MEDIA REACH, CONTROVERSIAL INDUSTRIES, ESG PERFORMANCE AND THE MARKET REACTION TO NEGATIVE ESG MEDIA STORIES

Wei Jiang

Alliance Manchester Business School

Siqi Liu

Alliance Manchester Business School

Andrew W Stark

Alliance Manchester Business School

August 2019

1 INTRODUCTION

Environmental, social and governance (ESG) performance has received attention from different groups of stakeholders, including investors, community and government. ESG performance measures the sustainability and ethical impact of an investment in a business or company. Firms are arguably aware of the importance of ESG performance, either through stakeholder theory which argues normatively that the firms should take care of the interests of different types of stakeholders, rather than only the shareholders' (Freeman, 1984), or because, in the long term, customers, employees, the community, and government could impose a penalties on the financial performance of firms as a consequence of poor ESG performance.

In this paper, my research question is to investigate the relationship between negative ESG media coverage, media reach, whether the firm is in a controversial industry or not, and ESG performance, and the stock market reaction to the negative coverage. Specifically, I first ask whether negative ESG news coverage from media outlets of different media influence affects firm value differently - does the level of media reach affect the stock price reaction to the news. I then develop this by asking whether the degree of media influence on stock prices affects different types of firms differently. The types of firms I consider are non-controversial industry firms with low ESG performance; controversial industry firms with low ESG performance; non-controversial industry firms with high ESG performance; and controversial industry firms with high ESG performance.

The motivation for this research has two aspects. First, there is a gap in previous research. Previous research (Aouadi and Marsat, 2016; Cai et al., 2012) identifies some factors that affect

the relationship between ESG adverse incidents and firm value, which include ESG performance and whether the firm is in a controversial industry or not. Also, Kölbel et al. (2017) suggest that firms that receive more media coverage on CSR controversies have higher credit risk. Nonetheless, it is not clear whether and how negative media coverage of ESG activities affects firms' stock price. Krüger (2015) investigates the market reaction to positive and negative CSR events and finds that the stock price of the firm reduces more when the negative CSR events happen to firms. The stock price reduces less when positive CSR events occur. This work does not distinguish controversial industry firms from other firms, however. Therefore, previous studies mainly consider one or two of the factors that affect the relationship between ESG negative incidents and firm value, and do not consider these factors together. Hence, my research is intended to fill the gap in research about ESG media coverage and firm value by looking at the combined effects of media reach, controversial industry affiliation, and ESG performance.

The second motivation is that tension exists about how the market reacts to adverse ESG news for firms with high ESG performance. Based on previous research, there are two opposing theories, namely greenwashing theory and signalling theory.

Greenwashing theory argues that greenwashing firms miscommunicate about (overstate) their real ESG performance intentionally to hide their true, poor, ESG performance. Therefore, the market may be sceptical about firms' communications on ESG issues, and may doubt the truth of apparently high ESG performance for controversial industry firms (Du, 2015; Leonidou and Skarmeas, 2017). If the market thinks these firms are greenwashing and not being honest about their actual ESG performance, they may punish them more when such firms are exposed

to ESG scandals. The higher the degree of media reach for any adverse news might amplify the stock price punishment.

By contrast, signalling theory argues that controversial industry firms send a positive signal to the market that they are indeed good corporate citizens by improving their ESG performance (Mohoney et al., 2013; Lys et al., 2015; Torelli et al., 2019). Moreover, the market then believes that the ESG engagement of controversial industry firms represents a substantive adoption of good ESG practice, rather than merely symbolic corporate social responsibility actions. In addition, Godfrey et al. (2009) suggests that the firm value of the controversial industry firms that engage in ESG activities reduce less when negative ESG events happen, and argues that better ESG performance can act as insurance that counterbalances the negative effect of the adverse ESG news on firm's market value.

Therefore, it is not clear whether the market believes that the ESG engagement of controversial industry firms is genuine or not. As a consequence, it is also not clear whether firms' stock prices will reduce more or less when negative ESG news occurs, nor how the degree of media reach for adverse ESG news will affect these outcomes.

I use an event methodology using the Reprisk dataset to test the effect of the ESG negative media coverage on stock prices around the date of the coverage. An event study can be performed because Reprisk news database provides the precise date of ESG negative news. It also provides features of the news items. The features of the news items include the media reach level, which means how influential the media covering the news is, and the severity level, which measures how severe the negative ESG incident is. A high media reach value means that the source media of the news is influential and international, such as the BBC or the New York

Times, while a low media reach value means that the source media has a limited audience, such as local media. A high severity value means that the negative ESG incident has high potential cost implications, or raises severe health or safety issues.

The key findings are as follows. First, the average effect of media reach is negatively associated with the abnormal returns when negative ESG news occurs, suggesting support for the general idea that the higher the media reach of the media reporting adverse ESG news, the more stock market reacts in reducing the stock value of affected firms. Second, for firms in controversial industries with low ESG performance, there is a negative relationship between media reach and abnormal returns, typically a relationship significantly more negative for those firms in non-controversial industries with low ESG performance. Third, for firms belonging to controversial industries with high ESG performance, the relationship between media influence and abnormal returns tends to be either insignificantly different from zero, or positive and significantly different from zero for negative ESG news events. Overall, these two results suggest that the market does not generally believe that high ESG performance signifies greenwashing.

The contribution of this research have several aspects. Firstly, it can contribute to the literature about the association between negative ESG events and the market reaction by investigating how media influence, industry profiles and ESG performance affect this association. Secondly, it sheds light on how media influence affects the market reaction to negative ESG news, so that the shareholders can better understand and manage the ESG-related risk of the investment. Thirdly, this research suggests that the market does not believe the high ESG performance of the firms in controversial industries signifies greenwashing, which helps understand the ESG engagement behaviours of the firms in controversial industries.

The rest of this paper is organized as follows. Section 2 covers relevant prior literature. Section 3 provides the development of hypotheses. Section 4 provides details of the methodology used in the study and Section 5 provides details of the data used. Section 6 provides the main results of the study, with Section 7 providing the results of robustness tests. Section 8 provides a summary of the main conclusions of the study, together with some limitations of the study and suggestions for future research.

2 LITERATURE REVIEW

2.1 CSR and firm value

There is much research literature about the association between CSR and firm value. The main argument of this stream of literature is that CSR increases the firm value by reducing the cost of capital and/or improving the corporate governance level. For example, Waddock and Graves (1997) suggest that CSR performance is positively associated with future financial performance. Dhaliwal et al. (2011) reveal that firms voluntarily initiating CSR reporting enjoy a lower cost of the capital than non-initiating firms because the disclosure of CSR information reduces the degree of information asymmetry. In addition, they find those firms with better CSR performance have higher analyst followings and higher institutional investors. Cheng et al. (2013) indicate that superior CSR performance reduces capital constraints because CSR increases stakeholder engagement and reduces agency costs. Furthermore, Plumlee et al. (2015) examine US firms in five industries and demonstrate that voluntary environmental disclosure quality is related to firm value through both cash flows and the cost of the capital. Apart from that, CSR could act as a governance role - Cheng and Kung (2016) find that CSR serves a corporate governance role in reducing information asymmetry.

In addition, there is also research that suggests that CSR engagement improves the reputation of the firm, and acts as insurance when a crisis happens. For instance, Shiu and Yang (2017) argue that investment in corporate social responsibility mitigates the decline of stock and bond prices when firms are faced with negative events. CSR is also a strategic tool for managing risk. For example, Orlitsky and Benjamin (2001) find that corporate social responsibility negatively associates with firm risk, because CSR improves the firm's reputation. Furthermore, Husted (2005) investigates the rationale behind this negative relationship, arguing that CSR functions as a real option to reduce business risk.

2.2 News and firm value

There is much literature about the news and the stock market reaction to it. . These papers, however, focus on financial news, rather than the ESG performance-related news. For instance, De Bondt and Thaler (1985) find that people tend to overact to unexpected and dramatic news events, suggesting that the market is only weakly efficient. Braun et al. (1995) examines the asymmetric reaction of conditional betas to good and bad news and claim that this predictive asymmetry is weak in conditional betas and idiosyncratic risk. Klibanoff et al. (1998) finds that during weeks of front page media coverage, the price movements of stocks are more associated with their fundamental value. Similarly, Fang and Peress (2009) finds that more media exposure reduces firms' information asymmetry levels, and also the abnormal return brought by the information advantage. Specifically, by investigating the association between media coverage and expected stock returns, they reveal that those stocks with no media coverage have higher returns than stocks with high media coverage. Moreover, these results are more significant for those stocks with higher information asymmetry, such as small stocks, or stocks with high individual ownership, low analyst coverage, and high idiosyncratic volatility. Tetlock(2007), however, conducts textual analysis and claims that negative words in news

predicts a downward price movement but also a subsequent reversal trend. Based on previous research, it is suggested, that in the short term, the stock price reaction to bad news depends on the degree of market efficiency and the level of information asymmetry.

2.3 CSR-related information and firm valuation

There is an increasing trend, however, towards academics investigating how the market reacts to media coverage about environmental, social and governance incidents. The news sources are different, ranging from the news service agency (Nexis-Lexis, CSRwire, Covalence, etc.) to the related index (Toxic release inventory index, ESG controversy score, Reprisk Index, etc.). In addition, some papers study the short-term stock market reaction to CSR-related news using event studies (Godfrey et al., 2009; Lundgren and Olsson, 2010; Blancard and Petit, 2017), whereas others investigate the long-term impact on the firm value (Plumlee et al., 2015; Aouadi and Marsat, 2016; Gregory et al., 2016).

There is no consensus about the market reaction to firm ESG news, however. In other words, the results are mixed. For example, Lundgren and Olsson (2010) use an event study to analyse whether bad news in the form of environmental incidents affect firm value negatively. They indicate that the environmental concerns reduce the firm value and this result is more significant for European firms.

Luo et al. (2012) use oil spill incidents in the oil industry as their setting, and find that the firms on the very top and the very bottom of the CSR ratings attract greater media attention when negative issues about CSR happen, compared with firms with moderate ratings. Further, the tone of the report is more critical for those firms with bad reputation in CSR.

Blancard and Petit (2017) suggests that negative news about environmental, social and governance issues reduces the firms' market value. They reveal that a sector's good reputation reduce the losses caused by the negative news. They conduct research about news and the market reaction in the short term. They consider the source of the news, which is either disclosed by firms or reported by media. According to them, firms can 'greenwash' the negative coverage from the media concerning ESG issues by self-disclosing positive news. In addition, they consider not only the number of the bad news items but also the number of positive news items. Compared to only focusing on ESG bad news, Blancard and Petit (2017) provide a more objective and unbiased view towards reputational risk. The limitation of their research, however, is that it only considers the number of the news items, but ignores the nature of them, such as their severity and the reach of the media in which they are published.

Jo and Na (2012) find that CSR engagement of firms in controversial industry sectors reduces firm risk, and this reduction of risk is more significant in controversial industries than non-controversial ones. Interestingly, they propose two competing hypotheses, which are the window dressing hypothesis and the risk reduction hypothesis respectively. According to window dressing hypothesis, 'sin stocks' in the alcohol, tobacco or gambling industries engage in CSR activity because they want to hide their illegal, or socially irresponsible behaviour. Nonetheless, investors may identify their motivation and, as a consequence, CSR engagement may increase firms risk in this case. Their empirical results support the second hypothesis, however, which argues that CSR activities reduce the risk of the firms in these controversial industries.

2.4 Gaps in the literature

There are four key papers closely related to my research. The first one is Kölbel et al. (2017). They suggest that the firms that receive more media coverage on ESG controversies have higher credit risk. Further, the severity level of the ESG concerns and the influence level, or reach, of the media outlet influence the relationship between media coverage on ESG controversies and credit risk. The second paper is by Aouadi and Marsat (2016). This paper looks at the interaction effect between ESG controversies (ESG controversy score) and CSR performance (ESG score) on firm value, as measured by Tobin Q. They find that the ESG controversies do not directly affect firm value. Instead, they affect it through the interaction effect with ESG performance. The third paper is by Cai et al. (2012). They find that CSR engagement increases firm value for those firms in controversial industries. They also use Tobin Q to measure the firm value. The fourth paper is by Blancard and Petit (2017). They conduct an event study and find that negative CSR events lead to drops in stock price.

Previous literature, then, only focuses on one or two dimensions such as the media effect, ESG performance, or controversial industries. They do not analyse them together to look at the combined relationship between negative media coverage on ESG and firm value. My research aims to fill this gap.

3 HYPOTHESES DEVELOPMENT

3.1 Media agenda setting theory

The phenomenon that media coverage coordinates the attention of communities on specific issues is known as agenda-setting (McCombs and Shaw, 1972). If the news is covered by highly influential media with a broad readership, then the information is disseminated broadly and profoundly, which is more likely to attract the cognitive attention and promote a reaction to the

information. Kölbel et al. (2017) suggests that the severity level of adverse CSR news events and the influence level of the media outlet are mechanisms driving the relationship between CSR controversies and credit risk. All other things being equal, the more influential the media, the higher the financial credit risk. Based on the agenda-setting theory, if ESG negative news is covered by very influential media such as the BBC or the New York Times, then investors are more likely to notice the negative ESG news and punish the firms by selling the stocks. Therefore, media of high influence may amplify the negative consequences caused by negative ESG news.

Based on media agenda theory, I propose Hypothesis 1 as follows:

H_1: All other things being equal, the stock market reaction to adverse ESG news is more negative when it comes from media with higher influence.

3.2 Controversial industry firms and ESG performance

Controversial industry firms, which are firms in industries such as alcohol, tobacco and also the firms in the oil industry, are more likely to be exposed to the adverse ESG adverse incidents such as environmental pollution and social scandals. Therefore, compared with non-controversial industry firms, controversial industry firms have lower ESG performance because of the embedded risk in their business nature. Those controversial industry firms with high ESG performance, however, could be greenwashing firms, which means that they invest in ESG activities to build a better image in order to mislead investors as to their true nature and performance.

According to the Oxford English Dictionary, the definition of greenwashing is ’the disinformation disseminated by an organization so as to present an environmentally responsible public image‘. Further, greenwashing is about the act of misleading consumers regarding the environmental practices of a company or the environmental benefits of a product or service (TerraChoice, 2019).

Alternatively, according to the ESG insurance theory, the motivation for controversial industry firms to engage in socially responsible activities is to rebuild their image and improve their reputation, as higher ESG performance can act as insurance when negative incidents happen. They can gain social trust from low-proximity stakeholder groups, such as customers and community. Social trust constitutes an essential part of the social capital required for their business operations. Further, they can obtain legitimacy as well (Cormier and Magnan, 2015).

Further, the market may have two opposite reactions to ESG engagement for controversial industry firms based on greenwashing theory and signalling theory. Greenwashing theory assumes that greenwashing firms deceive investors and pretend to be green firms by pursuing good ESG behaviour. Indeed, these controversial industry firms want to greenwash their reputation by symbolically communicating about their ESG activities and misleading the market about their real ESG (poor) performance. Therefore, the market may be sceptical about firms’ symbolic communications about ESG issues and question the high ESG performance of controversial industry firms (Du, 2015; Leonidou and Skarmeas, 2017). If the market thinks these greenwashing firms are not honest about their actual ESG performance, they may punish them more when the greenwashing firms are exposed to adverse ESG media coverage. Therefore, according to greenwashing theory, the stock price of these greenwashing firms will reduce relatively more than for non-greenwashing firms (low ESG performance firms, or non-

controversial industry firms), and this effect will be amplified when negative ESG incidents are covered by highly influential media.

In contrast, signalling theory suggests that controversial industry firms create positive signals to the market that they are genuinely good corporate citizens by improving their ESG performance (Mohoney et al., 2013; Lys et al., 2015; Torelli et al., 2019). Moreover, the market believes that the ESG engagement of the controversial industry firms is a substantive adoption of good ESG practices, rather than just symbolic corporate social responsibility actions. In this vein, Godfrey et al. (2009) reveal that firms engaging in CSR activities experience less reduction in firm value when adverse events happen, so they argue that CSR engagement acts as insurance against crises. Similarly, Cai et al. (2012) find that CSR engagement increases firm value for those firms in controversial industries. Therefore, according to signalling theory and ESG insurance theory, the stock price for high ESG performance firms in controversial industries will reduce relatively less than for low ESG performance firms with non-controversial industries, and the effect of media reach on stock market reaction will be reduced.

Based on the discussion above, a tension exists concerning how stock prices change when negative ESG news is affected by media reach, based on greenwashing theory and signalling theory. I state the second hypothesis in two different ways.

H_2: All other things being equal, the relationship between media reach and the stock market reaction to adverse ESG news is different for high ESG performance firms in controversial industries relative to firms in non-controversial industries and/or low ESG performance firms.

H_{2a}: All other things being equal, the relationship between media reach and the stock market reaction to adverse ESG news is more negative for high ESG performance firms in controversial industries, relative to firms in non-controversial industries and/or low ESG performance firms.

H_{2b}: All other things being equal, the relationship between media reach and the stock market reaction to adverse ESG news is more positive for high ESG performance firms in controversial industries, relative to firms in non-controversial industries and/or low ESG performance firms.

4 RESEARCH DESIGN

4.1 Methodology

This research uses the event study method to test the effect of negative ESG media coverage on stock prices at the time of the media event. In particular, we study how media reach affects the impact of negative ESG media coverage. We look at stock returns change in the event window (-1, 1), where day 0 is the event day.

The reasons for using an event study are as follows. The event study method proposed by Fama et al. (1969) analyzes how stock price reacts to an incident or an event. To perform such analyses requires the precise date of such incidents or events. The topic of negative media coverage on ESG behaviour is suitable for the use of the event study methodology because the Reprisk database from which we derive our negative ESG news identifies the date of the adverse media coverage. Hence, this research investigates whether negative news about ESG behaviour includes value relevant information and, hence, whether and how this media coverage affects the value of firms subjected to this media coverage.

In an event study, the dependent variable is generally the cumulative abnormal return within a specific event window. In this research, the event window for the main tests is (-1,1) - the day before, the day of, and the day after the news date for media event. Based on Fama et al. (1969), the calculation of the cumulative abnormal return (CAR) is as follows. First, the parameters of the market model, α and β, are estimated in a pre-event period. The market model is described below:

$$R_{jt} = \alpha_j + \beta_j R_{mt} + \epsilon_{jt}$$

where R_{jt} is the return of common stock of j^{th} firm on day t; R_{mt} is the rate of return of the market index on day t; and ϵ_{jt} is a random error term.

The abnormal return, A_{jt}, for the common stock of j^{th} firm on day t is calculated as follows.

$$A_{jt} = R_{jt} - (\widehat{\alpha_j} + \widehat{\beta_j} R_{mt})$$

where $\widehat{\alpha_j}$ and $\widehat{\beta_j}$ are ordinary least squares estimates of α_j and β_j.

The cumulative abnormal return CAR_{T_1,T_2} over the period (T_1, T_2) for N events is as follows:

$$CAR_{T_1,T_2} = \frac{1}{N} \sum_{j=1}^{N} \sum_{t=T_1}^{T_2} A_{j,t}$$

I use the Eventus package to derive abnormal returns. Eventus provides both value-weighted and equally-weighted CRSP indices as possibilities for the market index to calculate abnormal

returns. The equally-weighted CRSP index uses the number of shares as the weights to calculate the average abnormal return, whereas the value-weighted CRSP index uses the proportion of the market capitalization as the weight to calculate the average abnormal return. I use the equally-weighted CRSP index as the benchmark to derive the CAR(-1,1) data and label this dependent variable as ewcar11 (equally-weighted CAR (-1,1)). For robustness purposes, I also use the value-weighted CRSP index as the benchmark to get CAR (-1,1) and label it as vwcar11 (value-weighted CAR (-1,1)). I also estimate ewcar22 and vwcar22 as different versions of CAR (-2,2). I use a (-2,2) event window to allow for more leakage before the media event and more time for the effect of the media event to be reflected in stock prices. Since CAR is a return variable, I multiply it by 100 to transform it into a percentage variable.

I then use the Model 1 as my benchmark model to test the average impact of media reach (Reach) on the cumulative abnormal returns (CAR (-1, 1)) for all media events in the sample.

Model 1:

$$CAR(-1,1) = \beta_1 Reach + \beta_2 Breach + \beta_3 Severity + \beta_4 Novelty + \beta_5 PeakRRI_{t-1} + \beta_6 ESG_{t-1} + \beta_7 Size_{t-1} + \beta_8 ROA_{t-1} + \beta_9 Lev_{t-1} + \beta_{10} PPE_{t-1} + \beta_{11} SalesGrowth_{t-1} + \sum_{i,j=1}^{45} \gamma_j \, Ind_j$$

Model 2:

$$CAR(-1,1) = \beta_1 Reach + \beta_2 Reach.ContrInd + \beta_3 Reach.HighESG + \beta_4 ContrInd.HighESG + \beta_5 Reach.ContrInd.HighESG + \beta_6 ContrInd + \beta_7 HighESG + \beta_8 Breach + \beta_9 Severity + \beta_{10} Novelty + \beta_{11} PeakRRI_{t-1} + \beta_{12} Size_{t-1} + \beta_{13} ROA_{t-1} + \beta_{14} Lev_{t-1} + \beta_{15} PPE_{t-1} + \beta_{16} SalesGrowth_{t-1} + \sum_{i,j=1}^{45} \gamma_j Ind_j$$

In model 2, the coefficient of Reach (β1 + β2 + β3 + β5) captures the impact of media reach for non-controversial industry firms with low ESG performance. The sum of the coefficients of Reach and Reach.HighESG ($\beta_1 + \beta_3$) captures the impact of media reach for non-controversial industry firms with high ESG performance. Therefore, the coefficient of the interaction term Reach.HighESG represents the incremental effect of high ESG performance on the impact of media reach on abnormal firms for non-controversial industry firms, relative to non-controversial industry firms with low ESG performance.

The sum of the coefficients of Reach and Reach.ContrInd ($\beta_1 + \beta_2$) measures the impact of media reach for controversial industry firms with low ESG performance. Therefore, the coefficient of the interaction term Reach.ContrInd represents the incremental effect of controversial industry affiliation on the impact of media reach on abnormal returns firms for low ESG performance, controversial industry firms relative to those firms with non-controversial industry affiliation and low ESG performance.

The sum of coefficients of Reach, Reach.ContrInd, Reach.HighESG and Reach.ContrInd.HighESG ($\beta_1 + \beta_2 + \beta_3 + \beta_5$) measures the total impact of media reach on abnormal returns for controversial industry firms with high ESG performance. Therefore, the

sum of the coefficients of the two interaction terms, Reach.ContrInd and Reach.ContrInd.HighESG ($\beta_2 + \beta_5$) captures the incremental effect of controversial industry affilation on the relationship between media reach and abnormal returns for firms with high ESG performance relative to those firms with low ESG performance. Similarly, the sum of the coefficients of the two interaction terms, Reach.HighESG and Reach.ContrInd.HighESG ($\beta_2 + \beta_5$) captures the incremental effect of high ESG performance on the relationship between media reach and abnormal returns for firms with controversial industry affiliation relative to those firms with non-controversial industry affiliation. Overall, we can use Model 2, and various coefficients and combinations of coefficients, to test our second hypothesis

I broadly follow Kölbel et al. (2017) and Burke et al. (2019) with respect to the choice of control variables. I include firm size, ROA, PPE, and sales growth because these variables could reflect a firm's visibility or media attention. Bigger firms, or firms with higher profitability and sales growth, tend to receive more media attention and receive more media coverage, according to Bansal and Clelland (2004). Leverage controls for the firm's capital structure, which may affect the firm's financial risk, according to Kölbel et al. (2017). Definitions of all the variables used are provided in Table 1.

_____

Table 1

_____

5 DATA

5.1 The sample

My sample consists of US firms covered by Reprisk database from 2007 to 2018. Specifically, I download the media story data from the Reprisk database at the firm-incident level. This means that each firm has only one news item corresponding to one Reprisk story ID on a single day. Then I remove the observations with overlapping events within 2 days for the same firm and all observations with multiple events for a single firm on a single day. Subsequently, I drop observations with contaminating events in the event window. These contaminating events include earning announcements (1469), M&A announcements (694)， SEO events (631), CEO turnovers, and director (Chairman, President, CFO， CEO) appointments (758), and share repurchases (15). After merging with the cumulative abnormal return data from CRSP, and the control variable data in year t-1 from Compustat, the sample then has the 15036 observations. Finally, I use the ESG score from Thomson Reuters to measure the ESG performance. I have 5077 observations in the final sample. The detailed sample derivation can be found in Table 2.

Table 2

There are only 46 industries represented out of the Fama-French 48 industries in my sample, as there are no firms in my sample in the soda and fabricated product industries. In estimating my regressions, I include industry dummies.

5.2 The RepRisk news database

Reprisk is a data provider, based in Zurich, Switzerland, specializing in ESG and responsible business conduct risks. It includes the Reprisk news database which provides an overview of risk incidents (news) on a monthly basis. Specifically, the Reprisk news database provides the data for ESG negative news, and the features of news. The features of news include the reach level, which means how influential the media covering the news is (Reach); the severity level, which measures how serious the negative ESG incidents are (Severity). Notably, Reach and Severity are categorical variables equal to 1 (low level), 2 (medium level), or 3(high level). A Reach value of 3 denotes the highest media reach level, which means that the source media of the news is influential and international, such as the BBC or the New York Times, while a reach value of 1 means that the media source media a limited audience, such as local media. Similarly, a severity value of 3 means the ESG negative incident could cause high costs or is associated with serious health or safety issues.

Also for each piece of news, Reprisk provides information on whether the incident reported breaches the United Nations Global Compact principles. In addition, for each piece of news, it also provides an issue tag. The Reprisk database classifies negative ESG negative issues into 4 types -- environmental, social, governance and cross-cutting issues. For each type of issues, it has a set of issue tags that summarize the content of the news. For example, in environmental issues, it includes climate change, local pollution, biodiversity, etc.. In social issues, it includes human rights abuse, occupational health and safety issues, etc.. In governance issues, it

includes corruption, tax invasion, fraud, etc.. Finally, the cross-cutting issues include controversial products and services, supply chain issues and violation of national or international legislation. Since my research is about ESG issues, I only consider environmental, social and governance issues.

In addition, the Reprisk database provides the Peak Reprisk Index (PeakRRI), which is the measurement of a firm's reputational risk. According to the Reprisk guide, the Peak Reprisk Index is equal to the highest level of the Reprisk Index over the last two years, so it is a proxy for overall reputational exposure related to ESG and business conduct risk. The Peak Reprisk index ranges from zero (lowest) to 100 (highest). A higher Peak Reprisk index means that the firm has more negative CSR media coverage, so it represents higher ESG-related reputational risk exposure.

As for the Reprisk Index itself, it denotes the current level of media and stakeholder coverage of a company related to ESG issues. It ranges from zero (lowest) to 100 (highest). The calculation method of Reprisk index is equals to the news value (reach, severity and the novelty) multiplied by the news intensity (the number of the ESG-related news over last 2 months).

5.3 The Asset4 ESG score

The Asset4 ESG score is provided by Thomson Reuters. Their ESG database including ESG controversy scores dates back to fiscal year 2002, covering more than 6000 firms globally, but with most of the firms located in US and Europe. The ESG score measures a company's performance on environmental, social and governance issues (ESG), based on reported data in the public domain. Specifically, there are 6 sources of the data, which are annual reports, company websites, NGO websites, stock exchange filings, CSR reports, and news sources. All

indicators are grouped into 3 categories = environmental, social and governance issues. The calculation method of ESG represents the firm's ranking of ESG performance. The higher the ESG score, the better the ESG performance.

5.4 Sample variable characteristics

Descriptive statistics for the various variables can be found in Table 3. It includes values for minimum and maximum, mean and median and standard errors for each variable. Correlations between the variables are included in Table 4. The values for the correlations do not suggest likely multicollinearity problems for our regression coefficient estimates.

Table 3 and 4

---

6 THE RESULTS

Table 5 shows the results of estimating Models 1 and 2. Column 2 provides the results for Model 1. Columns 3 to 5 show the results for Model 2, using different kinds of measurement for media reach. Columns 3 to 5 show the results using Reach, HighReach1, and HighReach2 as the proxies for media reach respectively. Reach is equal to 1, 2, or 3; HighReach1 = 1 when reach = 2 or 3, otherwise 0; and HighReach2 = 1 when reach = 3, otherwise 0.

Table 5

_____

Hypothesis 1 predicts that media reach is negatively related to the abnormal return. From the baseline model results in column 2, the coefficient of Reach is negative and significant at the 5% level, which suggests that media reach is, on average across firms, negatively associated with abnormal returns when negative ESG news occurs.

In the results of Model 2 presented in columns 3 to 5, the coefficients of Reach, HighReach1 and HighReach2 are not significant, which indicates that Reach has no significant relationship with the abnormal returns for adverse ESG news for non-controversial industry firms.

The effects for firms in non-controversial industries with high ESG performance are captured by ($\beta_1 + \beta_3$). The F-tests reported on this sum suggest that media reach is not associated with abnormal returns for firms in non-controversial industries with high ESG performance. Further, β_3 is not significantly different from zero, suggesting that there is no significant difference in the impact of media reach on abnormal returns between high and low ESG performance firms in non-controversial industry firms.

The effects for firms in controversial industries with low ESG performance are captured by ($\beta_1 + \beta_2$). The F-tests reported suggest that media reach is negatively associated with abnormal returns for firms in controversial industries with low ESG performance. Further, β_2 is significantly different from zero and negative, suggesting that there is a significant difference in the impact of media reach on abnormal returns between firms with low ESG performance in controversial industry firms and firms with low ESG performance in non-controversial

industries. Further, the difference is negative, suggesting that media reach increases the negative reaction to the media event.

For firms in controversial industries with high ESG performance, the effect is captured by ($\beta_1 + \beta_2 + \beta_3 + \beta_5$). The tests of significance for this sum indicate that it is either not significantly different from zero (columns 3 and 5), indicating that media reach is not associated abnormal returns for these firms, or, in column 4, significantly different from zero, indicating a significant association between media reach and abnormal returns. Nonetheless, inspection of the coefficients suggests that the relationship is positive, not negative.

Overall, the results suggest that the relationship between media reach and abnormal returns is mediated by affiliation with controversial industries, but in different ways depending on whether firms have high or low ESG performance. If firms have low ESG performance, the impact on the relationship is to make the influence of controversial industry firm affiliation is significantly negative. If firms have high ESG performance, the relationship generally does not exist, whether a firm belongs to a controversial industry or not.

It would be difficult to attribute these results to high ESG performance indicating the presence of greenwashing. Instead, these results seem more consistent with high ESG performance signalling a commitment to high quality ESG activities.

I continue to test my hypotheses using high/low Severity subsamples to see if, in particular, the relationship between media reach and abnormal returns is different from that for the full sample for adverse ESG issues with high severity. It seems reasonable to consider high severity media

stories because they are more likely to produce stock market reactions. Table 6 presents the results for high/low severity subsamples.

_____

Table 6

_____

In Table 6, if the Severity is equal to 2 or 3, then the observation falls into the high severity group, otherwise it belongs to the low severity group. Column 2 shows the results for the high severity group, and column 3 shows the results for low severity group.

Concentrating on the results for the high severity group, they are similar to those for the full sample other than in one respect. The relationship between media reach and abnormal returns is now significant and negative for firms in non-controversial industries with low ESG performance, along with a significant and negative relationship for firms in controversial industries with low ESG performance. For firms with high ESG performance, there is no relationship between media reach and abnormal returns, whether firms belong to controversial or non-controversial industries. Again, these results appear inconsistent with high ESG performance indication greenwashing.

I then conduct further analysis using high/low turnover subsamples to see if the media reach effect on abnormal returns is more pronounced for the firms with lower information asymmetry (i.e., the firms with high turnover rate). I concentrate on the results for the high turnover group because firms with low information asymmetry suffering from adverse media events are more likely to show stock market reactions to such events.

Table 7

Concentrating on the results for the high turnover group, the relationship between media reach and abnormal returns is significant and negative for firms in non-controversial industries with low ESG performance. The relationship is also significant and negative for firms in controversial industries with low ESG performance, as in previous results, but is also significant for firms in non-controversial industries with high ESG performance. For firms belonging to controversial industries with high ESG performance, there is no relationship between media reach and abnormal returns. Again, these results appear inconsistent with high ESG performance indication greenwashing, at least for firms belonging to controversial industries. For firms belonging to non-controversial industries, the impact of high ESG performance is to amplify the relationship between media reach and abnormal returns, consistent with high ESG performance for non-controversial industries indicating greenwashing on average.

7 ROBUSTNESS TESTS

I use different CARs as the dependent variable to conduct robustness tests. Specifically, they are the value-weighted CAR (-1, 1), vwcar11, the equally-weighted CAR (-2, 2), ewcar22, and the value-weighted CAR(-2,2), vwcar22. Table 8 provides the regression results for these robustness tests. Columns 2 to 4 shows the results for Model 2. The results of these robustness tests are generally consistent with those found using the equally-weighted CAR (-1, 1) as the dependent variable. In untabulated results, the results of estimating Model 1 using these other

proxies for market reactions are similar to the main results – in particular, the coefficient of media reach is significant and negative, whatever proxy for media reach is used.

_____

Table 8

_____

Table 9 presents the results for sub-sample analyses using high/low severity subsamples, but with different proxies for media reach. Columns 2 and 3 show the results using HighReach1 as the measure of reach. HighReach1 = 1 if reach = 2 or 3, otherwise 0. Columns 4 and 5 show the results using HighReach2 as the measure of reach. HighReach2 = 1 if reach = 3, otherwise 0.

From Table 9, it can be seen that, using HighReach1, there is no relationship between media reach and abnormal returns for firms in non-controversial industries with low ESG performance, whereas there is a negative and significant relationship when using HighReach2. There is no relationship between media reach and abnormal returns for firms in non-controversial industries with high ESG performance, whichever measure of media reach is used. There is a significant and negative relationship for firms with low ESG Performance and belonging to controversial industries, whatever the measure of media reach used, consistent with results in other tests. For firms in controversial industries with high ESG performance, there is a significant relationship using HighReach1, but not High Reach2. The relationship estimated using HighReach1 is positive, however. These results are not consistent with high ESG performance indicating greenwashing.

Table 9

Table 10 reports the results for robustness tests of analyses using high/low turnover sub-samples, and HighReach1 and HighReach2 as different measures of media reach. Concentrating on the results for the high turnover sub-sample, the results for HighReach1 are consistent with those in Table 6, whereas the results for HighReach2 are consistent with those reported in Table 8.

8 CONCLUSIONS

We can draw a number of conclusions from the results. First, the average effect of media reach is negatively associated with the abnormal returns when negative ESG news occurs. Therefore, all other things being equal, firms' stock prices reduce more when negative ESG news is reported by highly influential media such as the BBC or the New York Times. Second, for firms in controversial industries with low ESG performance, there is a negative relationship between media reach and abnormal returns, typically a relationship significantly more negative for those for firms in non-controversial industries with low ESG performance. Third, for firms belonging to controversial industries with high ESG performance, the relationship between media influence and abnormal returns tends to be either insignificantly different from zero, or positive and significantly different from zero for negative ESG news events. This suggests that the market does not believe that high ESG performance signifies greenwashing.

There are several limitations of this research. First, although I have removed the major contaminating events there are still events that could be happening on the same date of the ESG news. Effectively, I am assuming that any remaining contaminating events, and their effects on market prices, are not associated with my key experimental variables. Second, this study only considers negative coverage but does not consider positive coverage in ESG issues. Positive coverage could counterbalance the negative effect of ESG controversies, which may lead to a different relationship between media influence, industry affiliation, adverse ESG news and market value. Third, this research investigates the short-term market reaction to news, rather than the long-term market response.

Future research could explore how negative ESG news affects firm value in the long term. In addition, whether a firm's voluntary disclosures affect the association between adverse ESG news and stock prices. Finally, I concentrate on US firms. It could be of interest to investigate the association between negative ESG news and firm value in an international setting.

REFERENCES

Aouadi, A. and Marsat, S. (2016). 'Do ESG Controversies Matter for Firm Value? Evidence from International Data', *Journal of Business Ethics,* pp 1–21.

Agarwal, V., R. Taffler and M. Brown (2011), 'Is Management Quality Value Relevant?' *Journal of Business Finance & Accounting*, Vol. 38, Nos. 9 & 10, pp. 1184–208.

Bansal, P., Clelland, I. (2004) Talking Trash: Legitimacy, Impression Management, and Unsystematic Risk in the Context of the Natural Environment, *Academy of Management Journal*, 93-103

Basu, S. (1997). 'The conservatism principle and the asymmetric timeliness of earnings', *Journal of Accounting and Economics*, Volume 24, Issue 1 ,Pages 3-37.

Blancard, G. and Petit, A. (2017). 'Every Little Helps? ESG News and Stock Market Reaction'. *Journal of Business Ethics*. pp 1–23.

Braun, P., Nelson, D., and Sunier, A. (1995). 'Good News, Bad News, Volatility, and Betas'. *The Journal of Finance, 50*(5), 1575-1603.

Blacconiere, W. and Patten, D. (1994). 'Environmental disclosures, regulatory costs, and changes in firm value', *Journal of Accounting and Economics*, Volume 18, Issue 3, Pages 357-377.

Cai, Y., Jo, H. & Pan, C. (2012) Doing Well While Doing Bad? CSR in Controversial Industry Sectors. *Journal of Business Ethics,*108: 467.

Carhart, M. M. (1997), On Persistence in Mutual Fund Performance. *The Journal of Finance,* 52: 57-82.

Cormier, D., and Magnan, M. (2015) The Economic Relevance of Environmental Disclosure and its Impact on Corporate Legitimacy: An Empirical Investigation. *Business Strategy Environment*, 431: 450.

Cheng, B., Ioannou, I. and Serafeim, G., (2014). 'Corporate social responsibility and access to finance'. *Strategic Management Journal* , 35: 1–23.

Cheng, C.L. and Kung, F.H. (2016). 'The effects of mandatory corporate social responsibility policy on accounting conservatism', *Review of Accounting and Finance,* Vol. 15 Issue: 1, pp.2-20.

Du, X. (2015). How the market values greenwashing? Evidence from China. *Journal of Business Ethics*, 128(3), 547–574.

De Bondt, W. F. and Thaler, R. (1985), 'Does the Stock Market Overreact?'. *The Journal of Finance*, 40: 793-805.

Dhaliwal, S., Li, Z., Tsang, A. and Yang, Y. (2011). 'Voluntary Nonfinancial Disclosure and the Cost of Equity Capital: The Initiation of Corporate Social Responsibility Reporting'. *The Accounting Review*, Vol. 86, No. 1, pp. 59-100

Fang, L. and Peress, J. (2009), Media Coverage and the Cross section of Stock Returns. *The Journal of Finance,* 64: 2023-2052.

Fombrun, C. (2015). Reputation. *Wiley Encyclopedia of Management*

Fombrun, C. J., N. A. Gardberg & M. L. Barnet (2000), 'Opportunity Platforms and Safety Nets: Corporate Citizenship and Reputational Risk', *Business & Society Review*,. 85–106.

Fang, L. and Peress, J. (2009), 'Media Coverage and the Cross-section of Stock Returns'. *The Journal of Finance,* 64: 2023-2052.

Freeman, R. Edward .(1984). *Strategic Management: a stakeholder approach*. Boston: Pitman.

Gao, H., Wang, J., Wang, Y., Wu, C., & Dong, X. (2018). Media Coverage and the Cost of Debt. *Journal of Financial and Quantitative Analysis,* 1-43

Gregory, A., Whittaker, J. and Yan, X. (2016). 'Corporate Social Performance, Competitive Advantage, Earnings Persistence and Firm Value'. *Journal of Business Finance & Accounting*, 43: 3-30.

Gregory, A. and J.Whittaker (2013), 'Exploring the Valuation of Corporate Social Responsibility– A Comparison of Research Methods', *Journal of Business Ethics*, 1–20.

Godfrey, P. C., Merrill, C. B. and Hansen, J. M. (2009), 'The relationship between corporate social responsibility and shareholder value: an empirical test of the risk management hypothesis'. *Strategic Management Journal*. 30: 425-445.

Husted, B.W. (2005). Risk Management, Real Options, and Corporate Social Responsibility. *Journal of Business Ethics*, 60: 175–183.

Hand, J. R. and Landsman, W. R. (2005). 'The Pricing of Dividends in Equity Valuation'. *Journal of Business Finance & Accounting*, 32: 435-469.

Jo, H. and Na, H. (2012). 'Does CSR Reduce Firm Risk? Evidence from Controversial Industry Sectors'. *Journal of Business Ethics*. Volume 110, Issue 4, pp 441–456.

Klibanoff, P., Lamont, O. and Wizman, T. A. (1998), 'Investor Reaction to Salient News in Closed-End Country Funds'. *The Journal of Finance*, 53: 673-699.

Krüger, P. (2015) Corporate goodness and shareholder wealth, *Journal of Financial Economics,* 304-329

Kempf, A. and Osthoff, P. (2007). 'The Effect of Socially Responsible Investing on Portfolio Performance'. European Financial Management, 13: 908-922.

Kölbel, J. F., Busch, T. and Jancso, L. M. (2017), How Media Coverage of Corporate Social Irresponsibility Increases Financial Risk. Strat. Mgmt. J, 38: 2266-2284.

Lundgren, T. & Olsson, R. (2010) 'Environmental incidents and firm value–international evidence using a multi-factor event study framework', *Applied Financial Economics*, 20:16, 1293-1307

Lys, T., Naughton, P. & Wang, C. (2015) Signalling Through Corporate Accountability Reporting, Journal of Accounting and Economics , 56-72

Leonidou, C.N. & Skarmeas, D. (2017) Gray Shades of Green: Causes and Consequences of Green Skepticism. Journal of Business Ethics, 144:401

Luo, J., Meier, S. and Gee, F. (2012). 'No News Is Good News: CSR Strategy and Newspaper Coverage of Negative Firm Events', working paper

Lougee, B. and Wallace, J. (2008), 'The Corporate Social Responsibility (CSR) Trend'. *Journal of Applied Corporate Finance*, 20: 96-108.

McCombs,M., Shaw, D. (1972) The Agenda-Setting Function of Mass Media.*Public Opinion Quarterly*, 176-187

Mahoney, L., Thorne, L., Cecil, L. & LaGore, W. (2013) A Research Note On Standalone Corporate Social Responsibility Reports: Signalling or greenwashing*?*. *Critical Perspectives on Accounting* ,350-359.

Ohlson, J. A. (1995). 'Earnings, Book Values, and Dividends in Equity Valuation'. *Contemporary Accounting Research*, 11: 661–687.

Orlitzky, M. and Benjamin, J. (2001). 'Corporate Social Performance and Firm Risk: A Meta-Analytic Review'. *Business & Society*, 40(4), pp. 369 – 396.

Plumlee, M., Brown, D., Hayes, R., and Marshall, S., (2015). 'Voluntary environmental disclosure quality and firm value: Further evidence', *Journal of Accounting and Public Policy*, Volume 34, Issue 4, Pages 336-361.

Shiu, Y. and Yang, S. (2017), 'Does engagement in corporate social responsibility provide strategic insurance-like effects?'. *Strategic Management Journal*, 38: 455-470.

Siegel, D. S. and Vitaliano, D. F. (2007), 'An Empirical Analysis of the Strategic Use of Corporate Social Responsibility'. Journal *of Economics & Management Strategy*, 16: 773-792.

Tetlock, P. C. (2007), 'Giving Content to Investor Sentiment: The Role of Media in the Stock Market'. *The Journal of Finance*, 62: 1139-1168.

Torelli, R, Balluchi, F& Lazzini, A. (2019) Greenwashing and environmental communication: Effects on stakeholders' perceptions. *Business Strategy Environment*. 1–15.

Williams, C. (2015). 'Asymmetric Responses to Earnings News: A Case for Ambiguity'. *The Accounting Review*, 785-817.

Waddock, S. and Graves, S. (1997). 'The Corporate Social Performance-Financial Performance Link'. *Strategic Management Journal*,18(4), 303-319.

TABLE 1

VARIABLE DESCRIPTIONS AND SOURCES

Dependent variables	
Variables	*Variable Description*
ewcar11	cumulative abnormal return over the days (-1,1), where day 0 is the announcement date, using the equally-weighted CRSP index as the benchmark return
vwcar11	cumulative abnormal return over the days (-1,1), where day 0 is the announcement date, using the value-weighted CRSP index as the benchmark return
ewcar22	cumulative abnormal return over the days (-1,1), where day 0 is the announcement date, using the equally-weighted CRSP index as the benchmark return
vwcar22	cumulative abnormal return over the days (-1,1), where day 0 is the announcement date, using the value-weighted CRSP index as the benchmark return
Experimental variables	
Variable	*Variable Description*
Reach	A categorical variable, equal to 1,2 or 3, which denotes whether the source for the media event is of low, medium or high reach level, taken from Reprisk
HighReach1	A dummy variable, highreach1 = 1 when reach = 2 or 3, otherwise 0
HighReach2	A dummy variable, highreach2 = 1 when reach = 3, otherwise 0
ContrInd	A dummy variable, equal to 1 if a firm belongs to a controversial industry
ESG_{t-1}	Corporate social responsibility performance in the year prior to the news media event, using yearly data from Thomson Reuters.
HighESG	A dummy variable, equal to 1 if the firm has a higher ESG performance score than the median of ESG scores in year t-1, otherwise 0.
Control variables	
Variable	*Variable Description*
Severity	A categorical variable, equal to 1,2 or 3, which denotes whether the ESG controversy media event is of low, medium or high severity level, from Reprisk
Novelty	A categorical variable, equal to 2 if the media event describes an ESG incident for the first time, otherwise 1, from Reprisk
Breach	A dummy variable, equal to 1 if the media event describes an ESG incident that breaches the United Nations Global Compact principles, from Reprisk.
$PeakRRI_{t-1}$	A measurement of the reputational risk for a firm, using monthly data from Reprisk
$Size_{t-1}$	The log of market value at the end of the calendar year prior to the media event, from Compustat
Lev_{t-1}	Leverage - the ratio of total liabilities to total assets at the end of the financial year prior to the media event, from Compustat
ROA_{t-1}	Return on assets – the ratio of net income to total assets at the end of the financial year prior to the media event, from Compustat
$SalesGrowth_{t-1}$	Sales growth – the ratio of the change in sales revenue in year t to sales revenue in year t-1, from Compustat
PPE_{t-1}	The ratio of property, plant and equipment to total assets at the end of the financial year prior to the media event, from Compustat
$Turnover_{t-1}$	The ratio of share trading volume to outstanding shares in the calendar year prior to the media event, from CRSP
$HighTurnover_{t-1}$	A dummy variable, equal to 1 if share turnover is higher than the median of turnover in year t-1, otherwise 0

TABLE 2

SAMPLE DERIVATION

	Observations
Reprisk News Data (firm-incident level)	40788
After dropping observations with overlapping events	20968
After dropping contaminated events	17400
With stock market data available from CRSP	17374
With Compustat data available	17373
With ESG score data	5077

Notes:

(i) The Reprisk news data (firm-incident level) counts the number of observation when a firm has only one news event corresponding to one Reprisk story ID on a single day;
(ii) Overlapping events that are dropped denotes those events for the same firm within 2 days and all observations with multiple events for a single firm on a single day; and
(iii) The contaminated events that are dropped include earning announcements (1469), M&A announcements (694), SEO announcements (631), CEO turnover and directors (Chairman, President, CFO, CEO) appointments (758), and share repurchase (15).

TABLE 3

DESCRIPTIVE STATISTICS

Variables	*Mean*	*Std. Dev.*	*Min*	*Max*
ewcar11	0.000	0.032	-0.461	0.544
vwcar11	0.000	0.032	-0.455	0.575
ewcar22	0.000	0.039	-0.450	0.524
vwcar22	-0.001	0.039	-0.445	0.555
Reach	1.812	0.759	1	3
ContrInd	0.207	0.405	0	1
ESG_{t-1}	55.872	16.223	10.34	93.17
Severity	1.449	0.574	1	3
Novelty	1.734	0.442	1	2
Breach	0.607	0.488	0	1
$PeakRRI_{t-1}$	41.650	14.104	0	79
$Size_{t-1}$	9.856	1.421	5.805	12.833
Lev_{t-1}	0.654	0.196	0.192	1.318
ROA_{t-1}	0.056	0.073	-0.215	0.237
$SalesGrowth_{t-1}$	0.039	0.161	-0.452	0.779
PPE_{t-1}	0.323	0.254	0.004	0.890
$Turnover_{t-1}$	0.209	0.153	0.041	0.982

TABLE 4

CORRELATIONS

Variables	ewcar11	vwcar11	ewcar22	vwcar22	Reach	ContrInd	ESG_{t-1}	Severity
vwcar11	0.972							
ewcar22	0.805	0.779						
vwcar22	0.782	0.807	0.967					
Reach	-0.044	-0.042	-0.045	-0.039				
ContrInd	0.001	0.002	-0.001	-0.001	0.035			
ESG_{t-1}	0.017	0.015	0.008	0.009	0.033	-0.045		
Severity	-0.004	-0.001	0.015	0.016	0.007	-0.018	-0.015	
Novelty	0.018	0.021	0.019	0.019	-0.152	-0.055	0.034	0.179
Breach	-0.017	-0.028	-0.03	-0.037	-0.005	0.033	-0.006	0.124
$PeakRRI_{t-1}$	-0.007	-0.004	-0.006	0.001	0.217	0.27	-0.028	0.072
$Size_{t-1}$	-0.006	-0.003	-0.005	0.003	0.134	0.287	0.082	0.021
Lev_{t-1}	0.013	0.016	0.008	0.013	-0.016	-0.091	0.013	-0.009
ROA_{t-1}	-0.042	-0.042	-0.038	-0.033	0.081	0.123	0.004	0.028
$SalesGrowth_{t-1}$	-0.021	-0.019	-0.024	-0.015	0.037	0.031	-0.096	-0.058
PPE_{t-1}	0.024	0.02	0.035	0.03	-0.106	0.166	-0.013	-0.016
$Turnover_{t-1}$	-0.009	-0.008	-0.003	-0.005	-0.047	-0.017	-0.06	-0.024

Variables	Novelty	Breach	$PeakRRI_{t-1}$	$Size_{t-1}$	Lev_{t-1}	ROA_{t-1}	$SalesGrowth_{t-1}$	PPE_{t-1}
Breach	0.101							
$PeakRRI_{t-1}$	-0.194	0.045						
$Size_{t-1}$	-0.083	-0.08	0.559					
Lev_{t-1}	0.029	-0.078	-0.023	-0.022				
ROA_{t-1}	-0.024	-0.088	0.204	0.446	-0.199			
$SalesGrowth_{t-1}$	-0.014	-0.012	-0.004	0.046	-0.17	0.191		
PPE_{t-1}	0.005	0.299	-0.081	-0.202	-0.037	-0.236	0.027	
$Turnover_{t-1}$	-0.019	0.068	-0.113	-0.421	0.017	-0.406	-0.033	0.19

TABLE 5

MARKET REACTIONS TO NEGATIVE ESG MEDIA EVENTS

Variables	*ewcar11*	*ewcar11*	*ewcar11*	*ewcar11*
Reach	-0.127**	-0.091		
	(0.063)	(0.086)		
HighReach1			-0.115	
			(0.108)	
HighReach2				-0.158
				(0.170)
ContrInd		1.222*	0.697	0.245
		(0.629)	(0.513)	(0.469)
$ESGScore_{t-1}$	0.002			
	(0.002)			
HighESG		0.005	-0.053	-0.002
		(0.216)	(0.135)	(0.083)
Reach.ContrInd		-0.460**		
		(0.210)		
HighReach1.ContrInd			-0.551**	
			(0.272)	
HighReach2.ContrInd				-0.736**
				(0.354)
ContrInd.HighESG		-1.159***	-0.399	-0.100
		(0.429)	(0.350)	(0.291)
Reach.HighESG		-0.014		
		(0.117)		
HighReach1.HighESG			0.051	
			(0.182)	
HighReach2.HighESG				-0.105
				(0.202)
Reach.ContrInd.HighESG		0.703***		
		(0.209)		
HighReach1.ContrInd.HighESG			0.878***	
			(0.276)	
HighReach2.ContrInd.HighESG				1.104***
				(0.389)
Breach	-0.100	-0.098	-0.104	-0.103
	(0.097)	(0.096)	(0.097)	(0.095)
Severity	-0.027	-0.020	-0.034	-0.003
	(0.056)	(0.058)	(0.056)	(0.058)
Novelty	0.112	0.100	0.112	0.110
	(0.079)	(0.079)	(0.079)	(0.079)
$PeakRRI_{t-1}$	0.001	0.001	0.000	0.001

	(0.004)	(0.004)	(0.004)	(0.004)
$Size_{t-1}$	0.026	0.018	0.021	0.020
	(0.042)	(0.051)	(0.050)	(0.051)
ROA_{t-1}	-1.527**	-1.454**	-1.462**	-1.475**
	(0.740)	(0.687)	(0.701)	(0.702)
Lev_{t-1}	-0.186	-0.251	-0.263	-0.220
	(0.225)	(0.224)	(0.226)	(0.229)
PPE_{t-1}	0.524**	0.438*	0.475**	0.438*
	(0.228)	(0.218)	(0.229)	(0.225)
$SalesGrowth_{t-1}$	-0.368	-0.424	-0.415	-0.426
	(0.252)	(0.255)	(0.253)	(0.256)
Test: $\beta_1 = 0$ (p-value)		0.295	0.295	0.358
Test: $\beta_1 + \beta_3 = 0$ (p-value)		0.215	0.664	0.023
Test: $\beta_1 + \beta_2 = 0$ (p-value)		0.006	0.009	0.006
Test: $\beta_1 + \beta_2 + \beta_3 + \beta_5 = 0$ (p-value)		0.342	0.031	0.763
R-squared	0.016	0.019	0.017	0.018
Observations	5,077			

Notes: This table presents the results for the market reaction to the negative ESG media coverage using model 1 and model 2. Column 2 is for the results for baseline model 1, and the others show the results for the model 2. Among them, Column3, Column4, Column5 shows the results using reach, highreach1, highreach2 as the proxy of media reach respectively. Reach is equal to 1, 2, 3 and highreach1=1 when reach=2 or 3, otherwise 0, while highreach2 =1 when reach=3, otherwise 0. β_1 is the coefficient of Reach, $\beta_1 + \beta_3$ is the sum of the coefficients of Reach and Reach.HighESG , $\beta_1 + \beta_2$ is the sum of the coefficients of Reach and Reach.ContrInd, and $\beta_1 + \beta_2 + \beta_3 + \beta_5$ is the sum of the coefficients of Reach, Reach.ContrInd, Reach.HighESG and Reach.ContrInd.HighESG. All models are estimated without a constant term and include 45 industry dummies variables. The standard errors are estimated clustered by the industry.

TABLE 6

MARKET REACTIONS TO NEGATIVE ESG MEDIA EVENTS – HIGH AND LOW SEVERITY SUB-SAMPLES

Variables	*High Severity*	*Low Severity*
Reach	-0.237**	0.009
	(0.106)	(0.126)
ContrInd	-0.569	3.713***
	(0.811)	(0.782)
HighESG	-0.360	0.316
	(0.307)	(0.281)
Reach.ContrInd	-0.243	-0.651**
	(0.218)	(0.250)
ContrInd.HighESG	-0.779*	-1.528***
	(0.443)	(0.514)
Reach.HighESG	0.191	-0.159
	(0.144)	(0.152)
Reach.ContrInd.HighESG	0.468**	0.893***
	(0.195)	(0.276)
Breach	-0.127	-0.058
	(0.155)	(0.104)
Novelty	0.009	0.130
	(0.129)	(0.087)
$PeakRRI_{t-1}$	0.002	0.001
	(0.007)	(0.004)
$Size_{t-1}$	0.069	-0.020
	(0.074)	(0.055)
ROA_{t-1}	-1.554	-1.142
	(0.930)	(1.006)
Lev_{t-1}	-0.218	-0.217
	(0.369)	(0.348)
PPE_{t-1}	0.994**	0.058
	(0.417)	(0.285)
$SalesGrowth_{t-1}$	-1.169**	-0.009
	(0.464)	(0.345)
Test $\beta_1 = 0$ (p-value)	0.031	0.941
Test $\beta_1 + \beta_3 = 0$ (p-value)	0.601	0.177
Test $\beta_1 + \beta_2 = 0$ (p-value)	0.010	0.005
Test $\beta_1 + \beta_2 + \beta_3 + \beta_5 = 0$ (p-value)	0.394	0.403
R-squared	0.038	0.024
Observations	2,071	3,006

Notes: This table presents the regression results using High Severity and Low Severity subsamples. The dependent variable is the equally weighted CAR(-1,1). If Severity is equal to 2 or 3, then the observation falls into the High Severity group, otherwise it belongs to the low severity group. Column 2 shows the results for the High Severity group and column 3 shows the results for the Low Severity group. β_1 is the coefficient of Reach, $\beta_1 + \beta_3$ is the sum of the coefficients of Reach and Reach.HighESG , $\beta_1 + \beta_2$ is the sum of the coefficients of Reach and

Reach.ContrInd, and $\beta_1 + \beta_2 + \beta_3 + \beta_5$ is the sum of the coefficients of Reach, Reach.ContrInd, Reach.HighESG and Reach.ContrInd.HighESG. All models are estimated without constant terms and include 45 industry dummies variables. The standard errors are estimated clustered by industry.

TABLE 7

MARKET REACTIONS TO NEGATIVE ESG MEDIA EVENTS – HIGH AND LOW TURNOVER SUB-SAMPLES

Variables	*High Turnover*	*Low Turnover*
Reach	-0.236**	0.070
	(0.090)	(0.126)
ContrInd	1.139	1.543*
	(0.686)	(0.787)
HighESG	0.140	-0.094
	(0.300)	(0.261)
Reach.ContrInd	-0.591***	-0.399**
	(0.126)	(0.174)
ContrInd.HighESG	-1.739***	-0.730**
	(0.332)	(0.290)
Reach.HighESG	-0.070	0.036
	(0.161)	(0.131)
Reach.ContrInd.HighESG	0.898***	0.517**
	(0.221)	(0.223)
Breach	-0.216	0.003
	(0.146)	(0.102)
Severity	-0.026	0.035
	(0.104)	(0.078)
Novelty	0.229	-0.012
	(0.146)	(0.065)
$PeakRRI_{t-1}$	0.005	0.003
	(0.006)	(0.003)
$Size_{t-1}$	0.076	-0.120
	(0.068)	(0.077)
ROA_{t-1}	-1.685**	-0.278
	(0.793)	(1.154)
Lev_{t-1}	-0.110	-0.169
	(0.334)	(0.450)
PPE_{t_1}	0.773**	0.043
	(0.308)	(0.339)
$SalesGrowth_{t-1}$	-0.420	-0.299
	(0.305)	(0.548)
Test $\beta_1 = 0$ (p-value)	0.012	0.580
Test $\beta_1 + \beta_3 = 0$ (p-value)	0.047	0.140
Test $\beta_1 + \beta_2 = 0$ (p-value)	0.000	0.014
Test $\beta_1 + \beta_2 + \beta_3 + \beta_5 = 0$ (p-value)	0.993	0.070
R-squared	0.039	0.020
Observations	2,535	2,542

Notes: This table presents the regression results using High Turnover and Low Turnover sub-samples. The dependent variable is the equally-weighted CAR(-1,1). If Turnover in year t-1 is larger than the median, then the observation falls into the High Turnover group, otherwise it belongs to the low turnover group. Column 2 shows

the result for the High Turnover group and column 3 shows the result for the Low Turnover group. All models are estimated without a constant term and include 45 industry dummies variables. The standard errors are estimated clustered by industry.

TABLE 8

MARKET REACTIONS TO NEGATIVE ESG MEDIA EVENTS – DIFFERENT MEASURES OF MARKET REACTION

Variables	*vwcar11*	*ewcar22*	*vwcar22*
Reach	-0.100	-0.121	-0.099
	(0.077)	(0.087)	(0.080)
ContrInd	1.057*	1.035	0.544
	(0.571)	(0.868)	(0.806)
HighESG	-0.067	-0.014	-0.015
	(0.193)	(0.285)	(0.261)
Reach.ContrInd	-0.347*	-0.510**	-0.400**
	(0.173)	(0.210)	(0.175)
ContrInd.HighESG	-0.880**	-0.869*	-0.511
	(0.392)	(0.450)	(0.432)
Reach.HighESG	0.007	-0.027	-0.043
	(0.111)	(0.138)	(0.130)
Reach.ContrInd.HighESG	0.584***	0.612*	0.468
	(0.186)	(0.334)	(0.338)
Breach	-0.157*	-0.322***	-0.344***
	(0.093)	(0.118)	(0.118)
Severity	0.003	0.108	0.125
	(0.056)	(0.089)	(0.087)
Novelty	0.127	0.079	0.097
	(0.094)	(0.096)	(0.104)
$PeakRRI_{t-1}$	0.003	0.005	0.006
	(0.004)	(0.005)	(0.005)
$Size_{t-1}$	0.008	0.006	0.009
	(0.052)	(0.086)	(0.089)
ROA_{t-1}	-1.469*	-1.074	-0.947
	(0.758)	(0.985)	(1.053)
Lev_{t-1}	-0.239	-0.454	-0.373
	(0.215)	(0.298)	(0.312)
PPE_{t-1}	0.490**	0.578*	0.700**
	(0.217)	(0.327)	(0.324)
$SalesGrowth_{t-1}$	-0.374	-0.441	-0.251
	(0.234)	(0.389)	(0.375)
Test $\beta_1 = 0$ (p-value)	0.205	0.173	0.223
Test $\beta_1 + \beta_3 = 0$ (p-value)	0.280	0.172	0.179
Test $\beta_1 + \beta_2 = 0$ (p-value)	0.006	0.002	0.002
Test $\beta_1 + \beta_2 + \beta_3 + \beta_5 = 0$ (p-value)	0.126	0.891	0.818
R-squared	0.019	0.015	0.015
Observations	5,077		

Notes: This table presents the results for robustness tests for model 2 using value weighted CAR(-1,1), equally weighted CAR(-2,2) and value weighted CAR(-2,2) as the dependent variables. Column 2 to Column 4 shows the results for model 2 using value weighted CAR(-1,1), equally weighted CAR(-2,2) and value weighted CAR(-2,2) respectively. All models without constant term include the 45 industry dummies variables and the standard errors are clustered by the industry.

TABLE 9

MARKET REACTIONS TO NEGATIVE ESG MEDIA EVENTS – DIFFERENT MEASURES OF REACH - HIGH AND LOW SEVERITY SUB-SAMPLES

Variables	*High Severity*	*Low Severity*	*High Severity*	*Low Severity*
HighReach1	-0.241	-0.038		
	(0.152)	(0.156)		
HighReach2			-0.508**	0.070
			(0.246)	(0.229)
ContrInd	-0.896	2.977***	-1.387*	2.430***
	(0.717)	(0.652)	(0.713)	(0.568)
HighESG	-0.148	0.050	-0.118	0.103
	(0.202)	(0.150)	(0.151)	(0.111)
ContrInd.HighESG	-0.347	-0.488	-0.075	-0.153
	(0.444)	(0.301)	(0.351)	(0.266)
HighReach1.ContrInd	-0.436*	-0.683**		
	(0.254)	(0.335)		
HighReach2.ContrInd			-0.280	-1.069***
			(0.451)	(0.392)
HighReach1.HighESG	0.214	-0.047		
	(0.247)	(0.195)		
HighReach2.HighESG			0.397	-0.427
			(0.270)	(0.299)
HighReach1.ContrInd.HighESG	0.742***	0.978***		
	(0.271)	(0.360)		
HighReach2.ContrInd.HighESG			0.625	1.458***
			(0.533)	(0.461)
Breach	-0.148	-0.053	-0.150	-0.061
	(0.150)	(0.104)	(0.162)	(0.102)
Novelty	0.006	0.148*	0.056	0.135
	(0.133)	(0.086)	(0.131)	(0.086)
$PeakRRI_{t-1}$	0.001	0.001	0.002	0.001
	(0.007)	(0.004)	(0.007)	(0.005)
$Size_{t-1}$	0.067	-0.013	0.072	-0.019
	(0.073)	(0.055)	(0.074)	(0.055)
ROA_{t-1}	-1.528	-1.185	-1.545	-1.144
	(0.930)	(1.026)	(0.954)	(1.012)
Lev_{t-1}	-0.236	-0.219	-0.207	-0.165
	(0.374)	(0.350)	(0.367)	(0.353)
PPE_{t-1}	1.028**	0.080	1.013**	0.039
	(0.440)	(0.293)	(0.431)	(0.296)
$SalesGrowth_{t-1}$	-1.143**	-0.010	-1.197**	0.006
	(0.456)	(0.344)	(0.475)	(0.344)

Test $\beta_1 = 0$ (p-value)	0.120	0.810	0.045	0.760
Test $\beta_1 + \beta_3 = 0$ (p-value)	0.860	0.611	0.569	0.050
Test $\beta_1 + \beta_2 = 0$ (p-value)	0.001	0.019	0.035	0.003
Test $\beta_1 + \beta_2 + \beta_3 + \beta_5 = 0$ (p-value)	0.007	0.144	0.719	0.860
R-squared	0.036	0.021	0.037	0.023
Observations	2,071	3,006	2,071	3,006

Notes: This table presents the results for robustness tests of subsample analysis using high/low severity subsamples. The dependent variable is the equally weighted CAR (-1,1). Columns 2 and 3 show the results using HighReach1 as the measurement of reach, while Columns 4 and 5 show the results using HghReach2 as the measurement of reach. All models are estimated without constant terms and include 45 industry dummies variables. The standard errors are clustered by industry.

TABLE 10

MARKET REACTIONS TO NEGATIVE ESG MEDIA EVENTS – DIFFERENT MEASURES OF REACH - HIGH AND LOW TURNOVER SUB-SAMPLES

Variables	*High Turnover*	*Low Turnover*	*High Turnover*	*Low Turnover*
HighReach1	-0.254*	0.074		
	-0.142	-0.152		
HighReach2			-0.451***	0.134
			0.163	0.269
ContrInd	0.296	1.225	-0.348	0.996
	-0.631	-0.795	-0.673	-0.736
HighESG	0.053	-0.11	0.023	-0.014
	-0.196	-0.144	-0.13	-0.118
ContrInd.HighESG	-0.901***	-0.01	-0.344	0.004
	-0.204	-0.23	-0.283	-0.202
HighReach1.ContrInd	-0.722***	-0.459*		
	-0.207	-0.257		
HighReach2.ContrInd			-0.923***	-0.699**
			-0.238	-0.33
HighReach1.HighESG	-0.087	0.135		
	-0.277	-0.183		
HighReach2.HighESG			-0.087	-0.078
			-0.263	-0.279
HighReach1.ContrInd.HighESG	1.354***	0.452		
	-0.379	-0.303		
HighReach2.ContrInd.HighESG			0.929**	1.093**
			-0.389	-0.413
Breach	-0.217	-0.006	-0.23	0.009
	-0.149	-0.103	-0.147	-0.099
Severity	-0.06	0.033	0.011	0.034
	-0.098	-0.078	-0.109	-0.076
Novelty	0.246*	-0.007	0.250*	-0.02
	-0.143	-0.068	-0.144	-0.062
$PeakRRI_{t-1}$	0.003	0.003	0.005	0.003
	-0.007	-0.003	-0.006	-0.003
$Size_{t-1}$	0.081	-0.117	0.082	-0.12
	-0.067	-0.078	-0.07	-0.076
ROA_{t-1}	-1.638**	-0.279	-1.829**	-0.256
	-0.791	-1.177	-0.807	-1.158
Lev_{t-1}	-0.099	-0.189	-0.089	-0.135
	-0.328	-0.453	-0.346	-0.44

PPE_{t-1}	0.842**	0.057	0.783**	0.041
	-0.314	-0.334	-0.314	-0.337
$SalesGrowth_{t-1}$	-0.423	-0.309	-0.399	-0.288
	-0.305	-0.556	-0.309	-0.544
Test $\beta_1 = 0$ (p-value)	0.081	0.63	0.008	0.62
Test $\beta_1 + \beta_3 = 0$ (p-value)	0.143	0.137	0.029	0.56
Test $\beta_1 + \beta_2 = 0$ (p-value)	0	0.074	0	0.009
Test $\beta_1 + \beta_2 + \beta_3 + \beta_5 = 0$ (p-value)	0.088	0.299	0.065	0.004
R-squared	0.035	0.019	0.038	0.019
Observations	2535	2,542	2,535	2,542

Notes: This table depicts the results for subsample analyses using high/low turnover subsamples. The dependent variable is equally weighted CAR (-1,1). Columns 2 and 3 show the results using HighReach1 as the measurement of reach, while Columns 4 and 5 show the results using HighReach2 as the measurement of reach. All models are estimated without constant terms and include 45 industry dummies variables. The standard errors are estimated clustered by industry.