

TO WHAT EXTENT DOES NEGATIVE PUBLIC EXPOSURE ON ENVIRONMENTAL ISSUES INCREASE ENVIRONMENTAL PERFORMANCE?

Abstract

Media outlets can expose a company for environmental accidents. NGOs and other civil society organizations and networks can also negatively expose companies for poor environmental records through the media and/or their own publications and webpages. Using a sample with the 350 largest British companies in terms of markets capitalisation and a dynamic data panel approach, this study shows that negative public exposure in relation to environmental issues leads to an increase in the company's environmental performance within the following two years and that this effect is driven by the largest companies in the sample. This disciplinary effect is able to explain around 30% of the increase in the environmental performance of the 50% largest companies' of the sample that took place between 2001 and 2011. The rationale behind this result is that negative public exposure entails reputational costs for the companies that have been exposed. Increasing the level of environmental performance may allow these companies to repair their damaged reputations and/or protect themselves from additional exposure.

Some environmental accidents that have appeared in the media have had a substantial impact on how companies integrate environmental concerns into their strategies. Indeed, the Seveso (1976), Bhopal (1984), Chernobyl (1986) and *Exxon Valdez* (1989) accidents, which were widely reported by the media, contributed to the integration of environmental protection into the company's strategic concerns in the late 1980s and early 1990s (Hoffman & Bansal, 2012). While media exposure can be a driver of change in the corporate environmental strategy, civil society organizations such as NGOs can also have an impact on companies' environmental practices through "bad cop" strategies such as the public exposure of the companies' poor environmental records (Lyon, 2010a). The pressure on companies generated by these confrontational strategies is likely to have increased over time. Indeed, the number of international NGOs has increased from less than 1,300 in 1960 to more than 57,000 in 2012 (Union of International Associations, 2013). Moreover, the spread of information technologies has given civil society organizations, as well as the media, a huge capacity to disseminate information about a company's practices and to mobilize the public around environmental issues. Finally, since the media have gatekeeping power, that is, the ability to filter the information, the internet allows public access to all the information that the media does not broadcast or publish (Palazzo & Scherer, 2006).

Being publicly exposed by the media and civil society organizations in relation to an environmental accident or for a poor environmental record can damage a company's reputation in the eyes of customers, investors, suppliers and employees and negatively affect revenues and financial performance (Baron, 2003; Fombrun, Gardberg, & Barnett, 2000; Kassinis, 2012). Therefore, negative public exposure in relation to environmental issues may result in the

adoption of environmentally responsible measures, in order to repair the company's damaged reputation and/or acquire "reputational capital" able to protect the company from reputational damage in case of additional exposure (Bourdieu, 1980; Minor & Morgan, 2011).

Using a sample of companies that contains the constituents of the FTSE350 index, that is, the 350 largest companies in terms of market capitalization that are listed on the London Stock Exchange, and a panel data approach, this study provides empirical evidence that negative public exposure in relation to environmental issues, either in the media or in civil society organizations' publications and websites, has a positive impact on a company's environmental performance. This disciplinary effect is identified by exploiting the companies' intertemporal variation in the level of environmental performance and negative public exposure. The advantage of this approach is that it controls for any time-invariant company-specific characteristic that could contaminate the coefficients. Moreover, I control for company-level time-varying characteristics, namely size, profitability, leverage and visibility in the media. Finally, the introduction of time fixed effects controls for any unobserved time-varying determinants of the environmental performance that affect all the companies in the same fashion. Since a model able to identify the disciplinary effect requires the introduction of lags of the dependent variable in the regressors, and these lags introduce a bias in the fixed-effects panel data estimator used to quantify the disciplinary effect, I check the robustness of the results obtained using a dynamic panel data approach with the Arellano-Bond estimator.

This study makes two additional contributions to the existing literature on the drivers of environmental performance. First, it shows that the disciplinary effect of negative public

exposure in relation to environmental issues only exists for the largest companies in the sample. Second, it quantifies the extent to which this negative public exposure is able to explain the companies' increase in their environmental performance. The data show that this public exposure is able to explain approximately 30% of the increase in the environmental performance experienced by the 50% largest FTSE350 companies between 2001 and 2011.

INTRODUCTION

Some well-known companies that have been negatively exposed by NGOs and media outlets in relation to environmental issues have responded by taking into account the public's demands. For example, when Greenpeace occupied the Brent Spar on April 30, 1995, and used the mass media to inspire protests across Northern Europe, within the next two months Shell responded to public pressure by renouncing to its plans for deep-sea disposal (Bakir, 2005). It should be noted that the boycott reportedly led to a 50% decline in sales at some German Shell stations during the height of the protests (Smith, 2008: 285). More recently, in March 2010, Greenpeace launched an attack on Nestlé for the use of unsustainable palm oil from the Indonesian supplier Sinar Mas in its products. Soon after the attack, Nestlé stopped sourcing palm oil from Sinar Mas and sought the help of an external partner, Forest Trust, to help in its exchanges with Greenpeace and to start auditing its palm oil suppliers (Ionescu-Somers & Enders, 2012). In May 2010 Nestlé also joined the Roundtable for Sustainable Palm Oil. A third example is the repeated media exposure of Shell's Niger delta oil spills (Arnott, 2010; Duffield, 2010; Vidal, 2012). Nowadays, Shell's webpage "Oil leaks in Nigeria" (Shell Global, 2013)

provides the company's views on the issues raised by the activists and the press. In the workers' rights dimension, a classical example is Nike, which was repeatedly exposed in the 1990s for poor working conditions in the 'sweatshops' and the use of child labor. This public exposure eventually resulted in Nike's adoption of more stringent measures than those required by the Fair Labor Association agreement, such as not hiring anyone below 18 in its footwear plants and meeting US air quality standards in the workplace (Baron, 2003). These examples show that pressure from stakeholders is one of the drivers of corporate environmental responsiveness (Bansal & Roth, 2000) and, more generally, of CSR.

Several studies that use company-level quantitative data suggest that companies respond to potential or actual negative public exposure by becoming more environmentally responsible. Sam and Innes (2008) found that American companies in industries that were more frequently subject to boycotts were also more likely to participate in a voluntary environmental program, even if they had never been themselves the target of a boycott. Another study that examined company behavior in response to toxic release inventory disclosures suggests that it is disclosure and not the fact of being a heavy polluter that has an impact on the company's reduction of toxic emissions (Konar & Cohen, 1997). Maxwell, Lyon and Hackett (2000) also showed that, in the United States, the number of environmental groups per capita at the state level had a positive effect on the companies' reductions in toxic emissions in the states. Finally, Lenox and Eesley (2009)'s study showed that some companies respond to activists' demands concerning environmental issues, and evaluated how the likelihood that a company responds to these demands depends on the company's characteristics, the type of activist group and the characteristics of the demand itself. While a company that has been targeted by activists and, as a

result, has been publicly exposed in relation to an environmental issue, sometimes responds to the activists' demands by addressing this issue, the impact of negative exposure can also trigger other responses that increase its environmental performance, such as the adoption of an environmental management system or a code of conduct. In other words, the effect of negative public exposure on the company's environmental performance can go beyond complying with the activists' demands. Moreover, companies are also sometimes negatively exposed by the media in relation to an environmental accident, such as an oil spill, without the initial intervention of activists or other civil society members. This type of exposure, whose origin is not the civil society, could also have a disciplinary effect on the company's environmental performance.

The literature shows that press diffusion and the environmental performance of a country's private sector are positively related (Dyck & Zingales, 2002) and more media exposure seems to lead to higher CSR performances (Mamingi, Dasgupta, Laplante, & Jong, 2008; Nikolaeva & Bicho, 2011; Zyglidopoulos, Carroll, Georgiadis, & Siegel, 2010). However, none of these studies distinguishes between good news and bad news. Since the public is more likely to perceive as important the subjects and the organizations that receive the greatest media attention (Fombrun & Shanley, 1990), the positive relationship observed between media exposure and CSR performance by these studies could simply be due to the fact that media exposure increases company visibility, which in turn leads to the adoption of environmentally responsible measures (King & Lenox, 2000).

The media tend to target companies that allow the portrayal of a dramatic conflict (Rindova, Pollock, & Hayward, 2006), and environmental accidents or poor environmental records lend themselves easily to dramatization. Moreover, the public depends more on the media to learn about the companies' reputation dimensions that are difficult to observe directly, such as the social and environmental performances, than about the dimensions that can be directly experienced, such as the product's characteristics (Einwiller, Carroll, & Korn, 2010). Therefore, the public's demand of information on the environmental and social records of companies, together with the media bias towards dramatic events, makes environmental accidents or companies' poor environmental records likely to be reported by the media.

Besides the media, activists and other civil society members also publicly expose companies for poor environmental records. In order to make these issues salient, they use not only their own publications and websites, but also media outlets (Bonardi & Keim, 2005). While civil society organizations target companies with poor environmental records in order to foster change concerning the environmental issues they consider important, they also tend to choose the companies that will give the maximum visibility to the issue (Porter & Kramer, 2006). More precisely, they tend to target the largest and most visible companies, as well as those that have a particularly high environmental impact (Lenox & Eesley, 2009).

Moreover, negative news tends to have more impact on the public than good news (Soroka, 2006), which makes the consequences of negative media exposure on corporate reputation rather serious. Einwiller et al. (2010) found that the media tone concerning the information on environmental and social performance was positively correlated with the

companies' emotional appeal. Moreover, a survey among the clients of retail chains offering fair trade products in Italy showed that negative social responsibility associations had a stronger influence on product associations than positive ones (Castaldo, Perrini, Misani, & Tencati, 2009).

Finally, the consequences of a damaged reputation can be substantial. Corporate reputation is the "perceptual representation of a company's past actions and efforts and future prospects that describe the company's overall appeal to all its key constituents" (Fombrun, 1996: 72). A good reputation is likely to have a positive impact on corporate financial performance, consumers' perceptions of product quality, employee morale, productivity and turnover and access to capital (Brammer & Pavelin, 2006). Therefore, it is an intangible asset that can confer competitive advantage (Deephouse, 2000). On the other hand, a damaged reputation can negatively affect revenues and financial performance, reduce the ability to attract financial capital and talented employees weaken employee morale and make policymakers and government agencies more skeptical of the company's future actions (Baron, 2003; Fombrun et al., 2000).

Highly confrontational actions tend to impose higher costs on companies than less confrontational actions such as letter-writing campaigns (Eesley & Lenox, 2006). Indeed, the threat of a boycott or the sullyng of a company's reputation in the media may be the most important harms NGOs can inflict on companies Lyon (2010a). External actors that engage in confrontational actions against companies can gain substantial leverage over them, because these companies depend on external actors for critical resources (Kassinis, 2012; Pfeffer & Salancik,

2003). Stakeholders' demands may be addressed only to the extent that they have a positive effect on financial performance (strategic stakeholder management), but they can also be addressed because managers consider that companies have a moral commitment towards the stakeholders' welfare and towards society and that value is created through cooperation with stakeholders in order to improve everyone's circumstance (Berman, Wicks, Kotha, & Jones, 1999; Freeman, Wicks, & Parmar, 2004).

Therefore, since (i) negative news on companies is likely to be reported by the media, (ii) civil society organizations target companies with poor environmental records and use the media and their own publications and websites to expose these companies, (iii) the public relies substantially on the media and information provided by civil society members to learn about companies' environmental records, (iv) the public is more sensitive to negative news on social and environmental performance than positive news, and (v) the costs imposed on the company by negative public exposure and boycotts can be substantial, companies have incentives to respond to negative public exposure to minimize the reputational damage and avoid further exposure.

Indeed, while the Union Carbide's Bhopal accident resulted in an increase in the volatility of the stocks of other chemical companies, in the aftermath of the accident, the stock volatility of companies that subsequently became members of the American Chemistry Council's Responsible Care Program decreased more than for non-members (Barnett, 2007). This example suggests that environmentally responsible measures may allow companies to repair their reputations. Moreover, an increase in environmental performance could also function as a

“reputation insurance” (Minor & Morgan, 2011), by providing companies with “reputational capital” that protects them from reputational damage in case of negative public exposure (Bourdieu, 1980). Indeed, corporate self-regulation is a strategy that can prevent the future development salient issues (Bonardi & Keim, 2005). Companies that exhibit high levels of CSR benefit from a “reservoir of public goodwill”, which protects them in difficult times (Luo, Meier, & Oberholzer-Gee, 2012) and can reduce the losses associated with media exposure when there is a negative incident. An empirical study on the American chemical industry showed that the impact of public perceptions of concern and care on trust and credibility is stronger than any other variable considered (Peters, Covello, & McCallum, 1997). If a company has a good reputation in the social and environmental dimensions, the public and the media are more likely to believe that a negative incident is due to bad luck rather than a lack of commitment to social and environmental issues. As a result, the tone of the news coverage might be less critical and activist pressure is likely to be lower (Luo et al, 2012; Minor & Morgan, 2011). An event study has also shown that companies with a stronger reputation in the domain of CSR experience less decline in their market value when they are deleted from the Calvert Social Index (Doh, Howton, Howton & Siegel, 2010). These results suggest that a high level of environmental and social performance protects companies, at least in part, from reputational damage in case of a decrease in the environmental and/or social performance. Finally, since negative public exposure can increase the managers’ awareness of the reputational costs associated with this exposure, it can lead them to increase the level of environmental performance in order to protect the company’s reputation from future public exposure.

In sum, a company's negative exposure in the media and/or by civil society organizations in relation to an environmental accident or for a poor environmental record can lead to the adoption of environmentally responsible measures to try to repair the damaged reputation and/or to acquire "reputational capital" able to protect the company in case of additional negative public exposure.

H1. Negative public exposure in the media or in civil society organizations' publications or websites in relation to environmental issues has a disciplinary effect on the company, leading to an increase in its environmental performance.

It should be noted that if the costs of complying with the public's demands after negative media exposure are too high, managers might choose not to comply with these demands (Spar & La Mure, 2003). Lenox and Eesley (2009) showed that the probability of a company's compliance with activists' requests decreases significantly with both the company's absolute and relative emissions (relative to its industry peers). The rationale behind this result is that the cost associated with achieving a given level of environmental performance is higher for companies that are further away from this level. If the cost of compliance is too high, companies might choose the path of resistance (Siegel & Vitaliano, 2007). They might also engage in more publicly visible and/or cheaper types of CSR measures that allow them to signal social and environmental responsibility, without addressing the issue the company has been exposed for (Chen, Patten, & Roberts, 2007). It should also be noted that an ambitious CSR positioning might increase the likelihood that negative corporate events are publicized in the media and invite private politics (Baron, 2003). Additionally, building a "good" reputation takes a lot of

time and resources, while a single incident can wipe it away, as the Deepwater Horizon accident suffered by BP in 2010 has shown (Minor & Morgan, 2011). Finally, demonstrating social and environmental responsiveness may not be credible in some industries, such as tobacco, nuclear energy, and weapons manufacture, where negative perceptions are particularly strong (Brammer & Pavelin, 2004). Therefore, while the assumption that underlies Hypothesis 1 is that companies can gain from responding to negative public exposure in relation to environmental issues by adopting environmentally responsible measures, this might not apply to all companies. Indeed, some might be better off ignoring public demands and not reacting to negative media exposure.

Large companies tend to face significant stakeholder pressure and, while Gupta and Innes (2008) find empirical evidence that company size is an important predictor of the likelihood that a company will be chosen as a target of an activist campaign, Capriotti (2009) finds that larger companies with good reputations and oriented to mass consumption have more visibility in newspapers than smaller ones. Because larger companies tend to face larger stakeholder pressure than smaller ones and also tend to have more resources for CSR, they exhibit on average higher levels of corporate donations (Adams & Hardwick, 1998; Brammer, Pavelin, & Porter, 2009), they are more likely to join voluntary initiatives (King & Lenox, 2000) and, more generally, they display higher levels of CSR performance (Ioannou & Serafeim, 2012; Jackson & Apostolakou, 2010).

Lenox and Eesley (2009) find that larger and more visible companies are more likely to be targeted at least once by activists, but size and visibility do not seem to have any significant effect on the likelihood of the company's compliance with an activist's request. While larger and

well-known companies may be more likely to suffer more reputational damage if they fail to comply, the authors discuss that these attributes may also be a source of strength in the event of an activist campaign because they provide resources with which to push back activist's demands. When the cost associated with compliance is high, these resources might allow companies to avoid complying the activists' demands. However, companies can still try to offset the negative consequences of the activist campaign by adopting environmental measures that are less costly and allow them to publicly show their commitment to environmental issues, especially if the activist campaign has been widely publicized. Moreover, while the company might not respond to the activist's demand, the negative public exposure could still lead to the integration of environmental issues in the company's strategic concerns. Therefore, I expect larger companies to be more likely to increase their environmental performance after being negatively exposed in relation to an environmental issue.

H2. The disciplinary effect of negative public exposure for an environmental accident or for a poor environmental record is stronger for larger companies than for smaller ones.

I test hypotheses 1 and 2 with a sample that contains the 350 largest companies in terms of market capitalization that were listed on the London Stock Exchange on December 31, 2012, and a panel data approach. In this study, I also quantify which part of the increase in the environmental performance of these companies can be attributed to negative public exposure by the media and civil society organizations in relation to environmental issues.

DATA AND METHODS

Sample

The sample contains the constituents of the FTSE350 stockmarket index on December 31, 2012, that is, the 350 largest companies listed on the London Stock Exchange in terms of market capitalisation. This choice is determined by the source of the data concerning the negative public exposure, which is the Ethical Research Consumer Association (ECRA), a British not-for-profit, multi-stakeholder co-operative.

Variables

While the dependent variable is the company's environmental performance, the explanatory variable is *Negative News*, which captures whether a company has been publicly exposed for environmental accidents or a poor environmental record at least once on a given year. To test Hypothesis 2, I separate the sample into two subsamples using the median of the company size and I check whether the disciplinary effect is present in the two subsamples. Therefore, while company size is introduced as a control variable, it is also used to test whether the disciplinary effect of negative public exposure in relation to environmental issues depends on company size. Other company-level controls that are introduced in the regression models are *Profitability*, *Leverage* and *Media Visibility*.

Environmental Performance. The indicator of environmental performance on the last day of each year is retrieved from the Asset4 database (Thomson-Reuters). The variable *Environmental Performance* is equal to the Asset4 environmental score, whose value is between 0 and 100. The data are available for 266 companies of the sample within the 2001-2011 period. Sometimes the data on a company is only available for some years. Therefore, the panel data is unbalanced.

Negative News. The 1995-2012 data on negative public exposure in media outlets, as well as in NGOs' and other civil society members' publications and webpages, is retrieved from the Corporate Critic Database (CCD), provided by the ECRA, for each of the 266 companies with available Asset4 data. The ECRA collects data on environmental and social issues related to companies from the media outlets, NGOs and other civil society organization publications, as well as corporate communications and other public sources of information. With this information, the ECRA generates companies' records, which ECRA uses to calculate each company's ethical rating (Ethiscore). These records, available in the CCD, allowed the creation of *Negative News_{it}*, a dummy variable that is equal to unity if company *i* has suffered negative public exposure in relation to an environmental accident or its environmental record at least once during year *t*, and zero otherwise. Boycott calls related to environmental issues are also included because they are a source of negative public exposure. The details about the procedure followed to collect the data is available in Annex I. ECRA does not hold any record related to any kind of issue for 65 companies out of 266. ECRA states that whenever it does not hold records on a company, one can consider that its ethiscore is "OK". Therefore, I assume that these 65 companies have not been publicly exposed in relation to environmental accidents or

shortcomings and I attribute 0 to *Negative News*. It should be noted that the results do not change when the companies for which ECRA does not hold records are excluded from the sample, because the identification strategy relies on the intertemporal variation of the data.

Company Size. As mentioned above, company size may have a positive impact on both negative media exposure and CSR performance. Therefore, to control for company size, I use the company's annual net sales in billion USD. The data are available in the Worldscope database (Thomson-Reuters).

Profitability. While profitable companies have more resources for CSR, companies with poor financial performance are more likely to restrict managerial discretion over CSR expenditures (Adams & Hardwick, 1998). Some studies that use company profitability as an explanatory or a control variable when the dependent variable is an indicator of CSR performance find a positive relationship between the two (Adams & Hardwick, 1998; Ioannou & Serafeim, 2012), while others do not find any significant relationship between them (Brammer et al., 2009; Jackson & Apostolakou, 2010). More generally, a meta-analysis of 251 studies published between 1972 and 2007 shows that, on average, the correlation between CSR and corporate financial performance is positive but weak (Margolis, Elfenbeim, & Walsh, 2009). Profitability may not only be positively correlated with CSR performance, but highly profitable companies may also be more publicly visible and, consequently, more likely to be exposed in the media. Therefore, the annual return on assets is introduced to control for company profitability. The data is retrieved from Worldscope (Thomson-Reuters).

Leverage. High levels of company leverage can constitute a burden upon future returns (Brammer & Pavelin, 2006), while imposing on companies high debt contracting costs, which has a negative impact on the companies' resources available for CSR (Adams & Hardwick, 1998). Moreover, high levels of leverage might put the company at risk of bankruptcy, negatively affect its reputation and, as a result, influence its visibility and likelihood of exposure in the media. Thus, leverage is also introduced as a control variable to account for these potential sources of endogeneity. The value of this variable is the company's debt as a percentage of total assets in a given year. The data are available in the Worldscope database (Thomson-Reuters).

Media Visibility. Even if company size is a proxy for the company's media visibility (Brammer & Millington, 2008), larger companies are likely to exhibit higher levels of social and environmental performance not only because they are more visible, but also because they are likely to have more resources to implement CSR measures. Therefore, in order to control adequately for media visibility I introduce an additional control, namely the number of times a company has appeared in the major English-language publications each year. The data is retrieved from the LexisNexis database selecting the option "exclude share indexes".

The Identification Strategy

Since Hypothesis 1 is that company i's negative media exposure related to environmental issues is a driver of the increase in the environmental performance, the model should be:

$$\begin{aligned}
\text{Environmental Performance}_{it} - \text{Environmental Performance}_{i,t-1} &= \\
&= \alpha + \beta \text{Negative News}_{i,t-1} + \delta X_{i,t-1} + \mu_i + \eta_t + \varepsilon_{it} \quad (I)
\end{aligned}$$

where *Environmental Performance*_{it} is company i's environmental performance in year t and *Negative News*_{it} is a dummy variable equal to unity if company i has been negatively exposed concerning an environmental issue at least once in year t and zero otherwise. *X*_{it} is a column vector that contains all the control variables (company size, profitability, leverage and media visibility). Company-fixed effects (μ_i) should also be included in the model in order to control for any company-level time-invariant characteristic, such as the industrial sector, that might be simultaneously correlated with CSR performance and negative exposure (or any other of the right-hand side variables). Finally, time-fixed effects (η_t) control for any time-varying characteristic that, in each year, affects the environmental performance of all the companies in the same fashion.

However, since the increase in environmental performance can depend on previous environmental performance, I need to introduce past values of this variable in the regressors. It should be noted that *Negative News*_{i,t-1} and financial performance may also depend on past environmental performance. Indeed, while low levels of environmental performance in previous years may have attracted the attention of media and NGOs, high levels of environmental performance in the past may have made the firm more profitable in the present. Thus, the introduction of lags of *Environmental Performance* controls for any potential bias in the estimated coefficients that could be due to the correlation of past environmental performance with both the dependent variable and the right-hand side variables.

Moreover, the increase in environmental performance and *Negative News*_{*i,t-1*}, as well as financial performance, could also depend on the company's negative public exposure in year t-k with $k \geq 2$. First, the main hypothesis is that past negative media exposure affects the company's environmental responsiveness. Second, the amount of news coverage devoted to a company's particular attribute is positively related to the proportion of the public who define the company by this attribute (Carroll & McCombs, 2003). Therefore, companies that have acquired a negative reputation through previous negative exposure might be more likely to be negatively exposed again. Third, since negative exposure can generate reputational damage, it might lead to a lower financial performance (Fombrun et al., 2000). The introduction of additional lags of *Negative News* in the right-hand side of the regression model controls for these potential sources of estimation bias.

Therefore, the coefficients of interest are the β_k in the model:

$$\begin{aligned}
 \text{Environmental Performance}_{it} - \text{Environmental Performance}_{i,t-1} = & \alpha + \\
 & \gamma \text{Environmental Performance}_{i,t-1} + \sum_{j=2}^J \theta_j \text{Environmental Performance}_{i,t-j} + \\
 & \sum_{k=1}^K \beta_k \text{Negative News}_{i,t-k} + \delta X_{i,t-1} + \mu_i + \eta_t + \varepsilon_{it}
 \end{aligned} \tag{II}$$

where $J \geq 2$ and $K \geq 1$. Model (II)'s terms can be rearranged as follows:

$$\begin{aligned}
\text{Environmental Performance}_{it} = & \alpha + \sum_{j=1}^J \theta_j \text{Environmental Performance}_{i,t-j} + \\
& \sum_{k=1}^K \beta_k \text{Negative News}_{i,t-k} + \delta X_{i,t-1} + \mu_i + \eta_t + \varepsilon_{it}
\end{aligned} \tag{III}$$

where $J, K \geq 1$ and $\theta_1 = 1 + \gamma$. According to the literature, poor performers in the environmental dimension appear to be more likely to take action to increase environmental performance (King & Lenox, 2000; Lyon & Maxwell, 2004). This is consistent with the view that environmental CSR is a resource with decreasing marginal returns, that is, the higher the level of environmental performance, the lower the additional value generated by additional investments in environmental CSR (Flammer, forthcoming). Therefore, I expect that $\gamma < 0$ and, consequently, $\theta_1 < 1$.

RESULTS

Table 1 reports the descriptive statistics of the variables. The probability of negative public exposure of one company in one given year between 1995 and 2012 and in relation to environmental issues is 9%. If only the subsample of 265 companies for which there is a full set of data is considered, the means of the variables do not differ significantly from the means of the whole sample.

Insert Table 1 about here

Table 2 reports the results that assess whether Hypothesis 1 is supported by empirical evidence. Time-fixed effects are included in all the regression models. Column (1) reports the estimates of the regression of the environmental performance on the lags of *Negative News* with the pooled OLS panel data estimator. However, it is possible that companies with higher levels of environmental performance in the past have higher environmental performances in the present and are more likely to be under scrutiny in relation to environmental shortcomings. Therefore, as shown in Model (I), the dependent variable should not be the level of environmental performance but instead the increase in environmental performance. However, the increase in environmental performance could be higher (or lower) for companies that are already performing well environmentally. Companies that have implemented environmentally responsible measures might have a better capacity to implement additional measures. However, as mentioned above, the literature suggests environmental CSR is a resource with decreasing marginal returns. All these issues can be addressed by: (i) using the increase in environmental performance as the dependent variable and (ii) introducing the first lag of environmental performance in the right-hand side. This can be achieved by simply adding one lag of *Environmental Performance* to the right-hand side of the model whose results are reported in column (1), and to report the results in column (2). The coefficient of the first lag of *Negative News* is positive and significant, indicating that negative media exposure is a shock that disciplines the company, leading to an increase in the environmental performance. Moreover, the coefficient of *Environmental Performance* at t-1, that is, θ_1 in Model (III), is below 1, which indicates that γ in Model (II) is negative, as expected. Therefore, the results provide additional empirical support to the hypothesis that environmental CSR is a resource with decreasing marginal returns.

Insert Table 2 about here

Since column (1) and (2)'s results correspond to the pooled OLS estimator, they do not take into account that there might be time-invariant confounding factors at the company level that can simultaneously affect the negative media exposure and the environmental performance. Companies with higher risk of suffering environmental accidents might be more likely to implement environmentally responsible measures and, simultaneously, the risk of being exposed in the media for these accidents should also be higher. Therefore, in column (3) I introduce company specific-fixed effects, which control for any time-invariant company characteristic that can affect both the likelihood of exposure and the environmental performance, including the company's industrial sector. The fixed-effects estimator results for the second lag of *Negative News* shows that the disciplinary effect of being negatively exposed in the media is present even after controlling for company-specific time-invariant fixed effects.

In column (4) I introduce an additional lag of the dependent variable. The coefficient for the environmental performance in t-2 is not significantly different from 0. Thus, estimates in column (3) are robust to the introduction of an additional lag of *Environmental Performance*. The results are also robust to the addition of the present value and the forward lag of *Negative News*, as shown by column (5)'s estimates. The coefficients of *Negative News* at t and t+1 are not significantly different from 0, which is consistent with the absence of omitted variables that might affect both negative public exposure in relation to environmental issues and the company's environmental performance.

However, the models whose results are presented in columns (2) to (5) are dynamic panel data models. Columns (3) and (4) correspond to Model (III) with $K=3$, while $J=1$ and $J=2$, respectively. Column (5) also corresponds to the model with $J=2$, but k goes from -1 to 3 . In dynamic panel data models such as (III), the fixed-effect estimator of the coefficients of the dependent variable's lags is inconsistent (Blundell, Bond, & Windmeijer, 2012). Indeed, the fixed-effects estimation procedure relies on a transformation of the regression model in which the individual's average of each variable is subtracted from that variable. Such a transformation allows the analyst to eliminate the fixed-effects term μ_i from the regression model and, as a result, to estimate the coefficients of interest. When this transformation is applied to Model (III), on the right hand side of the equation there are two terms, $(\text{Environmental Performance}_{i,t-1} - \overline{\text{Environmental Performance}_i})$ and $(\varepsilon_{it} - \bar{\varepsilon}_i)$, that are correlated. These terms are correlated because the $\overline{\text{Environmental Performance}_i}$ and $\bar{\varepsilon}_i$, which are the individual averages of $\text{Environmental Performance}_{it}$ and ε_{it} , respectively, are correlated by construction. While the fixed-effects coefficient estimates of the lags of the dependent variable are biased, we ignore whether this bias also affects the *Negative News*' coefficients.

Another way to remove μ_i from the regression model is to apply a first-differences transformation of the regression model. However, the OLS estimator of the first-differences model is inconsistent because on the right hand side of the equation $(\text{Environmental Performance}_{i,t-1} - \text{Environmental Performance}_{i,t-2})$ is correlated with $(\varepsilon_{it} - \varepsilon_{i,t-1})$. The Arellano-Bond estimator solves this problem with a panel GMM estimation procedure that uses the adequate lags of the dependent variable and the first differences of all the

other regressors as instruments for the first-differences equation (Blundell et al., 2012; Cameron & Trivedi, 2005). I test the robustness of the results obtained in column (5) using the Arellano-Bond estimator and report the results in column (6).

In a dynamic panel data model with only one lag of the dependent variable, Nickell (1981) proved mathematically that the fixed-effects estimate of the coefficient of the lagged dependent variable is downwards biased, which is what the estimates in column (6) suggest when they are compared to those in column (5). However, the author does not provide any information concerning the bias in the coefficients of the other regressors. The results in Table 2's columns (5) and (6) show that there might also be a downwards bias in the fixed-effect estimated coefficient of *Negative News* at t-2. However, the standard errors associated with the estimates do not allow us to conclude that the estimates are significantly different. In column (6) the Sargan test p-value does not reject the null hypothesis that the overidentifying restrictions are valid. That is, the Sargan test results indicate that the Arellano-Bond instruments are truly exogenous. Moreover, the Arellano-Bond test of order 2 p-value suggests that, as expected, there is no correlation between $(\varepsilon_{it} - \varepsilon_{i,t-1})$ and $(\varepsilon_{i,t-2} - \varepsilon_{i,t-3})$.

Finally, if one additional lag of the dependent variable is added to column (6), the coefficient estimate of the third lag of the dependent variable is not significantly different from 0. This result, together with the fact that the coefficient estimates of the present value of *Negative News*, as well as in t+1, are not significantly different from 0 in columns (5) and (6) suggest that the benchmark model should be column (4).

In sum, the results in Table 2 provide support for Hypothesis 1: negative exposure in relation to an environmental accident or a poor environmental record leads to an increase in the environmental performance within the two years following the exposure.¹ While the fixed-effects estimate of the impact of having suffered negative public exposure in relation to environmental issues on the environmental score two years later is 2, the Arellano-Bond estimate suggests that it is 3.

In order to test Hypothesis 2, I calculate each company's median size within the period 2001-2011 using the net sales data. Only the companies for which there is a full set of data are considered. Then, I use the company's median size to separate the sample into two subsamples, one that contains the 50% of smallest companies in terms of median net sales and another that contains the 50% largest companies. Table 3 reports the benchmark model results using both the fixed-effects and the Arellano-Bond estimators for the entire sample and the two subsamples.

Insert Table 3 about here

First, the environmental score averages of the two subsamples show that the largest companies exhibit higher levels of environmental performance and a higher probability of being publicly exposed for an environmental accident or a poor environmental record, which is consistent with the literature, as shown in the Theory and Hypotheses section. More importantly, the results show that the disciplinary effect of negative public exposure is absent from the

¹ The results are robust to replacing the level of net sales with the natural logarithm of the net sales. They are also robust to replacing the net sales by the market capitalization in trillion GBP, which was retrieved from Datastream. (Thomson-Reuters).

smallest 50% companies of the sample, indicating that it is driven by the largest companies.² Therefore, Table 3's estimates for the second lag of *Negative News* provide support for Hypothesis 2.

In the subsample of the 50% largest companies, the average increase in the environmental score per company and year is 2.5³. Since each company in this subsample has on average a probability of around 24% of being negatively exposed in any given year, the magnitude of the effect suggests that negative public exposure is able to explain about 30% of the increase in the environmental performance of the 50% largest companies that took place between 2001 and 2011.

DISCUSSION AND CONCLUSION

In this study I examine the effect of negative public exposure in the environmental dimension, either in the media or in civil society organizations' publications and websites, on the companies' environmental performance. When a company has been exposed at least once in a given year, the environmental performance score, whose values are between 0 and 100, increases on average by 3 within the two following years. Since the design and implementation of

² The Arellano-Bond estimation procedure did not allow ascertaining whether the disciplinary effect of negative public exposure is driven by the first quartile of companies in terms of size, the second quartile, or both. However, the fixed-effects estimation procedure showed that the coefficient of *Negative News* at t-2 for the first quartile was 2.92, with a level of confidence of 97%, while for the second quartile it was 2.61, with a level of confidence of 88%. This suggests that the disciplinary effect of negative public exposure in relation to environmental issues is probably driven by companies both in the first and the second quartile.

³ Since the panel data is unbalanced, I first calculate each firm's yearly average of the environmental score increase. Then I average the companies' mean annual increase of the environmental score across the sample.

environmentally-friendly measures take probably some time, the increase in the environmental performance is not immediate.

The effect is driven by the 50% largest companies in the sample, which tend not only to exhibit higher environmental scores than smallest companies, but are also more likely to suffer negative public exposure in relation to environmental issues. While the effect of being negatively exposed in one given year might, *a priori*, seem modest, it is able to explain approximately 30% of the increase in the environmental performance of the 50% largest companies that took place between 2001 and 2011. Therefore, the mechanism I have explored in this paper is a driver of CSR and it is able to explain a substantial part of the increase in the largest companies' environmental performance. The impact of this effect is also likely to be important in terms of environmental sustainability, since the largest companies also tend to have the largest impact on the environment. It also suggests that CSR is more efficient in terms of environmental sustainability in societies where the press is free and the civil society is protected by democratic rights.

Some negative news reported by the media concerns accidents, such as the Deepwater Horizon incident. But the media also relays the information provided by NGOs and other civil society organizations, which use both the media and their own publications and webpages to make information about companies available to the public. The diffusion of information through the media and information technologies allows civil society organizations to contribute to the public sphere's functions of "warning system with sensors that, though unspecialized, are sensitive throughout society", as well as to the problematization of societal issues (Habermas,

1996: 359). While civil society organizations have brought environmental and social issues to the public's attention and have launched awareness campaigns and boycotts, some of these organizations cooperate with the private sector and help companies increase their environmental and social performance. Indeed, Elkington and Beloe (2010) categorize NGOs into two groups: polarizers, who confront corporations and try to effect change by disrupting the *status quo*, and integrators, whose strategy relies on collaborating and developing partnerships with corporations, governments and other stakeholders, in order to achieve change. According to Lyon (2010b), these are two alternative NGO styles that are complementary and able to establish a "good cop, bad cop" routine that can be extremely effective: while integrators "go in the back door to work with companies behind the scenes", polarizers "create pressure by banging on the front door" (Elkington & Beloe, 2010: 29). Nearly half of environmental NGOs have no board members from corporations or foundations (Lyon, 2010a: 3), which suggests that a non-negligible proportion of NGOs adopt "bad cop" strategies. As we can see, approximately 30% of the increase in the companies' environmental performance during the 2001-2011 period can be explained both by the media's reports on environmental accidents and the "bad cop" strategies of NGOs and other civil society organizations. However, NGOs also display "good cop" strategies that may be able to account for part of the 70% of the effect that remains unexplained.

Besides company-NGO partnerships, coercive, mimetic and normative isomorphic processes could also explain why companies adopt environmentally-responsible measures in the absence of negative public exposure (DiMaggio & Powell, 1983). According to King and Lenox (2000), an industry self-regulation initiative such as Responsible Care can put pressure on laggards by publicizing the names of nonconforming members (coercive forces), by creating,

codifying and diffusing values and norms (normative forces) and by disseminating information on best practices (mimetic forces). Bansal and Roth's (2000) empirical study also showed that mimetic isomorphism is a driver of CSR: in order to establish their legitimacy and avoid sanctions for noncompliance, the dominant approach exhibited by companies was to imitate their peers in order to comply with institutional norms and pressures. Indeed, when competitors adopt environmental measures, such as joining voluntary initiatives, other companies might not want to be left behind (Nikolaeva & Bicho, 2011). Since uncertainty generated by the environment tends to encourage imitation (DiMaggio & Powell, 1983), the uncertainty created by negative public exposure of a company in a given industrial sector can affect not only this company's environmental performance, but it could also foster change in its competitors through isomorphism.

Moreover, if one of the motivations for a company to be socially and environmentally responsible is to acquire a good reputation as insurance against potential future negative media exposure, companies might also increase their environmental performance when they observe that a competitor has suffered negative public exposure for environmental accidents or shortcomings. The rationale behind this hypothesis is that, whenever a competitor is negatively exposed in the media, managers become more aware of the reputational damage associated with public exposure and, as a result, they are more likely to implement new CSR measures. Studies on geographic expansion strategies and on the ability of companies to gain favorable policy outcomes find that companies learn from their competitors in the same industry (Baum, Li, & Usher, 2000; Bonardi, Holburn, & VandenBergh, 2006; Macher & Henisz, 2004). Therefore, companies could also learn from the consequences of their competitors' exposure in the media in

relation to social and environmental issues. In 2001, after multinational giants such as Pfizer and Merck had suffered from accusations that patent and pricing policies made drugs unavailable to people in developing countries who needed them, Novartis, which was never directly involved in the controversy, decided to provide Coartem, an anti-malaria drug, at cost to patients in the developing world. At the time, the Novartis website mentioned that this measure “was a carefully considered decision on the part of Novartis in weighing its economic responsibilities to shareholders with its societal responsibilities. Intangible benefits - such as reputation, credibility and, ultimately, sustainability - counterbalance any potential loss of revenues” (Spar & La Mure, 2003: 94).

Public exposure in certain social dimensions could also be a driver of environmental performance. Indeed, when a company is negatively exposed regarding a social issue and the measures required to address this issue are too costly, managers might try to repair their reputation by increasing their CSR performance in another dimension, for example by adopting an environmental code of conduct or reducing the environmental impact of one of the company’s activities. Moreover, companies may adopt voluntary environmentally-friendly measures to preempt the passage of new environmental regulation (Lyon & Maxwell, 2004). Indeed, the likelihood of Environmental Management System adoption is positively associated with the stringency of formal regulation (Dasgupta, Hettige, & Wheeler, 2000).

Last but not least, one of the drivers of environmental performance could be the phenomenon described as the ‘third wave’ of corporate environmentalism, which started in the latter part of the first decade of the twenty-first century (Hoffman & Bansal, 2012). This third

wave is characterized by the merger of environmental and social issues with the global economy. Some companies already operate within the strong sustainability perspective and seek to integrate the company into environmental systems, as well as to promote production and consumption patterns that do not exceed the capacity of the planet (Roome, 2012). This perspective relies on social and organizational learning, innovation, change and the collaboration of multiple actors. Future research should explore the extent to which all the mechanisms I have discussed are able to explain the increase in the companies' environmental performance observed along time.

Finally, one of the limitations of this study is that it is focused on British companies. Indeed, negative public exposure in relation to environmental issues is able to explain almost one third of the increase in the British companies' environmental performance, but CSR performance is dependent on country-specific characteristics (Ioannou & Serafeim, 2012; Jackson & Apostolakou, 2010). Yu's (2005) economic model shows that high levels of public environmental awareness leads resource-constrained NGOs to substitute lobbying the government for public persuasion through the media. This suggests that in countries with high levels of concern for environmental issues and high NGO density, companies are more likely to be negatively exposed for poor environmental records. Moreover, in countries where clients, investors and other stakeholders are more sensitive to environmental issues, managers also have more incentives to respond to public criticism by becoming more environmentally responsible, in order to avoid the negative consequences of reputational damage. Therefore, in countries with high levels of concern for environmental issues, not only is the risk of negative exposure in relation to environmental issues higher, but managers are also more likely to respond to this

public exposure. As a result, in these countries, the disciplinary effect of being negatively exposed for a poor environmental record should be higher than in countries where the concern for environmental issues is low. However, further research is needed to evaluate the impact of country-level characteristics on the disciplinary effect of negative exposure by the media or by civil society organizations on companies.

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ANNEX I: PROCEDURE FOLLOWED TO COLLECT DATA FROM THE CORPORATE CRITIC DATABASE

I use the Corporate Critic Database (CCD) to retrieve data on companies and evaluate whether each company in the sample has been exposed negatively in the media or by civil society members in relation to an environmental issue in a given year. The CCD is a product of the Ethical Consumer Research Association (ECRA). This association generates the CSR records of companies that can be found in the CCD primarily using media outlets and civil society publications and websites. ECRA indexes and rates these records and then uses this information to calculate an ethiscore for each company. The ethiscore is a numerical ethical rating designed to allow consumers and investors to evaluate the extent to which companies have attracted significant levels of attention and criticism related to environmental and social issues.

The CCD includes information on environmental and social issues that has appeared in major media outlets (BBC News, the Financial Times, The Guardian, The Independent, The Observer, The Times, The Telegraph, etc.), as well as in magazines (Animal's Voice, Labour Research, Earth Matters, Food Magazine, Hazards, Viva! Life, Ethical Consumer, etc.), in the environmental journal ENDS Report and in civil society organizations' websites and newsletters (ActionAid, Amnesty International, the Business & Human Rights Resource Centre, the Corporate Responsibility Coalition, Corporate Watch, the Ecumenical Council for Corporate Responsibility, the Environmental Investigation Agency, Fairtrade Foundation, Friends of the Earth, Fur Free Alliance, Greenpeace, Labour Behind the Label, the Marine Conservation Society, Naturewatch, the PETA, Spinwatch, War on Want, Uncaged, etc.).

Each record reports on an environmental or social issue in which a company is involved contains a date (or a year), the name of the company involved and an abstract reporting the event. Moreover, ECRA attributes each record to one or more pre-established categories. The categories related to environmental issues are: Climate Change, Pollution & Toxics, Habitats & Resources, Environmental Reporting, Nuclear Power, Genetic Engineering, Animal Testing, Animal Rights, Factory Farming, Organic Product, Positive Environmental Features and Animal Welfare Features. All the records whose information came from media outlets, magazines and civil society members' webpages and newsletters that were classified into these categories have been carefully reviewed. I consider that the abstract corresponds to a situation of negative public exposure on the environmental dimension as long as it reports an environmental accident caused by the company or a shortcoming in relation to an environmental issue. I also reviewed the abstracts in all the other categories and the abstracts that had not been attributed to any category. Whenever an abstract clearly mentioned a shortcoming on an environmental issue, I also considered that the abstract reflected a negative exposure in the environmental dimension. The category "Boycott call" could refer either to an environmental issue, to a social issue, or to both. I only included in the sample the records that explicitly referred to an environmental issue.

The ECRA also generates records from other sources of information that are not the media or the civil society members. Because they do not reflect negative exposure of a company by the media or civil society organizations, I do not consider as negative news on environmental issues the following records:

- evaluations of the content of corporate communications by ECRA.
- the information collected from commercial defense and nuclear industry directories. The simple fact of being named in the World Nuclear Industry Forum or being a member of the British Nuclear Forum generates a record in the CCD and contributes negatively to the ethiscore. So does the fact of being a member of the British Roads Federation, because road transportation generates carbon dioxide emissions and, as a result, has an impact on climate change.
- ECRA shop surveys results, unless they are reported in the Ethical Consumer magazine. Indeed, whenever an ECRA shop survey finds products that use leather or slaughterhouse by-products, or goods that are not FSC-labeled, free-range or organic, it generates a record in the CCD that contributes negatively to the ethiscore.
- records on issues that do not involve an environmental issue but that are classified within the “Climate Change” category because the record simply mentions a company’s business that, because it operates in a sector such as oil or gas, has a high climate impact, and as long as the source of the information is not negatively evaluating these activities.
- Emails or phone calls between ECRA and civil society members that do not lead to a publication in a journal, magazine, newsletter or webpage other than the CCD.
- ECRA visits to websites such as Hemscott, Trustnet, the US Securities and Exchange Commission, Yahoo! Finance, Hoovers, the Juniper Business Information Database or Who Owns Whom, which report information about the

company's ownership or banking services. Simply the fact of having a banking relationship or having shares in a company that has been exposed by ECRA for some environmental issue leads to a record that contributes negatively to the company's ethiscore.

While the tone of some records is positive or neutral, most of the time the tone of the records is negative and/or reports at least one company's shortcoming related to environmental issues. Of the 1995-2012 records for the companies considered in this study more than four fifths of the records had a negative tone and/or reported a company's shortcoming. I consider these records to represent a negative exposure of the company.

ECRA collects data for the companies, their subsidiaries, divisions and the companies they have shares in. However, I only consider the records of the subsidiaries and divisions if their name matches the company's name. For example, the records for Croda Universal, Croda Resins, Croda Colloids, Croda Chemicals, Croda Solvents, Croda Adhesives, Croda Food Products, Croda Surfactants, Croda Kerr and Croda Gelatin are included in the records collected for Croda International Plc. The rationale behind this choice is that the public exposure of a partially or wholly owned subsidiary or division is more likely to impact the parent company, or the company to which the division belongs, if the public can readily associate the subsidiary or the division to the company than if the name of the subsidiary or division is different.

Table 1. Descriptive statistics of the variables

Variable	Number of Observations	Mean	Standard Deviation	Minimum Value	Maximum Value
<i>Environmental Score</i>	1935	62.60	26.74	9.56	97.18
<i>Negative News</i>	6192	0.09	0.29	0.00	1.00
<i>Net Sales</i>	5095	4.52	17.72	0.00	293.30
<i>Profitability</i>	4907	7.35	11.70	-127.76	185.33
<i>Leverage</i>	5072	21.12	19.76	0.00	206.38
<i>Media Visibility</i>	5076	288.63	1502.68	0.00	60631.00

Table 2. The effect of negative news related to environmental issues on the company's environmental performance

VARIABLES	Dependent variable: Environmental Performance at t					
	Column (1)	Column (2)	Column (3)	Column (4)	Column (5)	Column (6)
Environmental Performance at $t-1$		0.77*** (0.02)	0.27*** (0.03)	0.21*** (0.03)	0.21*** (0.03)	0.36*** (0.05)
Environmental Performance at $t-2$				0.02 (0.03)	0.02 (0.03)	0.12*** (0.03)
Negative News at $t+1$					0.07 (1.38)	1.37 (2.04)
Negative News at t					0.05 (1.44)	1.27 (1.66)
Negative News at $t-1$	6.25*** (1.48)	1.84 (1.14)	0.74 (1.24)	0.48 (1.32)	0.49 (1.36)	2.24 (1.43)
Negative News at $t-2$	9.10*** (1.35)	2.53** (1.14)	2.08** (1.03)	1.74* (0.91)	1.75* (0.96)	3.08** (1.22)
Negative News at $t-3$	9.30*** (1.34)	-0.30 (0.93)	0.02 (1.08)	-1.19 (1.20)	-1.17 (1.28)	-1.03 (1.45)
Net Sales at $t-1$	0.16*** (0.06)	0.03** (0.01)	-0.15*** (0.04)	-0.16*** (0.04)	-0.16*** (0.04)	-0.06 (0.05)
Profitability at $t-1$	-0.28*** (0.07)	-0.03 (0.04)	0.05 (0.05)	0.10** (0.05)	0.10** (0.05)	0.10* (0.06)
Leverage at $t-1$	0.06 (0.07)	0.01 (0.02)	-0.09*** (0.03)	-0.12*** (0.04)	-0.12*** (0.04)	-0.05 (0.04)
Media Visibility at $t-1$	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
Constant	60.83*** (4.71)	11.88*** (3.39)	48.04*** (2.47)	59.99*** (3.00)	59.98*** (3.00)	33.43*** (4.73)
Observations	1,891	1,642	1,642	1,410	1,410	1,173
R-squared	0.186	0.700	0.23	0.21	0.21	
Number of companies			242	234	234	218
Company-fixed effects	No	No	Yes	Yes	Yes	Yes
Sargan Test p-value						0.49
Arellano-Bond test p-value (order 2)						0.68

Notes: The unit of observation is the company. Columns (1) and (2) report pooled OLS panel data estimation results. Columns (3) to (5) report fixed-effects panel data estimation results. Column (6) reports Arellano-Bond estimation results. Time-fixed effects are included in all the models. The Sargan test null hypothesis is that the overidentifying restrictions are valid. The Arellano-Bond test null hypothesis is that there is no second order autocorrelation of the first-differenced error terms. Below each coefficient robust standard errors are reported in brackets. In columns (1) to (5) the standard errors are also clustered by company. * $p < .10$ ** $p < .05$ *** $p < .01$

Table 3. The disciplinary effect of negative public exposure in relation to environmental issues depends on company size

VARIABLES	Dependent variable: Environmental Performance at t					
	Complete sample		50% smallest companies		50% largest companies	
	Fixed-effects estimator	Arellano-Bond estimator	Fixed-effects estimator	Arellano-Bond estimator	Fixed-effects estimator	Arellano-Bond estimator
Environmental Performance at $t-1$	0.21*** (0.03)	0.37*** (0.05)	0.24*** (0.05)	0.44*** (0.14)	0.17*** (0.04)	0.33*** (0.06)
Environmental Performance at $t-2$	0.02 (0.05)	0.13*** (0.03)	0.02 (0.04)	0.07 (0.10)	0.02 (0.04)	0.13*** (0.04)
Negative News at $t-1$	0.48 (1.32)	1.73 (1.36)	-1.15 (2.67)	1.97 (2.96)	0.63 (1.61)	1.55 (1.59)
Negative News at $t-2$	1.74* (0.91)	2.59** (1.19)	-1.13 (1.74)	1.41 (1.45)	2.47** (1.02)	3.15** (1.44)
Negative News at $t-3$	-1.19 (1.20)	-1.52 (1.41)	-1.23 (2.80)	2.86 (3.20)	-1.17 (1.34)	-2.17 (1.54)
Net Sales at $t-1$	-0.16*** (0.04)	-0.06 (0.05)	4.52 (4.34)	2.10 (5.07)	-0.13*** (0.03)	-0.05 (0.05)
Profitability at $t-1$	0.10** (0.05)	0.10* (0.06)	0.04 (0.06)	-0.02 (0.06)	0.15* (0.08)	0.18* (0.10)
Leverage at $t-1$	-0.12*** (0.04)	-0.05 (0.04)	-0.05 (0.03)	-0.05 (0.03)	-0.19*** (0.05)	-0.04 (0.08)
Media Visibility at $t-1$	-0.00 (0.00)	-0.00 (0.00)	0.00*** (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
Constant	59.99*** (3.00)	33.56*** (4.72)	39.28*** (9.24)	28.64** (12.60)	70.43*** (4.59)	40.05*** (6.15)
Observations	1,410	1,173	562	562	848	720
R-squared	0.21		0.27		0.18	
Number of companies	234	218	107	107	127	126
Sargan Test p-value		0.46		0.55		0.77
Arellano-Bond test p-value (order 2)		0.64		0.44		0.59
Average value of Environmental Score	63		50		72	
Average value of Negative News at $t-2$	0.14		0.04		0.24	

Notes: The unit of observation is the company. The estimator used (either the fixed-effects or the Arellano-Bond estimator) is specified at the top of the column. Time-fixed effects are included in all the models. The Sargan test null hypothesis is that the overidentifying restrictions are valid. The Arellano-Bond test null hypothesis is that there is no second order autocorrelation of the first-differenced error terms. The bottom of the page reports the 2001-2011 averages of the variables mentioned. Below each coefficient robust standard errors, are reported in brackets. In columns (1), (3) and (5) the standard errors are also clustered by company.

* $p < .10$ ** $p < .05$ *** $p < .01$