought about, while increasing the likelihood that the company will rebuild relational capital and reputations (e.g., Guiso et al., 2015; Aguilera et al., 2007; Du et al., 2007; Servaes & Tamayo, 2013; Carter, 2000), both of which not only increase the future expected cashflows generated by the company but also reduces uncertainty associated with its future operation.

However, as discussed previously, the above results are not necessarily the evidence of "the market caring about CSR", due to the presence of a possible alternative interpretation. That is: market

participants do not care about CSR but react negatively (positively) to negative ES events (positive subsequent events) simply due to the financial implications associated with these events (e.g., additional (reduced) costs). In an attempt to gauge relatively "pure" impacts of CSR on firm value, we examine the market reactions to company responses (or attitudes) towards the negative ES events they brought about (Hypotheses H4a and H5a). Since these responses tend to carry little (if any) financial cost implications, this examination is expected to yield more reliable empirical findings with respect to the research question whether CSR truly matters.

Event Window	**# of Obs.**	**Mean CAR (%)**	**S. E.**	**t-stat**	***p-value***
A: Negative Events (Negative Origin, Recurrent, Negative Subsequent): H1					
(-5, +5)	701	-2.81307***	0.00268	-10.48241	0.00000
(-10, +10)	665	-3.81970***	0.00357	-10.70802	0.00000
A-1: Negative Origin					
(-5, +5)	345	-3.02912***	0.00452	-6.69803	0.00000
(-10, +10)	336	-4.42146***	0.00586	-7.54361	0.00000
A-2: Negative Subsequent					
(-5, +5)	321	-2.76445***	0.00317	-8.72082	0.00000
(-10, +10)	298	-3.41114***	0.00422	-8.08234	0.00000
A-3: Recurrent					
(-5, +5)	35	-1.12931*	0.00726	-1.55477	0.06460
(-10, +10)	31	-1.22206	0.01214	-1.00705	0.16100
Event Window	**Mean CAR difference (%)**		**S. E.**	**t-stat**	***p-value***
B: Recurrent & Negative Subsequent minus Origin					
(-5, +5)	0.42543		0.00571	0.74102	0.45701
(-10, +10)	1.21633*		0.00680	1.79134	0.07412
B-1: Negative Subsequent minus Origin					
(-5, +5)	0.26467		0.00582	0.45023	0.65021
(-10, +10)	1.01003		0.00692	1.46118	0.14510
B-2: Recurrent minus Origin					
(-5, +5)	1.89981		0.01332	1.43021	0.15403
(-10, +10)	3.19942*		0.01634	1.96003	0.05112
Event Window	**# of Obs.**	**Mean CAR (%)**	**S. E.**	**t-stat**	***p-value***
C: Positive Subsequent Events: H3a					
(-5, +5)	74	2.25281***	0.00776	2.90423	0.00240
(-10, +10)	71	2.95832***	0.00781	3.78670	0.00020
D: Negative Company Response: H4a					
(-5, +5)	121	-4.00742***	0.00867	-4.62440	0.00000
(-10, +10)	117	-4.53200***	0.00482	-9.40400	0.00000
E: Positive Company Response: H5a-1					
(-5, +5)	243	2.76182***	0.00446	6.18961	0.00000
(-10, +10)	219	4.25602***	0.00542	7.85242	0.00000
* p < 0.10, ** p < 0.05, *** p< 0.01					

Table 6: Cumulative abnormal returns (CARs) for different event categories

The results indeed suggests that the market cares about corporate social responsibility and incorporate it to the firm value. Row D in Table 6 shows significantly (at the one per cent level) negative market reactions to socially irresponsible corporate responses. It appears that irresponsible responses to the negative CSR event is considered as value-decreasing corporate attitude, along with their implications of delayed retrieval of relational capital and reputation (Chollet & Sandwidi, 2018) as well as enhanced internal attribution (Shiu & Yang, 2017), anchoring bias (Tversky & Kahneman, 1974), and the "bad actor" image (Godfrey, 2005).[30] On the other hand, an average CAR for positive company responses is positive and significant at the one per cent level (Row E), indicating that the market receives an event favorably when the company exhibits responsible attitudes to the environmentally- or socially harmful accident it brought about, as such attitudes build expectations of regaining relational capital and reputation (e.g., Xie & Peng, 2009; Lyon & Cameron, 2004), reduce uncertainty (Boeschen, 2000; Brown, 2019), as well as the erosion of the "bad actor" image (e.g., Lange & Washburn, 2012; Xie & Peng, 2009).[31]

5-1-2 Three additional analyses

Significant market reactions to company responses detected above suggest that the market indeed cares about corporate social responsibility – it does not react to ES (environmental and social) events not only due to the financial implications these event carry. To confirm this point, we implemented three additional analyses, presented below.

5-1-2-1 Classification of Positive Company Responses

The first analysis entails the classification of positive company responses into five types based on whether the company incurs substantial cash outflows when making such a response. The five types of positive company responses are:

i. Agreed to pay
ii. Apology &/or CEO Resign
iii. Socially Positive Economically Negative events &/or Socially Positive Politically Negative events (SPEN & SPPN), such as wage increase, ceasing the sale of controversial products, reimbursing/compensating affected parties, revealing information of data requests from law enforcement authorities etc.
iv. Socially Positive & Economically Positive events (SPEP), such as disclosure of information, calling for tightened rules & regulations, ensuring adequate working conditions of suppliers, etc.
v. Socially Questionable & Economically Positive events (SQEP), such as restarting controversial operations after authority approval.

We compare CARs among these five types. Table 7 shows that the market reacts significantly positively when the company exhibits a responsible action, even if such an action entails significant cash outflows, such as those in the "agreed to pay for settlement" and the "socially

[30] We, however, acknowledge that negative company responses have some "cost" implication, as they imply a more prolonged resolution process that is likely associated with additional costs and longer period of uncertainty.
[31] Again, we acknowledge that positive company responses have some "cost" implication, as they imply the resolution of the issue, which reduces uncertainty associated with the legal costs associated with the negative event the company brought about.

positive yet economically negative (SPEN)" categories.[32] However, Table 7 also exhibits that the market reacts much more positively when the company engages in a responsible action that does not seem to come with substantial cash outflows (i.e., those in the "Socially Positive Economically Positive (SPEP)" category). The post estimation analyses shows that the mean CAR for SPEP is significantly larger than that for "Agreed to Pay" (p-value = 0.026 and 0.0058 for [-5,+5] and [-10,+10], respectively) and that for "SPEN" (p-value = 0.0044 and 0.0046). It appears that company positive responses are received more favorably when the company does so without incurring significant cash outflows. Unfortunately, the data do not contain enough number of "Socially questionable but Economically Positive" and "Corporate Apology & CEO resignation" types of positive company responses. Accordingly, the market reactions to these types of company responses remain unknown and left for an extension of this study. Nevertheless, the results in Table 7 are suggestive that: (1) responsible actions taken by the company that brought about a negative ES event are received favorably, even if such actions entail cash outflows; although (2) the market reacts more favorably when the company takes responsible actions that does not involve significant cost implication. This is consistent with the notion that the market cares about CSR although it is also concerned about its cost implications.

Event Window	Response Types	# of Obs.	Mean CAR (%)	S. E.	t-stat	P-value
(-5, +5)	Agreed to pay	69	2.15765***	0.0051	4.20835	0.00004
	Apology & CEO Resign	10	0.45200	0.0167	0.27015	0.39657
	SPEN	71	1.44087***	0.0051	2.80875	0.00322
	SPEP	90	4.60020***	0.0102	4.50712	0.00001
	SQEP	3	0.46833	0.0284	0.16492	0.44208
(-10, +10)	Agreed to pay	64	2.80838***	0.0075	3.74713	0.00020
	Apology & CEO Resign	7	3.29471	0.0256	1.28591	0.12293
	SPEN	62	2.72644***	0.0079	3.44894	0.00051
	SPEP	84	6.53975***	0.0109	5.97500	0.00000
	SQEP	2	5.44600	0.0457	1.19116	0.22230
* p < 0.10, ** p < 0.05, *** p< 0.01						

Table 7: Cumulative abnormal returns (CARs) for different types of Positive Company Responses

5-1-2-2 Publicly available cost information

In order to examine whether the market reacts CSR events due to their financial implications or because it considers social responsibility as an important corporate mission, we also divided the events in the sample into two, based on the availability of cost information. More specifically, we scrutinized news on each event to seek for information on costs associated with it. Then, we recorded the amount if cost such information is released in the news, zero otherwise. These costs constitute contaminated site clean-up, settlement fees, fine, investigation cost, reimbursement to affected parties, cost of revamping procedures etc. Next, the events are divided into two groups – a group of events on which news contained cost information (Cost News Events) and the other group of events on which news did not release cost information (No Cost News Events). The average CAR is then compared between the two groups for each event category (Table 8).

[32] However, "agreeing to pay for settlement" has, again, some financial implication, as it implies the end of dispute, which reduces significantly the expectations on additional legal costs the company will incur in the future.

Event Window	Category	# of Obs	Mean CAR	S. E.	t-stat	P-value	Mean CAR difference (%)	*p-value* (difference)
Negative Origin							Cost News minus No Cost News	
(-5, +5)	Cost News	78	-2.65692***	0.00493	-5.39443	0.00000	0.48093	0.65700
	No Cost News	267	-3.13785***	0.00567	-5.53785	0.00000		
(-10, +10)	Cost News	78	-3.89764***	0.00742	-5.25386	0.00000	0.43138	0.75400
	No Cost News	258	-4.57983***	0.00730	-6.27365	0.00000		
Negative Subsequent							Cost News minus No Cost News	
(-5, +5)	Cost News	119	-2.02986***	0.00336	-6.04381	0.00000	1.16734*	0.07500
	No cost News	202	-3.19720***	0.00461	-6.93247	0.00000		
(-10, +10)	Cost News	113	-2.40232***	0.00437	-5.49958	0.00000	1.27935	0.14000
	No cost News	185	-4.02780***	0.00622	-6.47600	0.00000		
Negative Company Response							Cost News minus No Cost News	
(-5, +5)	Cost News	37	-2.63897***	0.00486	-5.42986	0.00000	1.97122	0.29700
	No cost News	84	-4.61019***	0.01227	-3.75854	0.00016		
(-10, +10)	Cost News	35	-3.75371***	0.00723	-5.19237	0.00000	1.46976	0.15500
	No cost News	82	-4.86420***	0.00613	-7.92864	0.00000		
Positive Company Response							Cost News minus No Cost News	
(-5, +5)	Cost News	79	2.08863***	0.00492	4.24174	0.00003	-0.99747	0.29600
	No cost News	164	3.08610***	0.00617	5.00558	0.00000		
(-10, +10)	Cost News	74	3.08993***	0.00685	4.51018	0.00001	-1.26407	0.27700
	No cost News	145	4.85113***	0.00737	6.58351	0.00000		
Positive Subsequent							Cost News minus No Cost News	
(-5, +5)	Cost News	28	0.64418	0.00860	0.74898	0.23017	-2.58781	0.10600
	No cost News	46	3.23198***	0.01115	2.89790	0.00289		
(-10, +10)	Cost News	27	1.67130**	0.00954	1.75261	0.04573	-2.28507	0.14500
	No cost News	44	3.74809***	0.01108	3.38265	0.00077		
(* p < 0.10, ** p < 0.05, *** p< 0.01)								

Table 8: Cumulative abnormal returns (CARs) of Event categories by Cost of events

Table 8 exhibits insignificant difference in market reactions between Cost News and No Cost News Event groups for all event categories except the "negative subsequent" category, which shows severer market reactions for the "No Cost News" group than for the "Cost News" counterpart, although the significant level is marginal.[33] It appears that the market reacts negatively (positively) to negative (positive) CSR events/actions regardless of the costs associated with such events/actions. This is more in line with the view that the market cares about CSR (it is not that the market reacts to an ES event solely due to its financial implications), as the reaction is not a function of the level of cash outflows associated with the CSR events/actions. However, an

[33] The market reacts to positive responses and positive subsequent events less positively when the news on the event contains cost information, This is consistent with the notion that information on the costs associated with the event, which is eventually shouldered by shareholders in the form of raised wage, voluntary compensation, reimbursement, cleanup cost, cost of internal investigation, settlement approval etc., reduces the magnitude of the positive market reaction to positive events. However, the differences are not statistically significant.

alternative explanation for this insignificant difference between the "No Cost News" and "Cost News" events: the incompleteness of this cost variable. No information on costs in the news on the event does not necessarily means that the event comes with no cash outflows incurred by the company. Ruling out the alternative explanation calls for a more complete data on cost information; a more detailed analyses on the cost-market reaction relationship with a more complete cost information could be an interesting extension of this study.

5-1-2-3 By Location

The last analysis to examine whether the market reacts to CSR events not solely due to their financial implications but also because it cares about CSR entails the categorization of events in the sample into two groups, based on the location of the events: one group consists of events that took place in the U. S. and the other group comprises of events that occurred outside of the U. S.

The analysis is based on the following two assumptions: (1) the majority of participants to the U.S. stock markets are in the U.S., thus shareholders tend to be more sensitive to social and environmental issues within the U.S. than those outside (Ichev & Marinč, 2018; Engelberg & Parsons, 2011);[34] and (2) costs associated with a negative ES events that occurred outside of the U. S. are more substantial than those within the U. S., due to the transportation and translation costs and costs associated with the complications raised by different cultural and legal settings.[35] Based on these assumptions, we hypothesize that if the market reacts to CSR events due purely to their financial implications, it should react more negatively (positively) to negative (positive) events that occurred outside of the U. S. (due to higher costs associated with it). On the other hand, if the market reacts to CSR events because it cares about social- and environmental issues, it should react more negatively (positively) to negative (positive) events that took place within the U. S.

The results are presented in Table 9. Table 9 exhibits that the market reacts more negatively to negative events that occurred within the U.S. than those outside. The difference is statistically significant at one per cent level when all negative events are combined, which is mainly coming from the significant difference for the Origin Event group (the difference is not significant for the negative subsequent and response groups). As for the Positive Event groups, although the average CARs are greater for the events within the U.S. than those outside (the market reacts more positively to positive subsequent events and positive company responses when the events occurred within the U.S.), the difference is not statistically significant.

Overall, the results are suggestive that the geographic proximity of the event makes investors more sensitive to the CSR event than the distance does. Accordingly, given the two assumptions above, it appears that the market cares for CSR – it does not react to CSR events due solely to their financial implications.

[34] See https://www.nasdaq.com/articles/who-is-trading-on-u.s.-markets-2021-01-28. Ichev and Marinč (2018) and Engelberg and Parsons (2011) report a significant correlation between geographic proximity of an event to financial market and pronounced market reaction.

[35] For example, unawareness of the French employee termination law cost an US firm $180,000 associated with employee misconduct and immoral behavior by an employee in France (Forbes, 2015)

Event Window	Location	# of Obs	Mean CAR (%)	S. E.	t-stat	P-value	Mean CAR Difference (%)	P-value (Difference)
Negative Origin							**Outside minus Within USA**	
(-5, +5)	USA	214	-3.86493***	0.00685	-5.64146	0.00000	2.20118 **	0.01800
	Other	131	-1.66375***	0.00382	-4.35522	0.00001		
(-10, +10)	USA	210	-5.74000***	0.00878	-6.53392	0.00000	3.51612 ***	0.00400
	Other	126	-2.22389***	0.00493	-4.51386	0.00001		
Negative Subsequent							**Outside minus Within USA**	
(-5, +5)	USA	201	-2.89065***	0.00449	-6.43491	0.00000	0.33760	0.60700
	Other	120	-2.55305***	0.00393	-6.50257	0.00000		
(-10, +10)	USA	182	-3.49105***	0.00612	-5.70140	0.00000	0.20455	0.81400
	Other	116	-3.28650***	0.00506	-6.49640	0.00000		
Negative Company Response							**Outside minus Within USA**	
(-5, +5)	USA	67	-5.26737***	0.01515	-3.47690	0.00045	2.82322	0.10600
	Other	54	-2.44415***	0.00425	-5.75266	0.00000		
(-10, +10)	USA	66	-5.11638***	0.00749	-6.83020	0.00000	1.34063	0.16900
	Other	51	-3.77575***	0.00521	-7.24200	0.00000		
Positive Company Response							**Outside minus Within USA**	
(-5, +5)	USA	135	3.15233***	0.00716	4.40337	0.00001	-0.87863	0.32900
	Other	108	2.27369***	0.00455	4.99873	0.00000		
(-10, +10)	USA	126	4.45875***	0.00770	5.79284	0.00000	-0.47740	0.66400
	Other	93	3.98135***	0.00740	5.38239	0.00000		
Positive Subsequent							**Outside minus Within USA**	
(-5, +5)	USA	53	2.93475***	0.01056	2.77892	0.00379	-2.40304	0.16400
	Other	21	0.53171	0.00463	1.14897	0.13206		
(-10, +10)	USA	52	3.63173***	0.01012	3.58930	0.00037	-2.51641	0.15500
	Other	19	1.11532*	0.00820	1.35932	0.09542		
(* p < 0.10, ** p < 0.05, *** p< 0.01)								

Table 9: Cumulative abnormal returns (CARs) of Event categories by event Location

The below summarizes the results of this section 5-1. First, CARs around the days of negative CSR events, as well as the days of those subsequent to the origin events, are significant, suggesting that: (1) the market reacts negatively not only to negative origin events but also negative subsequent or recurrent events that follow the origin events; and (2) it reacts positively to positive subsequent events, confirming the Hypotheses 1 and 3a. However, the difference in CARs between the origin and the negative subsequent/recurrent events is insignificant, rejecting the Hypothesis 2a: the market reacts more negatively to subsequent and recurrent negative events than to the origin negative event, at the univariate level.

In order to examine whether the market reacts negative CSR events purely due to its concern about the environmental and social issues (not due to the costs associated with such events), this study performed the following four empirical tests: (1) market reactions to company responses to the negative events it brought about (assuming that responses carry less financial implications); (2) comparisons of market reactions across different types of company positive responses; (3)

comparisons of market reactions to events on which news discloses information on the costs associated with the event with those on which news does not disclose such information; (4) comparisons of market reactions to events that occurred within the U.S. and those took place outside of the U.S. It was found that: (1) the market reacts negatively to irresponsible responses by the company that brought about the negative event, and positively to responsible actions; (2) it does not react less positively to positive company responses that are likely to come with the costs; (3) the reactions do not significantly differ between the events on which news discloses the costs of the events and those on which cost information was not publicly available;[36] and (4) the market are more sensitive to the events that took place within the U.S. than those outside. These results appear to be more supportive of the view that that the market cares about CSR events not solely due to their financial implications, but also because it considers socially responsible operations as an important, value-enhancing corporate duty.[37]

5-2 OLS Regression Results

In this section we report the results of OLS regression estimates for Model 1, 2, 3 and 4 (specified in Section 4.2. Methodology), each of which is to test Hypothesis 2a; Hypotheses 2b, 3b, 4b, and 5b; Hypothesis 5a-2; and Hypotheses 6a and 6b; respectively.

5-2-1 Market Reactions to Negative Subsequent or Recurrent Events (Testing Hypothesis 2a)

Hypothesis 2a predicts that market reacts more negatively to negative subsequent and recurrent events than to negative origin events, due to the attributional bias (Weiner, 1985; Kelley & Michela, 1980; the presence of previous examples of negative events leads people to attribute the responsibility of the current (and previous) negative events internally), and the anchoring bias ((Tversky & Kahneman, 1974; people tend to assess the current event based on previous occurrences of similar events, so the second negative events are viewed more unfavorably than the first one). We ran Model 2 to test this hypothesis and the results are presented in Table 10. We regressed 11-day CAR (column 1) and 21-day CAR (column 2) on recurrent and negative subsequent event dummies while controlling for the size of the company that brought about the event.[38]

The coefficient on the negative Subsequent dummy is insignificant for both 11-day and 21-day estimation windows, suggesting that market reactions to negative subsequent events are not significantly more unfavorable than those to the origin events. For recurrent events, the market tends to react less negatively than origin events at the five per cent significance level (when the 21-day window is concerned), contrary to the Hypothesis 2a.

[36] This result is, however, subject to a robustness check with a more complete cost data.

[37] This is based on the following assumptions (a) company responses to the negative ES events carry less financial implications than the event itself (for testing (1)); and (b) U.S. market participants are more sensitive to ES issues within the U.S. than those outside (if they care about these issues) and the costs associated with negative ES events are higher for those that occurred outside of the U.S. (for testing (4)).

[38] We also tried various models that include possible control variables, such as location, issue area, cost etc. (we include one of these at one time in order to preserve a good level of degrees of freedom). The direction and the significance of the coefficients on negative subsequent and recurrent event dummies remain unchanged.

	(1)	(2)
Dependent Variable	CAR [-5, +5]	CAR [-10, +10][39]
Constant	-0.10061***	-0.14989***
	(0.01670)	(0.02223)
ln(Market Cap)	0.00652***	0.00980***
	(0.00151)	(0.00201)
Recurrent	0.02028	0.03420**
	(0.01245)	(0.01695)
Negative Subsequent	0.00179	0.00861
	(0.00544)	(0.00719)
Observations	701	665
R-squared	0.02930	0.04124
Standard errors in parentheses		
*** p<0.01, ** p<0.05, * p<0.1		

Table 10: Comparison of impact of negative origin events and Negative Subsequent & Recurrent events

Overall, the results do not support Hypothesis 2a, and are suggestive of the opposite direction, that is: CARs on the recurrent or negative events are less negative than the event that they are originated from. This might be because negative origin events lower investors' expectation on ES issues associated with the company that brought about the event. It could be thought that negative events triggered by the negative origin events do not come as surprise, but just confirm the lowered expectation investors developed by the origin events – in other words, a phenomenon known as *negative expectancy conformity* (Park, Cho, & Kim, 2021) occur. The results are also thought to be consistent with the expectancy violation (EV) theory, which argues that confirmatory behaviors produce less extreme outcomes than expectancy-violating surprises (Burgoon & LePoire, 1993; Park, Cho, & Kim, 2021). Hence, market reactions to the negative subsequent or recurrent incidents are not significantly more punitive than market reaction to the origin event.

5-2-2 Impact of Time (Testing Hypotheses 2b, 3b, 4b and 5b)

Hypotheses 2b, 3b, 4b and 5b suggest the time impact on CARs – the closer the subsequent event in time to the original events, the severer the market reactions, either positive or negative. To test these hypotheses, Model 2 is estimated with the dependent variable being CARs; the independent variable being the natural logarithm of the number of days elapsed between the Origin event and the subsequent event under consideration ("*Time_Orig*" variable).[40]

[39] The sample size is slightly smaller for the 21-day estimation window than for the 11-day counterpart, due to the presence of a few events that are contaminated when the 21-day window is used. It is possible that the difference in significance of the recurrent event dummy between the two estimation windows is derived by the few observations that are included in the 11-day but excluded in the 21-day window sample. Accordingly, we run the 11-day window model excluding those that are not included in the 21-day estimation. However, the coefficient for the recurrent event dummy stays insignificant even in that model.

[40] We also estimated the impact of time (the number of days elapsed) between the closest previous event (which could be the origin or a subsequent event) and the subsequent event under consideration ("*Time_Prev*" variable).

The results for hypothesis 2b (which suggests the time impact on recurrent and negative subsequent events) and 4b (which suggests the time impact on negative company responses) are presented in Panel A, Table 11, while those for hypothesis 3b (on positive subsequent events) and 4b (on positive company responses) are presented in Panel B, Table 11.[41]

5-2-2-1 Time impact on recurrent/negative subsequent events (H2b) and negative company responses (H4b)

Hypothesis 2b predicts that the shorter the time between the origin and the recurrent /negative subsequent events, the more negatively the market reacts to the latter. Consistent with this prediction, Column (1) and (4) of Panel A show that, for the sample of Negative subsequent and recurrent events, the coefficient of Time_Orig is positive and significant for both estimation windows ($p<0.01$ for 11-day and $p<0.05$ for 21-day windows). These results support Hypothesis 2b, suggesting that the market reacts more negatively to recurrent and negative subsequent events when they are chronologically close to the origin event, as temporal proximity: (1) induces the recency bias (Tversky & Kahneman, 1973; 1974); (2) makes the overall picture of a chain of events more cognitively available that amplifies the perceived impact of the chain and heightens its subjective undesirability (Tversky & Kahneman, 1973; 1974); (3) makes each negative event within a string be perceived more undesirable and attention-drawing while facilitating internal attribution (Lange & Washburn, 2012).

Similarly, Hypothesis 4b states that the shorter the time between the origin events and the negative company response to the origin event, the more negatively the market reacts to the latter, thus a positive and significant coefficient for Time_Orig was predicted. Column (2) and (5) indicates a positive coefficient for Time_Orig variable for the sample of Negative company responses, which is significant for the 21-day estimation window ($p<0.05$). Accordingly, the result based on the 21-day estimation window supports Hypothesis 4b: temporal proximity induces the recency bias, while facilitating the cognitive availability of the overall picture of a chain of events, which makes the events more attention-drawing, internally attributed, and perceived to be more undesirable. However, the Time_Orig variable is not significant for the 11-day estimation window; this might be because of the average CAR for the 21-day estimation window greater than that for 11-day window (see Table 6, Panel D).[42]

In Column (3) and (6) of Table 11, we present the results of the analysis on an aggregated sample consisting of recurrent and negative subsequent, as well as negative responses. The coefficient of Time_Orig is significantly positive for both 11-day and 21-day estimation windows ($p<0.05$ and $p<0.01$, respectively), confirming the time impact of market reactions to recurrent, negative subsequent, and negative company response events.

[41] We also tried various models that include possible control variables, such as location, issue area, cost etc. (we include one of these at one time, in order to preserve a good level of the degrees of freedom). However, inclusions of these control variables did not change the direction and the significance of Time variable coefficients.

[42] Again, it is possible that the difference in significance of the Time-Orig variable between the two estimation windows is derived by the few observations that are included in the 11-day but excluded in the 21-day window sample. Accordingly, we run the 11-day window model excluding those that are not included in the 21-day estimation. However, the coefficient for Time-Orig stays insignificant even in that model.

Panel A: Impact of time on recurrent and negative subsequent events, as well as negative company responses												
Dependent Variable	CAR [-5, +5]			CAR [-10, +10]			CAR [-5, +5]			CAR [-10, +10]		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Event Category	Neg Sub+ Rec	Neg Res	Neg Sub +Neg Res +Rec	Neg Sub +Rec	Neg Res	Neg Sub +Neg Res+ Rec	Neg Sub + Rec	Neg Res	Neg Sub +Neg Res +Rec	Neg Sub + Rec	Neg Res	Neg Sub +Neg Res +Rec
Constant	-0.07647***	-0.09047	-0.07739***	-0.10082***	-0.07775**	-0.09610***	-0.07082***	-0.10718	-0.07783***	-0.09202***	-0.09177**	-0.09360***
	(0.01850)	(0.06768)	(0.02048)	(0.02535)	(0.03628)	(0.02106)	(0.01824)	(0.07098)	(0.02051)	(0.02524)	(0.03596)	(0.02121)
ln(Market Cap)	0.00284*	0.00427	0.00289	0.00339	0.00098	0.00280	0.00305*	0.00465	0.00318*	0.00395*	0.00175	0.00342*
	(0.00163)	(0.00623)	(0.00183)	(0.00224)	(0.00335)	(0.00188)	(0.00163)	(0.00630)	(0.00183)	(0.00224)	(0.00320)	(0.00188)
Time_Orig	**0.00423*****	**0.00068**	**0.00360****	**0.00681*****	**0.00498****	**0.00656*****						
	(0.00158)	(0.00431)	(0.00162)	(0.00211)	(0.00231)	(0.00163)						
Time_Prev							**0.00355****	**0.00526**	**0.00425****	**0.00513****	**0.00851*****	**0.00631*****
							(0.00156)	(0.00489)	(0.00167)	(0.00210)	(0.00246)	(0.00169)
Observations	354	119	473	328	115	443	353	114	467	327	110	437
R-squared	0.03230	0.00488	0.01808	0.04204	0.04481	0.04465	0.02664	0.01552	0.02160	0.02901	0.10361	0.04006
Panel B: Impact of time on positive subsequent events and positive company responses												
Dependent Variable	CAR [-5, +5]			CAR [-10, +10]			CAR [-5, +5]			CAR [-10, +10]		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Event Category	Pos Sub	Pos Res	Pos Sub+ Pos Res	Pos Sub	Pos Res	Pos Sub+ Pos Res	Pos Sub	Pos Res	Pos Sub+ Pos Res	Pos Sub	Pos Res	Pos Sub+ Pos Res
Constant	0.13104**	0.10621***	0.10601***	0.14202**	0.13534***	0.13356***	0.06861*	0.16746***	0.14029***	0.15492***	0.23390***	0.20649***
	(0.06280)	(0.03321)	(0.02865)	(0.06351)	(0.04012)	(0.03343)	(0.03739)	(0.04999)	(0.03788)	(0.05457)	(0.05633)	(0.04345)
ln(Market CAP)	-0.00391	-0.00622**	-0.00584**	-0.00404	-0.00735**	-0.00674**	-0.00084	-0.00994**	-0.00732**	-0.00424	-0.01380***	-0.01078***
	(0.00472)	(0.00280)	(0.00240)	(0.00481)	(0.00337)	(0.00280)	(0.00281)	(0.00438)	(0.00326)	(0.00398)	(0.00497)	(0.00373)
Time_Orig	-0.01082	-0.00209	-0.00299	-0.01124	-0.00251	-0.00395						

	(0.00705)	(0.00239)	(0.00214)	(0.00695)	(0.00287)	(0.00248)						
Time_Prev							**-0.00799****	**-0.00728***	**-0.00763****	**-0.01599*****	**-0.01068****	**-0.01184*****
							(0.00341)	(0.00383)	(0.00300)	(0.00476)	(0.00428)	(0.00340)
Observations	74	242	316	71	218	289	48	141	189	45	130	175
R-squared	0.04677	0.02334	0.02501	0.05238	0.02477	0.02864	0.0963	0.06041	0.05919	0.21538	0.10085	0.10667
Time_Orig: the natural logarithm of the number of days elapsed between the Origin event and the subsequent event under consideration; Time_Prev: the natural logarithm of the number of days elapsed between the closest previous event (which could be the origin or a subsequent event) and the subsequent event under consideration. Neg Sub: Negative subsequent events; Neg Res: Negative company responses; Rec: Recurrent events; Pos Sub: Positive subsequent events; Pos Res: Positive company responses												
Standard errors in parentheses												
*** p<0.01, ** p<0.05, * p<0.1												

Table 11: Impact of time on market reactions

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Columns (7) ~ (12) repeat the analyses presented in (1) ~ (6) but use a different measure of Time, i.e., "Time_Prev". While "Time_Orig" in (1) ~ (6) measures the chronological distance of the event from its origin event, Time_Prev gauges it from its closest previous event, either the origin, or a previous recurrent, negative subsequent, or negative company response event. The results with the "Time_Prev" variable resemble those with the "Time_Orig" variable, providing additional evidence in favor of the view that investors react more negatively to negative subsequent events (including recurrent events and company negative responses) when they occur sooner after the origin events or when the negative events within a chain are more concentrated in time.

5-2-2-2 Time impact on positive subsequent events (H3b) and positive company responses (H5b)

Next, we estimate Model 2 for hypothesis 3b using the sample of positive subsequent events, and estimate model 2 for hypotheses 5b-1 and 5b-2 using the sample of positive company responses. Hypothesis 3b expects that the market reacts more positively when a positive subsequent event occurs sooner, predicting a negative and significant coefficient of the time variable, due to the effect of such events to reduce the anticipated costs and uncertainty, as well as to facilitate the re-development of relational wealth and reputation, quickly, giving customers less opportunity to drift away (Klein et al., 2004). However, Column (1) and (4) of Panel B in Table 11 indicate that, for the sample of positive subsequent events, the coefficients for the Time_Orig variable is negative, but not significant for both 11-day and 21-day estimation windows.

As for the impact of time on the market reactions to positive company responses, we have developed two hypotheses opposing each other: Hypothesis 5b-1 argues that the company's quicker (favorable) response to the original negative event it brought about is received more favorably by the market (thus predicts a negative coefficient of time), as such a response facilitate quicker regain of relational capital and reputation (Moorman et al., 1993; Kim et al., 2004; Lins et al., 2017; Xie and Peng, 2009; Ferrin et al., 2007), reduction of uncertainty (Boeschen, 2000; Brown, 2019), and the erosion of a "bad actor" image (Godfrey, 2005). On the other hand, Hypothesis 5b-2 contends that the company's quicker (favorable) response is received less favorably by the market (thus predicts a positive coefficient of time), due to the recency bias (Tversky & Kahneman, 1973; 1974) with which individuals tend to overweigh the recent negative information. However, as in the case of positive subsequent events, the coefficient for Time_Orig is insignificant for both estimation windows for the sample of Positive company responses, supporting neither Hypothesis 5b-1 nor 5b-2 (accordingly, the Time-Orig coefficient is also insignificant in the positive subsequent – company response combined sample).

As in the analyses of recurrent, negative subsequent, and negative response events, the time impacts were also analyzed based on the time between the current and closest previous negative events (instead of between the current and the origin event) for positive subsequent and response events. Columns (7) ~ (12) of Table 11 report the results. Contrary to the "Time_Orig" variable that exhibits an insignificant impact on CARs, "Time_Prev" shows a significantly negative impact for both 11-day and 21-day estimation windows ($p<0.1$ and $p<0.05$, respectively), consistent with Hypotheses 3b and 5b-1.

Why is the impact of Time_Orig insignificant while that of Time_Prev is significant? We assume that this is due to the greater chronological distance of the positive subsequent/response event under consideration from its negative origin event (average 403 and median 279 days) than the

distance from its closest previous negative event (which could be either the origin or a recurrent/negative subsequent/negative response event – average 164 and median 50 days). Assuming the decreasing marginal impact of time (Gattig, 2002; a difference in time impact is greater between 2 and 7 days than between 300 and 305 days), the fact that a half of positive subsequent events/positive responses occurred more than nine months after the origin event occur, for which period the time since origin event might lose its impact, erases the meaning of the Time_Orig variable.[43] Accordingly, we consider that the impact of time is more clearly manifested in Time_Prev (the number of days from the previous negative event), and thus the overall results are rather supportive to Hypotheses 3b and 5b-1: the market reacts more favorably when positive subsequent events occur soon after the previous negative event and when the company makes an a more prompt ES-friendly response to the ES-harmful event it previously brought about. This is because: (1) a positive subsequent event that occurs soon after the previously occurred negative event and (2) a quicker company ES-friendly response that address the ES negative event it preciously encountered, facilitate quicker regain of relational capital and reputation, reduction of anticipated costs and uncertainty, and the erosion of a "bad actor" image.

In sum, we found empirical observations supporting Hypotheses 2b and 4b, i.e., severer market reactions to recurrent/negative subsequent/negative response events that are closer in temporal distance to the negative origin event or previous negative events. Although Hypotheses 3b and 5b-1 are not confirmed when the chronological distance is measured from the origin event, they are supported when it is gauged from the closest previous negative event.

5-2-3 Moderating Effect of Agency Risk (Testing Hypothesis H5a-2)

Kruger (2015) argues that market reactions to firms' engagements in socially- or environmentally friendly activities (positive ES events) depend on the firm's risk level with respect to agency problems, as such engageents may be used by senior executives to enhance their own reputations at the expense of shareholders (Bénabou & Tirole, 2010; Cheng, Hong, & Shue, 2013; Masulis & Reza, 2015; Borghesi, Houston & Naranjo, 2014; Gul et al., 2020). Hypothesis 5a-2 argues that such a moderating effect of agency problem may be present not only in market reactions to positive ES events but also in those to positive company responses. This hypothesis is tested by the estimation of Model 3, of which results are presented in Table 12.

Following Kruger (2015), we measure the firm's level of agency concern with two proxy measures: (1) cash to total assets (Liquidity – the greater the value of this variable, the higher the agency concern); and (2) total liabilities to total assets (Book leverage – the smaller the value of this variable, the higher the agency concern). Panel A of Table 12 exhibits the results with Liquidity as the proxy of the degree of agency concerns, while Panel B present the results with Book leverage as the proxy.

[43] In Panel A, Table 11 (for recurrent/negative subsequent negative response events), both Time_Orig and Time_Prev variables are significant, while in panel B (for positive subsequent and company response events), only Time_Prev is significant. This is because, we assume, negative subsequent events and company responses tend to occur relatively sooner after the original negative event (average 314 and median 149days) than positive subsequent and response events do (average 403 and median 279 days – the difference is significant at one per cent level).

Panel A: Moderating effect of Liquidity								
Dependent Variable	CAR [-5, +5]	CAR [-10, +10]	CAR [-5, +5]			CAR [-10, +10]		
	(0)	(0)	(1)	(2)	(3)	(4)	(5)	(6)
Event Category	All Pos Res	All Pos Res	All Pos Res	All Pos Res	All Pos Res	All Pos Res	All Pos Res	All Pos Res
Constant	0.09621***	0.12324***	-0.00147	0.12458***	0.03569	0.01126	0.15621***	0.06569*
	(0.03102)	(0.03728)	(0.00598)	(0.02787)	(0.02238)	(0.00733)	(0.03394)	(0.03402)
ln(Market Cap)	-0.00622**	-0.00734**		-0.01194***	0.00385		-0.01379***	0.00441
	(0.00278)	(0.00336)		(0.00258)	(0.00309)		(0.00316)	(0.00476)
Liquidity			0.16648***	0.19842***	0.08775***	0.17842***	0.21643***	0.11334***
			(0.02490)	(0.02489)	(0.02073)	(0.03028)	(0.03037)	(0.03343)
S&P issuer Credit					-0.00100***			-0.00137***
					(0.00027)			(0.00043)
Observations	243	219	243	243	211	219	219	190
R-squared	0.02029	0.02157	0.15650	0.22546	0.13218	0.13792	0.20783	0.10488
Panel B: Moderating effect of Book Leverage								
Dependent Variable			CAR [-5, +5]			CAR [-10, +10]		
			(1)	(2)	(3)	(4)	(5)	(6)
Event Category			All Pos Res	All Pos Res	All Pos Res	All Pos Res	All Pos Res	All Pos Res
Constant			0.04972***	0.13937***	0.03966	0.06599***	0.17091***	0.06804*
			(0.01159)	(0.03494)	(0.02637)	(0.01407)	(0.04225)	(0.03997)
ln(Market Cap)				-0.00762***	0.00588*		-0.00892***	0.00654
				(0.00281)	(0.00318)		(0.00339)	(0.00487)
Book Leverage			-0.03712**	-0.04661**	-0.02099	-0.03912*	-0.05065**	-0.02233
			(0.01798)	(0.01809)	(0.01495)	(0.02170)	(0.02185)	(0.02323)
S&P issuer Credit					-0.00100***			-0.00130***
					(0.00029)			(0.00045)
Observations			243	243	211	219	219	190
R-squared			0.01738	0.04667	0.06598	0.01476	0.04531	0.05426
Standard errors in parentheses								
*** p<0.01, ** p<0.05, * p<0.1								

Table 12: Moderating effect of agency risk

Column (0) of Panel A (both CAR [-5, +5] and CAR [-10, +10]) include only the control variable, the natural logarithm of size (market cap). They show that the constant term is highly significant ($p<0.01$) and positive, confirming positive market reactions to positive company responses, the result obtained by the t-test (Table 6, Panel E) that supports Hypothesis 5a-1. Given the multicollineality between size and agency risk variables, Column (1) and (4) of Panel A and B include only the independent varible (i.e., Liquidity for Panel A and Book Leverage for Panel). Models are then augumented by additional variables (size (the natural logarithm of market cap)

and credit ratins) as they move to the right. The credit rating variable is included to column (3) and (6) following Kruger (2015), who adds the credit rating variabe in his examination of the moderating effect of agency risk on market reactions to firms' pro-ES initiatives, in order to control for the alternative explanation of the two agency variables (high leverage and low liquidity could also mean financial distress).

All models (Column (1) ~ (6)) in Panel A indicate a positive and significant coefficient for Liquidity, and Column (1), (2), (4) and (5) in Panel B exhibit a negative and significant coefficient for Book Leverage. These coefficients are contrary to the prediction of Hypothesis 5a-2, that is: market reactions to positive company responses would be more favorable for firms with less agency concerns, thus, the coefficient for *Book leverage* should be positive and that for *Liquidity* is negative. They are also contrary to the results reported by Kruger (2015): a positive and significant coefficient for Book Leverage and a negative one for Liquidity, in the context of companies' positive ES initiatives. We contemplated on this somewhat surprising finding and formulated the possible reason as follows. When a company encoutered a negative ES event and attempts to work towards its resolution, the market concerns less about the agency risk but more about financial resources available to the company for a smooth resolution. The market thus reacts to positive company responses more favorably when the firm has more cash and when it is not financially constraint, as higher liquidity and lower leverage ensure resources that might be necessary for smooth settlement.

To substantiate this view, we performed an additional analysis, which estimates the coefficients for Liquidity and Leverage in the regression on CARs for corporate positive ES initiatives (i.e., Positive origin events). Table 13 exhibits the results of such an analyses. Consistent with the results reported in Kruger (2015), the coefficient of Liquidity is significantly negative ($p<0.05$) and that of Book Leverage is significantly positive ($p<0.1$) for estimation with 11-day CAR, although the coefficients lose their significance for estimation with 21-day CAR[44]. It appears that the market concerns about the agency risk when companies make positive ES initiatives (and try to measure the risk using the liquidity and leverage levels of the company), while it focuses more on the availability of financial resources when the company attempts to address the negative ES event it brought about in a ES-friendly way. In other words, investors do not regard positive responses as agency-motivated events but are concerned more about the availability of necessary cash when the company makes remedial responses to the negative ES event.

Column (3) and (6) of Panel A and B of Table 12 include the credit rating variable, following Kruger (2015). While, in Panel A, Liquidity keeps its significance after the inclusion of the rating variable, the coefficient of the rating variable exhibits a wrong direction. Moreover, Leverage loses its significance when the rating variable is inserted. Obviously the two agency risk variables are correlated with the rating variable – in fact, the correlaton coefficients are all significant – Leverage is negatively correlated with Liquidity and Rating, and Liquidity and Rating are positively correlated, all at the one per cent level. We argue that since the market appears to gauge cash availability based on the liquidity and leverage variables (rather than measuring the level of agency risk), the inclusion of the credit rating variable to control for the level of financial destress of the firm is not necessary in the context of positive company resposes.

[44] A bigger sample and a thorough contamination check to eliminate confounding events are necessary for a more robust conclusion.

Dependent Variable	CAR [-5, +5]		CAR [-10, +10]	
	(1)	(2)	(3)	(4)
Event Category	Positive Origin	Positive Origin	Positive Origin	Positive Origin
Constant	-0.01565	-0.07459*	-0.09434	-0.12097*
	(0.04009)	(0.04282)	(0.06447)	(0.06713)
ln(Market Cap)	0.00315	0.00464	0.00908*	0.00967*
	(0.00338)	(0.00345)	(0.00543)	(0.00541)
Book Leverage		0.04936*		0.03367
		(0.02886)		(0.04524)
Liquidity	-0.09283**		-0.02063	
	(0.03686)		(0.05926)	
Observations	75	75	75	75
R-squared	0.09808	0.05693	0.04108	0.04680
Standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1				

Table 13: Moderating effect of agency risk: Positive Origin events

5-2-4 Impact of *Ex-ante* CSR (Testing Hypotheses 6a and 6b)

5-2-4-1 Impact of ex-ante CSR performance on negative events (H6a)

In the consideration of the impact of firms' *ex-ante* CSR performance on market reactions to negative and positive ES events, we developed two hypotheses opposing each other. Regarding the impact of CSR performance on market reactions to negative events (Origin, Recurrent, Negative subsequent, and Negative company response evens), Hypothesis 6a-1 predicts less severe market reactions to negative events for firms with higher *ex-ante* CSR scores, as: (1) relational wealth and reputation built through corporate responsible attitudes by the firm before it brought about a negative ES events acts as safeguards against the negative ES event (e.g., Godfrey, 2005); (2) responsibility of a negative event is more likely attributed to management in the presence of poor *ex-ante* CSR performance (Coombs & Holladay, 1996; Coombs & Holladay, 2004; Coombs, 2007); and (3) negative ES events would be perceived relatively more unfavorably for a firm with a weak CSR record because the firm have alreacy been characterized as "bad actors" (Godfrey et al., 2009); and (4) a firm's history of socially irresponsible behavior acts as a cognitive anchor, based on which individuals assess the firm associated with a negative event (Tversky & Kahneman, 1974). On the other hand, Hypothesis 6a-2 predicts a negative relationship between CARs on negative events and *ex-ante* CSR performance, arguing based on the theory of expectancy violations (EV) by Burgoon and LePoire (1993) that strong CSR engagement exposes firms to more severe reputational damages at the time of a negative ES event, because the market has an *ex-ante* elevated level of expectations of firms with high repute (e.g., Sohn & Lariscy, 2015; Baron, 2009; Coombs & Holladay, 2015).

Panel A: Negative Events								
Dependent Variable	CAR [-5, +5]				CAR [-10, +10]			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Event Category	Origin	Neg Sub +Rec	Neg Res	Neg Sub + Neg Res + Rec	Origin	Neg Sub +Rec	Neg Res	Neg Sub + Neg Res + Rec
Constant	-0.14624***	-0.06992***	-0.10234	-0.07960***	-0.21526***	-0.08488***	-0.07914**	-0.08537***
	(0.02947)	(0.01879)	(0.06607)	(0.02056)	(0.03756)	(0.02566)	(0.03694)	(0.02142)
ln(Market Cap)	0.01055***	0.00426**	0.00696	0.00505***	0.01559***	0.00489**	0.00349	0.00472**
	(0.00271)	(0.00174)	(0.00604)	(0.00190)	(0.00346)	(0.00238)	(0.00340)	(0.00198)
CSR Scaled score	0.00423	-0.00730	-0.02792**	-0.01343***	0.00742	-0.00335	-0.00900	-0.00577
	(0.00714)	(0.00444)	(0.01296)	(0.00465)	(0.00925)	(0.00594)	(0.00730)	(0.00475)
Observations	336	349	119	468	328	322	116	438
R-squared	0.04761	0.01924	0.04313	0.02499	0.06539	0.01314	0.01840	0.01358
Panel B: Positive Events								
Dependent Variable	CAR [-5, +5]			CAR [-10, +10]				
	(1)	(2)	(3)	(4)	(5)	(6)		
Event Category	Pos Sub	Pos Res	All Positive events	Pos Sub	Pos Res	All Positive events		
Constant	0.08178	0.11118***	0.10326***	0.08381	0.13809***	0.12521***		
	(0.05397)	(0.03229)	(0.02757)	(0.05450)	(0.03773)	(0.03129)		
ln(Market Cap)	-0.00558	-0.00782***	-0.00721***	-0.00479	-0.00885**	-0.00789***		
	(0.00492)	(0.00293)	(0.00250)	(0.00494)	(0.00344)	(0.00285)		
CSR Scaled Score	0.00644	0.00201	0.00355	-0.00320	-0.00264	-0.00281		
	(0.00961)	(0.00685)	(0.00555)	(0.00960)	(0.00835)	(0.00647)		
Observations	73	230	303	71	209	280		
R-squared	0.02050	0.03053	0.02716	0.01755	0.03299	0.02936		
Standard errors in parentheses								
*** p<0.01, ** p<0.05, * p<0.1								

Table 14: Impact of ex-ante CSR

Panel A of Table 14 shows the results of the OLS regression estimates on CARs against the *CSR Scaled score* variable, for negative events.[45] The columns indicate different samples of negative events used for the regression.

For the regressions using 11-day CAR as dependent variable, Panel A reports significantly negative coefficients for *ex-ante* CSR score for: (1) the sample of Negative company responses (Column (3), $p<0.05$); (2) the aggregate sample of negative subsequent, negative response and recurrent events (Column (4), $p<0.01$), due to the significant coefficient of CSR for negative responses and the close-to-significant coefficient of CSR for negative subsequent and recurrent events ($p=0.10107$). Accordingly, Hypothesis 6a-2 is supported for negative subsequent/recurrent/response events. In other words, the theory of expectancy violations holds for these events, suggesting that higher *ex-ante* CSR performing firms are more penalized for these events than lower *ex-ante* performing firms, since the market experiences a larger magnitude of expectancy violation when good *ex-ante* CSR performers encounter negative events than for poor CSR performing firms' negative engagements.

However, *ex-ante* CSR score is not found to be significantly related to CARs for negative origin events (column (1) and (5), $p=0.554$ and $p=0.423$, respectively). As a possible reason for this finding, we speculate the presence of "benefit of the doubt" for the first event (see section 3-2-1 for more detailed discussion on this concept). While the expectation violation drives down the CARs for high-*ex-ante* CSR performing firms, more "benefit of the doubt" is afforded to these firms – so the effects of these two factors cancel out.

Columns (5) ~ (8) of Panel A of Table 14 exhibit the results of Model 4 estimations using 21-day CARs as the dependent variable. However, in this case, the coefficient of *ex-ante* CSR performance is not statistically significant for any negative event type.[46] Accordingly, we conclude that the analyses provide *weak* evidence supporting Hypothesis 6a-2, which argues that higher *ex-ante* CSR performing firms are more penalized for negative subsequent/recurrent/company response events due to higher expectancy violation such firms trigger when they encounter negative subsequent/recurrent events or when they exhibit irresponsible attitudes to the negative ES events they caused.

5-2-4-2 Impact of ex-ante CSR performance on positive events (H6b)

As we did in the case of negative events, we developed two hypotheses, opposing each other, in consideration of *ex-ante* CSR performance of the firm on positive subsequent events and positive company responses. The first hypothesis (Hypothesis 6b-1) argues that relational and reputational capital built through the firm's favorable *ex-ante* disposition acts as a cognitive anchor (Tversky & Kahneman, Judgment under uncertainty: Heuristics and biases, 1974), facilitating internal

[45] We also tried various models that include possible control variables, such as location, issue area, cost etc. (we include one of these at one time, in order to preserve a good level of the degrees of freedom). The direction and the significance of the coefficients on the CSR variable were not changed by the inclusion of any of the control variables.

[46] To rule out that the significance in CAR[-5,+5] models for the sample of negative response and for the aggregate sample of negative response, negative subsequent and recurrent events are not driven by a few observations that are eliminated in CAR[-10,+10] models, we reran CAR[-5,+5] models excluding the observations eliminated from CAR[-10,+10] models. The CSR coefficients remain significant, suggesting that the significance in CAR[-5,+5] models are not driven by a few observations that are eliminated in CAR[-10,+10] estimations.

attributions of the good news and enhancing the trust with respect to the firm's ability to address the negative ES event it encountered in a socially-responsible fashion (Lin-Hi & Blumberg, Managing the social acceptance of business: Three core competencies in business ethics, 2012). On the other hand, Hypothesis 6b-2 predicts a negative impact of *ex-ante* CSR performance on market reactions to positive subsequent and company response events, due to the conformity to the expectation (Burgoon & LePoire, 1993) discussed above as well as the effect of marginal return on CSR investments, which is a decreased function of the firm's CSR performance level (the higher the CSR performance, the lower the marginal return).

Accordingly, we estimate Model 4 for the sample of positive subsequent events and positive responses to test the above two hypotheses (a positive coefficient of the *ex-ante* CSR score variable (higher CARs for firms with higher *ex-ante* CSR score) supports Hypothesis 6b-1, while a negative coefficient of the CSR variable (the inverse relationship between CARs and *ex-ante* CSR performance) is consistent with Hypothesis 6b-2).[47] However, as reported in Panel B, Table 14, the *CSR Scaled score* variable is not found to be significantly related to the CARs for either the sample of Positive subsequent events (columns (1) and (4)), the sample of positive company responses (columns (2) and (5)), or the sample of positive subsequent and response events combined (columns 3 & 6). It appears that the market reacts positively to positive events subsequent to, and responsible company responses towards, the negative origin events they brought about, regardless of the firm's *ex-ante* (before the positive event under consideration) CSR performance – thus neither Hypothesis 6b-1 nor 6b-2 is supported. A possible reason for this result is the weak effect of positive expectancy violation compared to the negative violation. For negative events considered under hypothesis 6a, we see that the effect of negative expectancy violation outweighs the safeguarding effect of robust relational/reputational capital. In case of positive events, the favorable effect of positive expectancy violation is not strong enough to eliminate the negative impact of anchoring bias and positive internal attribution. This is because the perceived gap between a low-CSR firm's *ex-ante* performance and its positive ES response triggers skepticism toward the firm and its positive CSR actions (Skarmeas & Leonidou, 2013; Vanhamme & Grobben, 2009), of which effect, together with the effects of the anchoring bias and positive internal attribution, cannot be surpassed by the effect of positive expectancy violation (Park, Cho, & Kim, 2021).

5-3 Robustness check

We performed several robustness checks to ensure the robustness of the results presented above.

5-3-1 Re-estimation of CARs with the Fama-French three and four factor models

Following Kruger (2015), we estimated CARs using other two asset pricing models, namely: the Fama-French three factor model (Fama & French, 1993) and Fama-French plus momentum model proposed by Carhart (1997), and performed all the above analyses[48]. These alternative ways of

[47] We also tried various models that include possible control variables, such as location, issue area, cost etc. (we include one of these at one time, in order to preserve a good level of the degrees of freedom). However, the direction and the significance of the coefficients on *ex-ante* CSR score is not changed by the inclusion of any of these control variables.

[48] Kruger (2015) estimates CARs with the market, the Fama-French three factor, and the Fama-French value-weighted 48 industry return models. Since the "Event Study by WRDS" does not provide the last model for CAR estimations,

computing CAR do not affect the findings presented in previous sections of this chapter. For the sake of brevity, the results of t-tests and regressions in which event returns are based on the two Fama and French models are not presented here, but are available upon request.

5-3-2 t-tests of CARs for different types of CSR events

In order to ensure that negative (positive) and significant CARs detected for negative (positive) CSR events are not an artifact of CSR events with particular characteristics, to which the market is particularly sensitive, we divided the events into several categories based on: (1) issue area; (2) development stage; and (3) location, and performed t-tests on CARs for each type.

5-3-2-1 By Issue Area

First, the events are classified based on the issue raised by the event, whether it is environmentally- or socially-related. Table 15 records the differences in CARs between Environmental and Social events for each event category. There appears no significant difference in market reactions between Environmental and Social events. Accordingly, there is no observation suggesting that the market reacts to environmentally-related events only, ignoring socially-related events (or vice versa).

Event Window	Environmental/ Social	# of Obs	Mean CAR (%)	S. E.	t-stat	P-value	Mean CAR Difference (%)	p-value (Difference)
Negative Origin							Social minus Environmental	
(-5, +5)	Environmental	50	-2.92450***	0.00696	-4.19985	0.00006	-0.12235	0.92400
	Social	295	-3.04685***	0.00516	-5.90576	0.00000		
(-10, +10)	Environmental	50	-5.63682***	0.01099	-5.13122	0.00000	1.42783	0.38700
	Social	286	-4.20899***	0.00661	-6.36654	0.00000		
Negative Subsequent							Social minus Environmental	
(-5, +5)	Environmental	70	-3.42963***	0.00871	-3.93632	0.00010	0.85069	0.26800
	Social	251	-2.57894***	0.00325	-7.94252	0.00000		
(-10, +10)	Environmental	67	-3.95472***	0.01081	-3.65995	0.00025	0.70087	0.48900
	Social	231	-3.25385***	0.00446	-7.29180	0.00000		
Negative Company Response							Social minus Environmental	
(-5, +5)	Environmental	20	-7.32415*	0.04568	-1.60329	0.06268	3.97350*	0.08900
	Social	101	-3.35064***	0.00518	-6.46809	0.00000		
(-10, +10)	Environmental	20	-4.94740***	0.01171	-4.22435	0.00023	0.50105	0.69700
	Social	97	-4.44635***	0.00531	-8.37182	0.00000		
Positive Company Response							Social minus Environmental	
(-5, +5)	Environmental	25	4.50196***	0.01064	4.23221	0.00015	-1.93969	0.18700
	Social	218	2.56227***	0.00481	5.32691	0.00000		
(-10, +10)	Environmental	23	6.54357***	0.01446	4.52569	0.00008	-2.55598	0.14900
	Social	196	3.98759***	0.00579	6.88182	0.00000		
Positive Subsequent							Social minus Environmental	
(-5, +5)	Environmental	16	2.55069***	0.00797	3.19838	0.00299	-0.38000	0.84200

we used the Fama-French plus momentum model or Carhart's (1997) four-factor model instead. The latter is the model that adds the momentum to the Fama-French three-factor model that includes market, size, and book-to-market factors.

Event Window	Environmental/ Social	# of Obs	Mean CAR (%)	S. E.	t-stat	P-value	Mean CAR Difference (%)	p-value (Difference)
	Social	58	2.17064**	0.00968	2.24300	0.01440		
(-10, +10)	Environmental	16	1.25031	0.01153	1.08442	0.14765	2.20489	0.24100
	Social	55	3.45520***	0.00945	3.65503	0.00029		
*** p<0.01, ** p<0.05, * p<0.1								

Table 15: Cumulative abnormal returns (CARs) of Event categories by event type: Environmental or Social

Second, we classified all events based on the issue raised by the event with a narrower issue area categorization: Contamination, Financial/Accounting (e.g., fraudulent and unlawful debt-collection, currency benchmark rigging, insider trading), Impact to customers (e.g., product safety), Impact to labor (e.g., workplace safety), Legislative change (e.g., being affected by regulatory changes that restricts environmentally- or socially-questionable operations such as sale of sin products, supporting, lobbying, or requiring environmentally- or socially-questionable regulatory changes such as anti-immigration agenda) and Privacy (e.g., data breach).[49]

Event Window	Issue Area	# of Obs	Mean CAR (%)	S. E.	t-stat	*p-value*
(-5, +5)	Contamination	50	-3.02554***	0.00694	-4.35680	0.00000
	Financial/Accounting	36	-5.56806***	0.01876	-2.96870	0.00270
	Impact to Customers	99	-3.41891***	0.01176	-2.90750	0.00230
	Impact to Labor	68	-1.80972***	0.00670	-2.70190	0.00440
	Legislative Change	44	-3.92893***	0.01047	-3.75390	0.00030
	Privacy	48	-1.22735***	0.00510	-2.40470	0.01010
(-10, +10)	Contamination	50	-5.68088***	0.01093	-5.19680	0.00000
	Financial/Accounting	36	-8.96911***	0.02084	-4.30360	0.00006
	Impact to Customers	96	-4.82094***	0.01490	-3.23491	0.00084
	Impact to Labor	65	-2.12605***	0.00883	-2.40709	0.00949
	Legislative Change	43	-3.75062***	0.01472	-2.54875	0.00728
	Privacy	46	-2.53042***	0.00849	-2.98082	0.00231
*** p<0.01, ** p<0.05, * p<0.1						

Table 16: Cumulative abnormal returns (CARs) for negative origin by different Issue areas

Table 16 reports CARs by issue areas for negative origin events. Issue areas with particularly large CARs (in the absolute value) are Financial/Accounting, Contamination, Impact to customers, and Legislative change. It appears that the market reacts more severely to events that are expected to: (1) come with large cash outflows (Contamination and Impact to customers); (2) have direct impacts on the firm value (Financial/Accounting); and (3) require significant changes in the operation (Legislative change). This is consistent with the notion that the primary reason for negative market reactions to negative CSR events is those events' financial implications rather than its concern about firms' social responsibility. However, the average CARs for the remaining two issues areas (Impact to labor and Privacy) are also negative and significant at the one per cent

[49] t-test results of CARs for each issue area are not reported for other event categories (negative subsequent, recurrent, etc.) due to insufficient number of observations in each issue area group.

level. So, it might be possible to conclude that the market cares both cash outflows associated with the event and the firm's responsibility to the society/environment.

5-3-2-2 By Development Stage

There are two types of negative origin events: ones on which news are released when they occur (truly "origin" events) and those for which the event date is unknown and of which occurrences are publicly disclosed by the subsequent events ("accused, sued, investigated, etc."). For example, for such events as oil spills, factory blowouts, workplace collapse, in many cases, the date of the event is known and the news are released immediately after the occurrence. On the other hand, for many of such events as gender discrimination/racism in the workplace, product deficits, and data breach, the exact date of the event is difficult to identify and the event is known by news on lawsuits by victims, company announcements, or authority investigations. We examined whether the market reactions to these two types of events differ, as shown in Table 17. The mean CARs are similar and both significantly negative at one per cent level (the two sample t-test indicates that the differences in CARs are statistically insignificant).

Event Window	Process Category	# of Obs	Mean CAR (%)	S. E.	t-stat	P-value	Mean CAR Difference (%)	P-value (difference)
Negative Origin								
(-5, +5)	Origin	265	-2.83832***	0.00401	-7.07757	0.00000	-0.82282	0.44300
	Accused, sued, investigated, etc.	80	-3.66114***	0.01433	-2.55467	0.00628		
(-10, +10)	Origin	258	-4.21834***	0.00545	-7.74636	0.00000	-0.87497	0.55900
	Accused, sued, investigated, etc.	78	-5.09331***	0.01777	-2.86662	0.00267		
*** p<0.01, ** p<0.05, * p<0.1								

Table 17: Cumulative abnormal returns (CARs) of negative origin by development stages

5-3-3 Inclusions of more control variables in regression analyses

As mentioned in footnotes, we also re-estimated all the regression models including possible control variables, such as location, issue area, cost, industry of the firm, etc. (we include one of these at one time, in order to preserve a good level of the degrees of freedom). The direction and the significance of the coefficients on the independent variables remain unchanged in most cases, except for the case of the inclusion of the industry variable in the analyses of the impact of time on market reactions. It appears that the industry specific component exists in the length of time between the original event and its subsequent event, so that the inclusion of the industry variable makes the time variable insignificant. This raises a question whether the time impact on market reactions, detected in this study, truly reflects the effect of chronological distance between the two events within a chain, or the industry effect, calling for an extension of this study with a larger sample that makes sure of this point. Inclusions of any other variables did not change the significance levels and the directions of the coefficients of the independent variables.

In sum, the robustness check reveals that the results are robust to two alternative ways of asset pricing models (i.e., Fama-French three-factor and Fama-French plus momentum models) in estimating CARs and the inclusion of any of the control variables into the regression models reported in previous sections of this chapter. In addition, there is no observation suggesting that the results are not driven by a particular issue area and development stage.

Chapter 6 Conclusion

This work conceptualizes and empirically tests market reactions to each stage pertaining to the chronological development of events that negatively impact social or environmental issues (negative ES events). The empirical examination is based on the hand-collected dataset, which allows this study to scrutinize market reactions to the entire stream of the development of an ES event.

In keeping with the view that negative ES events not only decrease the prospect of future cash flows and increase the risk, but also erode relational and reputational wealth, the study finds that shareholders react strongly negatively to the news of negative ES events. This significantly negative market reactions are not only to the origin negative events but also the recurrent and subsequent negative events, which induce – in addition to impacting cash flows, risk, and relational capital – cognitive biases. On the other hand, the study unfolds that the positive events subsequent to the negative origin events drive the recovery of firm value lost by negative events, as these positive events reduce the anticipated amount of costs and uncertainty associated with the negative events, as well as help regain the relational capital and reputations.

More importantly the study finds significantly negative market reactions to companies' irresponsible responses to the negative events they brought about, and significantly positive market reactions to companies' responsible attitudes towards the negative events. Since these corporate responses are less likely to carry significant cost implications (in almost all cases negative ES events are accompanied with significant costs, while corporate responses do not always come with cash outflows), the findings suggest the possibility that the market reacts to ES-related events not only due to their cost implications (companies are likely to incur additional costs when encountering such events) but also because it cares about the role of corporations as ES-responsible members of the society. Three addition empirical observations found in this study supports this possibility. First, the costs of events reported in the news do not significantly influence market reactions. Second, the market is more sensitive to events that took place within the U.S. than those outside – assuming that costs incurred by the company that encountered negative ES events are greater when the events occurred outside of the U.S., this is inconsistent with the view that the market reacts to negative ES events due solely to their cost implications. Third, the market reacts positively to positive company responses even when such responses come with substantial cash outflows.

This dissertation also shows that the promptness of positive subsequent events and positive responses, when gauged from the closest previous negative event, heighten the favorable reaction of the investors to these events as reduction of costs due to the shortened time of the conflict period, quick eradication of uncertainty, and recovery of the relational capital positively affect the firm value. On the other hand, market reaction to the negative subsequent, negative responses and recurrent events is more punitive when they occur sooner than later after the origin events due to recency bias and concentration in time effect.

The inquiry about the moderating impact of *ex-ante* CSR performance on market reaction uncovers the impact of the "expectancy violation (EV)". In other words, the analyses indicate that the firms with higher *ex-ante* CSR repute experience more punitive responses from shareholders for their negative events, supporting the hypothesis that negative violations trigger more negative outcomes

than does conformity to expectations. However, we do not find any observation supporting the expectancy violation theory for positive events (i.e., we did not find a significantly negative impact of that *ex-ante* CSR performance on market reactions to positive subsequent events/positive company responses, which suggests that greater positive expectancy violation results in more positive outcome than conformity to expectations). This might be due to the weak effect of positive expectancy violation compared to the negative violation. For negative events, the effect of negative expectancy violation overweighs the effect of the safeguarding role of robust relational/reputational capital. However, in the case of positive events, the favorable effect of positive expectancy violation is not strong enough to overweigh the impact of anchoring bias and positive internal attribution, due to the skepticism triggered by the perceived gap between a low-CSR firm's *ex-ante* performance and its positive ES response (Skarmeas & Leonidou, 2013; Vanhamme & Grobben, 2009), the effect of which might strengthen the negative impact of low-CSR performance via anchoring bias and internal attribution (Park, Cho, & Kim, 2021).

Lastly, this study reveals that company positive responses to address the negative origin events receive more favorable reaction when the firm has more financial resources (higher liquidity) and are not financially constraint (lower leverage). This finding is in contrast to our expectation that the liquidity and leverage are proxies for agency risk and thus the former is negatively and the latter is positively associated with market reactions to positive company responses. As a possible explanation for this result, we argue that investors do not view positive company responses to a negative event as agency-motivated events (while they regard company positive ES initiatives as agency-motivated), because, in the case of positive company responses, investors' concerns are placed more on smooth settlement or remedial processes and the availability of financial resources necessary for this.

As are most studies, this study is not limitation-free. One of such limitations stems from the hand-collected nature of the data. Since the sample collection relies on keyword search of news through the Factiva database, there might be overlooked ES events due to the incompleteness of the list of ES-related keywords. Moreover, the small sample size limits the inclusion of control variables, and exacerbates the multicollinearity issue (such as those between the industry and the time between two events variables, described in the Robustness check section) that makes the coefficient interpretation difficult. Second, this study does not take the media impact into consideration. Third, we attempt to gauge the financial impact of a negative ES event based on its costs reported in the news. However, we admit that this cost variable is incomplete as no cost information in the news does not necessarily means that the firm does not incur any cash outflows due to the event. Nevertheless, we believe that the sample includes major ES events that occurred over the last decade, and the novelty of the topic addressed by this study is expected to make significant contributions to the literature.

There remain several areas of future research. The first one relates to the first and second limitations of this study: re-examination of the hypotheses with a larger sample along with the investigation of media impacts on market reactions to ES events. The second one is to examine long-term operating and stock return performance. The third one could use several different CSR performance measures to ensure more robust findings on the impacts of *ex-ante* CSR performance on market reactions to ES events (nevertheless, our measure of CSR proxy, MSCI KLD scores, has been widely used by the literature and recognized as being reliable, valid, and robust in terms of construct validity). The fourth one is the re-estimation of the financial impact of ES events on

market reactions based on more complete data on costs of ES events, which could allow for more extensive analysis and more reliable and robust findings. Lastly, an extension of this study could investigate the hypothesis that the effect of positive expectancy violation is weaker than the negative violation, due to the skepticism triggered by the gap between the firm's *ex-ante* low-CSR performance and its positive ES attitudes, as discussed above.

As the first study – to our best knowledge – that tracks successive events within a chain originated by a negative ES incident, it provides empirical observations suggesting that: (1) responsible (irresponsible) engagements with the society or environment affect firm value strongly positively (negatively), not only through its financial implications but also because the market appears to expect corporations responsible attitudes to the society and the environment; (2) attitudes towards the negative ES events appear to matter. Thus, it appears possible for the firm to recover its value lost by the negative ES event, by taking prompt remedial or reformative actions aimed to rehabilitate mutual trust and relational wealth; (3) quickness matters. If is better for the firm to address the negative ES events it brought about; (4) it appears important to avoid any negative ES accidents at any costs as investors are likely to be punitive to each of all negative events within the chain triggered by negative ES events. Firms retrieve their values when they experience positive subsequent events (such as a positive authority investigation result after the suspicion of product deficit), but the market reactions to positive subsequent events (2.25 and 2.96 per cent for CAR[-5,+5] and CAR[-10,+10], respectively) are smaller than those to negative (original and subsequent) events (-2.8 and -3.4 per cent); and (5) it is also important for high-CSR performers to maintain the performance as misbehaviors are more punitive for such firms than low CSR performers. With these implications of findings, this work aims to make notable contributions to the literature and pose significant implications to practitioners and policymakers.

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Appendix I: Keywords used for ES Event Search

General words
Environment, social, responsibility, public relation, disaster, fraud, illegal, violation, protest, fire, blowout, halt, dispute, bribery, corruption, unfair,
Specific words (Environment)
Biodiversity, activist, spill, nuclear plant, contamination, explosion, toxic, water withdrawn, climate, loyalty,
Specific words (Social)
Labor, discrimination, safety, strike, deceptive, overcharging, privacy, hack, attack, manipulation, laundering, halt, sin product,