002-19

GREFA
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THE PERFORMANCE OF EXTRA-FINANCIAL RATINGS AS MEASURE OF ESG-RISK

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Préambule

La gestion financière responsable vise la maximisation de la richesse relative au risque dans le respect du bien commun des diverses parties prenantes, actuelles et futures, tant de l'entreprise que de l'économie en général. Bien que ce concept ne soit pas en contradiction avec la définition de la théorie financière moderne, les applications qui en découlent exigent un comportement à la fois financièrement et socialement responsable. La gestion responsable des risques financiers, le cadre réglementaire et les mécanismes de saine gouvernance doivent pallier aux lacunes d'un système parfois trop permissif et naïf à l'égard des actions des intervenants de la libre entreprise.

Or, certaines pratiques de l'industrie de la finance et de dirigeants d'entreprises ont été sévèrement critiquées depuis le début des années 2000. De la bulle technologique (2000) jusqu'à la mise en lumière de crimes financiers [Enron (2001) et Worldcom (2002)], en passant par la mauvaise évaluation des titres toxiques lors de la crise des subprimes (2007), la fragilité du secteur financier américain (2008) et le lourd endettement de certains pays souverains, la dernière décennie a été marquée par plusieurs événements qui font ressortir plusieurs éléments inadéquats de la gestion financière. Une gestion de risque plus responsable, une meilleure compréhension des comportements des gestionnaires, des modèles d'évaluation plus performants et complets intégrant des critères extra-financiers, l'établissement d'un cadre réglementaire axé sur la pérennité du bien commun d'une société constituent autant de pistes de solution auxquels doivent s'intéresser tant les académiciens que les professionnels de l'industrie. C'est en mettant à contribution tant le savoir scientifique et pratique que nous pourrons faire passer la finance responsable d'un positionnement en périphérie de la finance fondamentale à une place plus centrale. Le développement des connaissances en finance responsable est au cœur de la mission et des intérêts de recherche des membres du Groupe de Recherche en Finance Appliquée (GReFA) de l'Université de Sherbrooke.

Les agences de notations ESG propose d'évaluer le risque environnemental, social et de gouvernance (ESG) des plus grandes entreprises internationales. Ces agences proposent différentes méthodologies pour évaluer ces risques extra-financiers. Cette recherche analyse explicitement la performance de ces notations à prévenir l'occurrence d'événements médiatiques néfastes pour la réputation ESG des entreprises.

THE PERFORMANCE OF EXTRA-FINANCIAL RATINGS AS MEASURE OF ESG-RISK

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THE PERFORMANCE OF EXTRA-FINANCIAL RATINGS AS MEASURE OF ESG-RISK

1. INTRODUCTION

Firms are increasingly exposed to risk that can arise from environmental, social or governance (ESG) issues. Recently publicized cases of ESG risks (see, for example, those involving Volkswagen, BP, Nike or Enron) bear witness to the potential negative effects of ESG risks for companies: loss of revenue[1], lower customer loyalty, litigation, fines[2], sanctions by regulators, decline in share prices[3], etc. Reducing exposure to adverse ESG-related events that could affect the company's return, cost of capital, risk or reputation, is therefore a major issue in the management of global corporate risk. This study brings a new perspective to this issue by examining how firms' extra-financial performance (EFP) can predict the occurrence of adverse ESG-related events and thus serve as a measure of ESG risk.[4]

For many investors, responsible investment, which refers to the integration of ESG criteria into the selection and management of investments, can lead to better risk management. As noted by Rosen et al. (1991), investors, particularly institutional investors, are increasingly interested in holding stocks of companies with good EFP, fearing that socially irresponsible companies will be targeted by regulators, activist groups or the media (Maxwell et al., 2000; Baron and Diermeier, 2007; Baron, 2009 and Lyon and Maxwell, 2011). To attract investors, who have an increasingly

[1] For example, anti-Nike media campaigns, carried out in 1997 by activists denouncing the unethical practices (violation of trade union rights, working conditions, forced and child labor) of the company's subcontractors, tarnished the image and resulted in a narrowing of the company's market share and a sharp decline in sales.

[2] The Gulf of Mexico oil spill in 2010 cost BP $56 billion, including a record fine of $20.8 billion, the heaviest penalty ever imposed on a company in the U.S.

[3] On September 21st 2015, the day of the U.S. press release of Volkswagen's anti-pollution test fraud, the company lost nearly 20 billion euros in market capitalization. In three days, the Volkswagen stock had lost nearly 30% of its share price on the Frankfurt Stock Exchange. The reaction of the market can be explained by the company's violation of the Clean Air Act, which exposed the manufacturer to a fine of $37,500 per vehicle, a total bill of $18 billion, for cars in the U.S.

[4] We define extra-financial performance in the broadest term to mean the performance of a firm based on criteria other than just financial performance. These criteria typically include those based on the three ESG factors: environment, social and governance. In our study, extra-financial performance is thus an evaluation of a company's CSR practices and policies.

responsible investment approach, numerous firms now work on their EFP, which includes engaging in corporate social responsibility (CSR) projects, establishing CSR committees in support of the Board of Directors and publishing CSR reports that ensure accountability. Corporate spending on EFP or CSR has increased dramatically in recent years (Hong et al., 2012), and Fortune 500 companies spent more than $15 billion a year on CSR activities in 2016.

Following this trend, several studies examine the relationship between a firm's EFP and its financial performance (see, for e.g., Waddock and Graves, 1997; McWilliams and Siegel, 2000; McWilliams and Siegel, 2001; Jiao, 2010; Edmans, 2011 and Krüger, 2015). Results show sometimes a positive, sometimes a negative and mostly a neutral (non-significant) relationship between EFP and financial performance. Studies that examine the relationship between EFP and corporate risk arrive at a more consensual finding of a negative relationship between EFP and risk (see for e.g., McGuire et al., 1998; Orlitzky and Benjamin, 2001; Boutin-Dufresne and Savaria, 2004; Lee and Faff, 2009; Luo and Bhattacharya, 2009; Oikonomou et al., 2012; Bouslah et al., 2013; Kim et al., 2014 and Sodjahin et al., 2017). McGuire et al. (1998), who are among the first authors to examine the link between EFP and firm risk observe a negative relationship, especially when considering accounting risk measures. Orlitzky and Benjamin (2001) conduct a statistical meta-analysis to examine the effect of EFP on accounting and market risk measures and conclude that the correlation between EFP and risk is negative, and that the relationship is stronger when market risk is considered.

Other studies specifically show that a firm's EFP affects its residual (i.e. idiosyncratic) risk. Boutin-Dufresne and Savaria (2004), Lee and Faff (2009), Mishra & Modi (2012) and Bouslah et al. (2013) show a negative relationship between idiosyncratic risk and overall EFP. Merton (1987) and Fama and French (2007) provide a theoretical framework in which the aggregate demand for responsible-firm securities, combined with the exclusion of irresponsible-firm securities can have an impact, both directly and indirectly, on firms' systematic risk and, therefore, on their expected returns. Luo and Bhattacharya (2009), Salama et al. (2011), Oikonomou et al. (2012) and Sodjahin et al. (2017) find a negative relationship between various EFP measures and systematic risk. Further, Heal (2005), Werther and Chandler (2005) and Peloza (2006) rely on stakeholder theory to also highlight the strategic nature of CSR in financial risk management. McWilliams and Siegel (2001), Luo and Bhattacharya (2009), Jo and Harjoto (2012) and Sodjahin et al. (2017) also show that, for high-EFP firms, overinvestment in CSR can result in disadvantages that outweigh benefits.

The authors conclude that, above a certain level, the benefits of CSR are lower than the costs, which can induce unstable future profits or increase the market risk of these firms.

The measurement of EFP can be based on very targeted measures (such as Fortune magazine's most admired companies in the U.S. as used for e.g. by Luo and Bhattacharya, 2009) but is more often based on extra-financial or ESG ratings provided by specialized extra-financial rating agencies (such as MSCI, Asset 4, Sustainalytics, etc.). Most studies on the relationship between EFP and risk, including those cited above, test the link between extra-financial ratings and financial risk, for instance by testing if/how the market reacts or integrates information from the ratings, thereby providing evidence that ratings may contain information about *some* type of risk that *may* be related to ESG risk. But to formally test this, we must directly test the link between EFP and extra-financial or ESG risk.[5] In our study, we use the probability of occurrence of an adverse ESG-related event as a measure of ESG risk and we test whether EFP, measured with extra-financial ratings, can help predict ESG risk.

Our study provides four main contributions to the existing literature. First, unlike previous studies that examine the direct link between corporate EFP and financial risks, our study looks at the relationship between EFP and ESG risk. Specifically, our study extends the literature by explicitly examining the link between extra-financial ratings and the likelihood of adverse ESG-related events. We argue that firms with low EFP, for example through negative environmental externalities, bad employee relationships or poor governance, are more likely to face environmental problems, violation of regulatory standards, employee claims, social conflicts or boycotts and negative media campaigns, than firms with high EFP. If this relationship is observed, it will legitimize the empirical results that firms with low (high) EFP have higher (lower) financial risk. This result is important because it can help pave the way to identify a potential ESG-related risk factor in asset pricing models.

The second contribution of our study relates to our data. We construct a unique database of adverse ESG-related events, based on negative news articles in the Wall Street Journal (WSJ), for companies in the S&P 500. We argue that media-reported ESG-related events, which can include fraud, employee strikes or environmental catastrophes, are not only linked to potential financial

[5] We can make an analogy with the literature on credit ratings. There are studies on how/if the market reacts or integrates the information from credit ratings and there are studies on the relationship between credit ratings and default events. The latter formally establish the type of risk that is captured by credit ratings, namely default risk.

losses but, more importantly, to the image or reputation of the firm. Overall, our sample includes 2,149 adverse ESG-related events spanning 4,677 news articles from the WSJ between 2001 and 2013. In addition, we measure EFP with extra-financial ratings by MSCI-ESG, which are widely analyzed in the economic and financial literature (see, for example, Krüger, 2015; Kim et al., 2014; Bouslah et al., 2013 or Oikonomou et al., 2012). The rating agency assesses the positive and negative EFP of firms on seven dimensions of CSR: environment, community, diversity, employee relations, human rights, products and governance.

Our third scientific contribution is in terms of methodology. Our study is one of the few to adopt a logistic regression approach in the context of EFP. To our knowledge, the only study that is based on this approach is the one by Luo et al. (2012) who examine whether CSR reduces or amplifies the media coverage of oil spills. In contrast, we test the impact of CSR on the likelihood of adverse ESG-related events that include, but are not limited to oil spills, and that can affect firms from all sectors. More explicitly, we test whether overall EFP, which combines positive and negative ratings across the seven dimensions of CSR, is related to the probability of occurrence of adverse ESG-related events. We also individually examine each of the seven dimensions of a firm's EFP to test the impact of dimensional-EFP on ESG risk. We further refine our analysis by disaggregating events into seven CSR-related categories and by examining the effect of each dimensional-EFP on the dimensional-ESG risk. This allows us to examine whether ratings for a given dimension is only related to the probability of facing adverse events related to that same dimension or whether there are inter-dimensional effects by which EFP in a given CSR dimension affect the probability of occurrence of events in other CSR dimensions. Finally, we separately examine positive and negative ESG ratings to identify potential asymmetrical effects.

As a fourth contribution to the literature, our study provides evidence that may support the insurance hypothesis which states that CSR (or EFP in general) generates positive moral capital that can mitigate the evaluation of the firm’s negative actions (see, for e.g., Godfrey et al., 2005 or Werther and Chandler, 2005). Unlike Godfrey et al. (2005) who show how CSR can protect shareholder wealth in the event of negative corporate events, we verify if EFP measures reduce the likelihood of adverse ESG-related events for different media coverage intensities.

Our three main results are as follows. First, we observe that a firm's overall EFP is negatively related to its likelihood of dealing with adverse ESG-related events, which might explain why high-EFP firms have lower financial risk. The negative effect is particularly important for EFP

pertaining to the Products dimension. Second, we observe an inter-dimensional effect by which EFP in a given CSR dimension affects (positively or negatively) ESG risk associated with other dimensions. For example, higher Product-dimension ratings (for example through CSR policies aimed at improving the quality of products) appear to not only reduce the likelihood of dealing with adverse product-related events, but also adverse events associated with other dimensions. Third, while the impact of concerns-related ratings on the probability of adverse events is clear and positive, the impact of strengths-related ratings is more contrasted and depends on the CSR dimension. Finally, we find that the negative relation between EFP and ESG risk is observed regardless of the intensity of media coverage.

The rest of the article is organized as follows. In section 2, we formulate our main research hypotheses based on a broad theoretical and empirical literature review. In section 3, we describe our data sources and the empirical model that we use to test our hypotheses. In section 4, we present and discuss our empirical results. Finally, in section 5, we provide a synthesis of our results as well as their limits and we discuss their implications for practitioners and avenues for future research.

2. LITERATURE REVIEW AND RESEARCH HYPOTHESES

A growing number of studies highlight the strategic nature of CSR in the firm's decision-making process. In this section, we develop research hypotheses on the potential relationship between a firm's EFP and ESG risk that are based on stakeholder theory as well as from the empirical literature. Stakeholder theory suggests that, by adopting a proactive attitude in managing its stakeholders (customers, suppliers, governments, shareholders, communities, media, etc.), companies can anticipate societal pressure and reduce potential conflicts related to the working environment, customer relations, government regulations, etc. (see, for e.g., Bowman 1980; Fombrun and Shanley, 1990 or Feldman et al., 1997). This argument is summarized by Heal (2005) who defines CSR as "... a program of actions to reduce externalized costs or to avoid distributional conflicts". By anticipating and proactively managing conflicts between the firm and its stakeholders, CSR strategies can reduce the probability of occurrence of harmful events. For Waddock and Graves (1997), the CSR framework fits well with the principles of risk management for which one of the objectives is to prevent or avoid damages and potential operational losses. As a result, as pointed out by McGuire et al. (1988) and Waddock and Graves (1997), a high EFP is a signal of quality management and, therefore, high-EFP firms should be less subject to social

criticism because they more rigorously conform to environmental (see, for e.g., Sharfman and Fernando, 2008), social (see, for e.g., Bauer et al., 2009) and governance (Dhaliwal et al., 2011) norms and regulations. Thus, according to stakeholder theory-based arguments, corporate EFP should be negatively related to ESG risk, which forms our first research hypothesis:

H1: A firm's EFP is negatively related to the probability of occurrence of adverse ESG-related events.

However, as pointed out by Bouslah et al. (2013), EFP is a multidimensional concept. As such, aggregating over different dimensions can confound individual dimensional performances that are not as important or relevant (Griffin and Mahon, 1997; Johnson and Greening, 1999). It is therefore important that the different dimensions of CSR are also examined separately in order to obtain an accurate picture of their individual impact on ESG risk. For example, Bouslah et al. (2013) find that EFP for the Human Rights or Employee dimension is negatively correlated with total risk, while Oikonomou et al. (2012) find that EFP for the Community, Employee and Environment dimensions are negatively related to systematic risk.

Derwall and Verwijmeren (2007) look at the effect of EFP on the cost of capital and find that it is negatively related to three dimensions of CSR (Environment, Products and Governance) and positively related to four dimensions of CSR (Community, Diversity, Employee and Human Rights). El Ghoul et al. (2011) note that only the Employee, Environment, and Products dimensions are negatively correlated with the cost of capital. Overall, based on the literature, and considering that some firms may, when expecting adverse events, attempt to improve their EFP in other dimensions in order to mitigate their reputational impact, we postulate that the relationship between EFP and ESG risk is dimension-specific, which forms our second research hypothesis, *H2*:

H2: The relationship between EFP and the probability of occurrence of adverse ESG-related events is conditional on the CSR dimension.

Krüger (2015) points out that the heterogeneous nature of events does not allow for a detailed analysis and suggests separating adverse events by category. For example, consumer-oriented firms are more likely to be affected by customer-relations events, while firms in the industrial sector are more likely to be affected by events related to product recalls, pollution, etc. As a result, firms often seek to reduce their exposure to ESG-related event risk. Given the nature

of the firm's activity, specific CSR dimensions can become more favored than others. For example, the nature of oil companies' operations exposes them to a high risk of adverse environmental events (such as oil spills, carbon emissions, etc.). Company executives may therefore seek to offset this risk by investing in environmentally-positive projects to show that the firm is responsible despite the risk of its activities. As Sharfman and Fernando (2008) argue, improving environmental risk management (for example through a reduction of emissions and pollutants) can reduce the likelihood of environmental accidents, lawsuits, fines and potential reputational damages. Chatterji et al. (2009) show that companies with poor environmental performance are associated with much more pollution and rule violations. Waddock and Graves (1997) point out that if a company chooses not to invest in product safety and sells a dangerous product, it increases the likelihood of being faced with product recall issues and possible legal proceedings related to the quality of its products. Finally, Bauer et al. (2009) and Kane et al. (2005) argue that the quality of work relationships can mitigate litigation and reputational risks associated with the adverse behavior of disgruntled employees (such as strikes, demonstrations, etc.) and, through this mechanism, can affect the level and volatility of expected cash flows. Dhaliwal et al. (2011) obtain similar results and show that idiosyncratic risk is associated with weaker corporate governance. Thus, based on the literature, we formulate the following third research hypothesis:

H3: EFP in a given CSR dimension is negatively related to the probability of occurrence of adverse ESG-related events associated with the dimension.

Nevertheless, because of the overlapping and sometimes divergent interests of stakeholders, as documented by Tirole (2001), CSR strategies in one dimension can also affect the probability of occurrence of adverse events in other dimensions. For example, a company policy to comply with new environmental standards (for example by shutting down a production line due to pollution) can improve the firm's environmental performance while at the same time undermine employee relationships due to potential job losses, strikes or social unrest. This forms our fourth research hypothesis:

H4: EFP in a given CSR dimension is related to the probability of occurrence of adverse ESG-related events associated with other dimensions.

In addition, some authors such as Mattingly and Berman (2006) argue that positive and negative CSR actions (as measured by CSR strengths and concerns) are two empirically and conceptually distinct contexts and do not covariate symmetrically. They should therefore not be combined. Godfrey et al. (2008) suggest that negative actions (concerns) and positive actions (strengths) be considered separately because aggregate EFP measures (typically measured by the difference between strengths and concerns) can hide the offsetting effect of negative actions by positive actions. For our study, this suggests that we need to separately examine the impact of CSR strengths and concerns on the probability of occurrence of adverse events. Specifically, concerns embody uncertainty and can be warning signs of a future socially irresponsible behavior by the firm. Concerns are therefore likely to increase the probability of occurrence of adverse ESG-related events, which represents our fifth research hypothesis:

H5a: CSR concerns are positively related to the probability of occurrence of adverse ESG-related events.

Intuitively, CSR strengths should reduce the probability of occurrence of adverse ESG-related events. However, some empirical studies (see, for e.g., Godfrey et al., 2009 and Bouslah et al., 2013) show that the relationship between strengths and risk mitigation is highly contrasted. Bouslah et al. (2013) find that the relationship between CSR strengths and corporate risk is negative for some dimensions and positive for others. In addition, some firms may be tempted to over-invest in their strengths if they expect an adverse event in order to reduce the media coverage of bad news ahead. Therefore, we expect that the direction and magnitude of the impact of CSR strengths on the probability of occurrence of adverse events is conditional on the dimension:

H5b: The relationship between CSR strengths and the probability of occurrence of adverse ESG-related events is conditional on the dimension.

Our previous research hypotheses deal with the occurrence (or lack thereof) of adverse ESG-related events. One important theoretical approach to CSR in the literature is that EFP can serve as a form of insurance that can protect firms when a crisis occurs by reducing its impact (Godfrey, 2005; Werther et Chandler, 2005; Peloza, 2006 et Godfrey et al., 2009). For instance, Godfrey (2005) argues that CSR can generate positive moral and reputation capital among stakeholders (including journalists and medias) that can mitigate their evaluation of the firm's

negative actions. Empirically, results are somewhat ambiguous, with some studies that find results compatible with the insurance hypothesis (Godfrey et al., 2009) and with others that can't empirically support it (Rhee et Haunschild, 2006). Nevertheless, we argue that, if some form of insurance is present, it should reflect (negatively) on the occurrence of media-covered adverse events, regardless of the event's coverage intensity:

H6: Regardless of media coverage, the probability of occurrence of an adverse ESG-related event is negatively related to corporate EFP.

3. METHODOLOGY

3.1 Identification of adverse ESG-related events

As mentioned above, we use the probability of occurrence of adverse ESG-related events to measure ESG risk. We therefore construct a unique database of corporate adverse ESG-related events published in the WSJ between 2001 and 2013. Like Tetlock (2007), we focus on events that affect firms in the S&P 500 because these firms make up about three quarters of the total market capitalization of the U.S. and because they have a better chance of being covered in the media following an adverse event.

We collect events from the ProQuest ABI/INFORM electronic database which archives all the articles published in the WSJ. We establish a list of keywords to collect events that are both potentially adverse for the firm and ESG-related. Keywords listed in Panel A of Table 1 are based on previous empirical studies by Krüger (2015) and Bouslah et al. (2013) and allow us to identify events, while keywords in Panel B are based on the indicators used by MSCI[6] to evaluate EFP for seven CSR dimensions and are used to collect ESG-related events and categorize them into one of the seven dimensions. After reading each news article, the event is then categorized into either a positive event or a negative (adverse) event. We then match the events with the MSCI-ESG database to obtain the company's ESG rating at the time of the event, and with Compustat and CRSP to obtain accounting and financial data for the firms. Our procedure results in a sample of

[6] KLD. 2006. Getting started with KLD stats and KLD's ratings definitions. Boston, MA: KLD Research & Analytics, Inc.

4,677 newspaper articles that are categorized into 2,149 adverse ESG-related events between 2001 and 2013 and that involve 844 distinct companies.[7]

Descriptive statistics for the adverse ESG-related events are presented in Table 2. Panel A shows that the 2,149 adverse events are dominated by events related to the Employee dimension (labor relations) which account for one-third (33.09%) of the events and the Product dimension (customer relationship) concerns which account for one-quarter (24.80%) of the events in our sample. They also represent the type of event that involves the most companies. Panel B presents the extent of media coverage for the 2,149 events. On average, we see that an event is covered by 4.14 articles and 2,721words over a period of 308 days. Governance-related events receive the most coverage, with an average of 7.72 articles per event over a period of almost two years (711 days). These statistics can be explained partly by the high-profile event related to the Enron accounting fraud (governance).[8]

[**Insert table 2 here**]

3.2 Measures of extra-financial performance

As mentioned above, we measure corporate EFP with the extra-financial ratings provided by MSCI through their MSCI-ESG-STAT database (formerly known as KLD). The agency evaluates a company's EFP for seven dimensions of CSR: Environment (*ENV*), Community (*COM*), Diversity (*DIV*), Employees (*EMP*), Human Rights (*HUM*), Products and Business Practices (*PROD*) and Corporate Governance (*GOV*). For each of the seven dimensions, the agency assigns positive (strengths) or negative (concerns) ratings to the firm based on a number of predetermined qualitative indicators that vary according to the dimension.

For each firm in our sample ($i = 1, ..., N$) and for each CSR dimension ($d = \{ENV, COM, DIV, EMP, HUM, PROD, GOV\}$), we calculate a yearly average for its strengths (STR_{dit}) and one for its concerns (CON_{dit}) as follows:

$$STR_{dit} = \frac{1}{N_{STR,d}} \sum_{l=1}^{N_{STR,d}} Strenght_{lit} \qquad (1)$$

[7] An adverse ESG-related event can be composed of more than one newspaper article if it relates to the same event and the same firm.

[8] The event began in 2001 with the bankruptcy of the company and ended its judicial epilogue in June 2013 with the conviction by the U.S. Supreme Court of Jeffrey Skilling, former CEO of Enron, to 14 years imprisonment for breaching his moral obligations.

$$CON_{dit} = \frac{1}{N_{CON,d}} \sum_{j=1}^{N_{CON,d}} Concern_{jit} \quad (2)$$

where $N_{STR,d}$ and $N_{CON,d}$ represent the number of strengths and concerns indicators, respectively, for dimension *d*. For each dimension *d*, the dimensional-rating for firm *i* during year *t* is therefore measured as the difference between STR_{dit} et CON_{dit}. We therefore obtain the following seven dimensional EFP measures: EFP_ENV_{it}, EFP_COM_{it}, EFP_DIV_{it}, EFP_EMP_{it}, EFP_HUM_{it}, EFP_PROD_{it} and EFP_GOV_{it}.

Finally, following previous studies (see, for e.g., Chatterji et al., 2009 or Kim et al., 2014), we can estimate overall strength (STR_{it}) and overall concern (CON_{it}) for firm *i* during year *t* as the average over the seven dimensional measures:

$$STR_{it} = \frac{1}{7} \sum_{d=ENV}^{GOV} STR_{dit}, \quad (3)$$

$$CON_{it} = \frac{1}{7} \sum_{d=ENV}^{GOV} CON_{dit}, \quad (4)$$

We then estimate the measure of global EFP, $EFP\_GLOBAL_{i,t}$ as the difference between (3) and (4). Panel A in Table 3 provides descriptive statistics for $EFP\_GLOBAL_{i,t}$ as well as for the seven dimensional EFP measures that combine strengths and concerns.[9] We observe that firms in our sample have an average global EFP of -0.013, ranging between -0.425 and 0.536. The negative EFP implies that, on average, there are more concerns than strengths. These statistics are similar to those obtained by Kim et al. (2014). For dimensional measures, we observe that average EFP varies between -0.105 for the Product dimension and 0.093 for the Diversity dimension. Finally, with the exception of the Diversity, Community and Environment dimensions, average strengths are lower than average concerns, although very similar since average EFPs are close to zero.

[**Insert table 3 here**]

3.3 Impact of EFP on ESG risk

We take a logistic regression approach to test whether a firm's EFP during year *t-1* can predict the occurrence of adverse ESG-related events during year *t*. Specifically, we define our dependent variable, y_{it}, as a binary variable that equals 1 if firm *i* faces at least one adverse ESG-

[9] Untabulated results show that EFP measures for the majority of the dimensions are positively correlated with one another. However, overall, correlation coefficients between the exogenous variables used in our regressions are relatively low, which suggests that multicollinearity should not affect our statistical analyses.

related event during calendar year *t*, and 0 otherwise. We then estimate the following regression model:

$$\text{Prob}(y_{it}=1)=\frac{\exp(\alpha+\beta EFP\_GLOBAL_{it-1}+\gamma X_{it-1}+\delta Z_{t-1}+\varepsilon_{it})}{1+\exp(\alpha+\beta EFP\_GLOBAL_{it-1}+\gamma X_{it-1}+\delta Z_{t-1}+\varepsilon_{it})} \quad (5)$$

where our variable of interest, EFP_GLOBAL_{it-1}, represents the global EFP for firm *i* at *t-1*, as defined in section 3.2, β is the regression coefficient associated with EFP_GLOBAL_{it} and α is the constant.[10] Based on the literature, we control for several company-specific factors (X_{it-1}) as well as macro-economic factors (Z_{t-1}) that can also affect the probability of occurrence of adverse events. γ and δ represent the vector of coefficients associated with X_{it-1} and Z_{t-1}, respectively.

3.3.1 Control variables

As Godfrey et al. (2009) highlight, "The role of firm specific characteristics in the face of common events clearly yields illumination" (p.426). Vector X_{it-1} is therefore composed of eight accounting and/or financial variables that are specific to firm *i:*

$SIZE_{i,t-1}$: Size of firm *i* as measured by the log of its market capitalization. The predictive power of the firm size is documented in several studies (see, for e.g., Harvey et Siddique, 2000 or Chen et al., 2001). In addition, large companies attract more media coverage.

$MB_{i,t-1}$: Market-to-book-value ratio for firm *i*. Firms with higher MB ratios are, on average, less risky (Fama and French, 1995) and more socially responsible (Goss and Robert, 2009). We therefore expect this variable to be negatively related to ESG risk.

$RET_{i,t-1}$: Financial performance of firm *i*, as measured by its average monthly return over year *t-1*. Past performance is related to firm risk (Chen et al., 2001).

$ROA_{i,t-1}$: Return on assets for firm *i*. Several studies find a positive link between ROA and EFP (see, for e.g., McGuire et al., 1988).

$SIGMA_{i,t-1}$: Share volatility for firm *i*, as measured by the standard deviation of its monthly returns during year *t-1*. Firms with higher share volatility are riskier and, therefore more likely to face unexpected events (Kim et al., 2014).

[10] We impose a 1-year lag between the dependant and independent variables. This lag allows us to address the potential endogeneity issue whereby adverse ESG-related events for a given year can affect EFP for that year. As a robustness test, we also estimate all our models with no lag, as well as with 2- and 3-year lags. Results are similar to those presented and are available upon request.

$LOSS_{i,t-1}$: Risk of loss measured with a binary variable that equals 1 if the firm has negative earnings (before extraordinary items) during year *t-1* and 0 otherwise. Losses can be warning signs of negative events related to ESG issues.

$DTURNOVER_{i,t-1}$: Change in firm *i*'s share turnover, as measured by the difference between the average monthly share turnover during year *t-1* and average monthly share turnover for year *t-2*. The variable is an indicator of liquidity risk (see, for e.g., Kim et al., 2014).

$CONTROVERSIAL_{i,t-1}$: Controversial activities of firm *i* , as measured by a binary variable that equals 1 if the firm operates in at least one controversial business sector (as defined by Goss and Robert, 2011) and 0 otherwise. Firms that operate in controversial activities (i.e. alcohol, gambling, tobacco, firearms, military, nuclear, etc.) face higher legal risks (Hong and Kacperczyk, 2009).

We also include industry dummies based on the Fama and French classifications with 5 industries (siccode5).[11] The risk of a firm varies by sector (Fama and French, 1997 and Gebhardt et al., 2001). Capital-intensive industries (such as coal, oil, natural gas, chemicals, etc.) are more exposed to environmental problems than other industries (Carroll, 1979 and Griffin and Mahon, 1997). Also, social relations and human rights issues may be more important in labor-intensive industries such as retail-related sectors, which were strongly targeted in the mid-1990s for human rights violations and non-compliance with international labor standards (Rivoli, 2003).

Finally, our sample period is characterized by high financial volatility due to the 2000 technology bubble and the 2008-2009 financial crisis. The inclusion of macroeconomic and financial control variables allows us to take this into account. Indeed, as some recent studies point out (see, for e.g., Albuquerque et al., 2014; Oikonomou et al., 2012 or Chen et al., 2010), EFP and macroeconomic or market factors can co-vary. In addition, company growth can increase exposure to operational risk and thus increase its likelihood of dealing with adverse events. We control for the macroeconomic and financial environment with Z_{t-1}, a matrix that contains the following five standardized variables: i) annual real GDP growth (GDP_{t-1}), ii) annualized rate of return for the 3-month U.S. T-Bill in December of year t-1 ($LEVEL_{t-1}$), iii) slope of the term structure of interest rates defined as the difference between the 10-year and 3-month T-bond rates ($SLOPE_{t-1}$), iv) credit

[11] Siccode5 is the Standard Industrial Classification (SIC) that classifies firms into 5 groups: Cnsmr (Consumer Durables, Non Durables, Wholesale, Retail, and Some Services), Manuf (Manufacturing, Energy, and Utilities), HiTec (Business Equipment, Telephone and Television Transmission), Hlth (Healthcare, Medical Equipment, and Drugs) and Other (Mines, Constr, BldMt, Trans, Hotels, Bus Serv, Entertainment, Finance).

spread measured by the rate difference between BBA- and AAA-rated bonds (Ferson and Schadt, 1996) ($SPREAD_{t-1}$) and v) annual dividend per share ratio for all S&P 500 companies divided by their December share price, which informs stakeholders about the perception of the company's management and their uncertainty regarding future risks (Beaver et al., 1970) (*DIVt-1*). Panels B and C in Table 3 present the descriptive statistics for the control variables.

3.4 Probability of occurrence of low-media-coverage or high-media-coverage events

As suggested by the descriptive statistics in table 2, media coverage can vary considerably from one event to another. While events that warrant only one newspaper article can have a lower chance of sparking controversy and may fly under the radar of investors, it might not be the same for events that lead to numerous articles, that are on the front page, that are covered over a longer period or that warrant more newspaper space (word count).

To examine whether a firm's EFP can reduce the probability of being exposed to high-media-coverage adverse ESG-related events, we modify model (5) to distinguish between three levels of media coverage (null, low and high). Specifically, to test H6, we estimate the following multinomial logistic regression model:

$$p_{ji} = \Pr\left(y_i = j\right) = \begin{cases} \dfrac{\exp\left(\alpha_1 + \beta_1^{[2]}\left(ISP_{i(t-1)} = 2\right) + \beta_1^{[3]}\left(ISP_{i(t-1)} = 3\right) + \gamma_j X_{i(t-1)} + \delta_j Z_{(t-1)}\right)}{1 + \exp\left(\alpha_1 + \beta_1^{[2]}\left(ISP_{i(t-1)} = 2\right) + \beta_1^{[3]}\left(ISP_{i(t-1)} = 3\right) + \gamma_j X_{i(t-1)} + \delta_j Z_{(t-1)}\right)}, \text{ if j} = 1 \\ \dfrac{\exp\left(\alpha_2 + \beta_2^{[2]}\left(ISP_{i(t-1)} = 2\right) + \beta_2^{[3]}\left(ISP_{i(t-1)} = 3\right) + \gamma_j X_{i(t-1)} + \delta_j Z_{(t-1)}\right)}{1 + \exp\left(\alpha_2 + \beta_2^{[2]}\left(ISP_{i(t-1)} = 2\right) + \beta_2^{[3]}\left(ISP_{i(t-1)} = 3\right) + \gamma_j X_{i(t-1)} + \delta_j Z_{(t-1)}\right)}, \text{ if j} = 2 \end{cases} \quad (6)$$

where the dependent variable, *j*, is now related to one of three measures of media coverage intensity (j = 0, 1 or 2). The intensity of media coverage is measured by one of the following four criteria:

i) The number of newspaper articles about the event. Media coverage is considered null (*j*=0) if firm *i* has 0 article during year t; low (*j*=1) if the event is covered by 1 article, and high (*j*=2) if the event is covered by at least 2 articles.

ii) The length of the media coverage following the event measured by the number of days between the first and last article about the event. Media coverage is considered null (*j*=0) if firm *i* receives 0 days of coverage; low (*j*=1) if firm *i* receives fewer than 365 days of coverage, and high (*j*=2) if firm *i* receives 365 days or more of coverage.

iii) The total number of words used in the newspaper articles about the event. Media coverage is considered null (j=0) if firm i receives 0 word of coverage; low (j=1) if firm i receives fewer than the median number of word coverage (for the entire sample of events), and high (j=2) if firm i receives the median number of words of coverage or higher.

iv) The presence on the front (first) page for at least one article about the event. Media coverage is considered null (j=0) if firm i receives no cover page, and high (j=1) if firm i receives at least one article on the cover page.

Further, in model (6), firms in our sample are classified into three categories according to their level of EFP: low-EFP firms (first tier, $ISP_{i(t-1)}$=1), medium-EFP firms (second tier, $ISP_{i(t-1)}$ =2) and high-EFP firms (third tier, $ISP_{i(t-1)}$=3).

4. RESULTS AND ANALYSIS

In this section, we analyze different specifications of model (5), which tests the effect of extra-financial ratings on ESG risk, which is measured by the probability of occurrence of adverse ESG-related events. For all the estimates, we report the odds ratios (OR = $\exp^{(coef.)}$) which simplifies the interpretation of the results.

4.1. Test of *H1*: Impact of global extra-financial performance

Table 4 reports the results for five specifications of model (5). In all cases, the OR for *EFP_GLOBAL* is statistically significant and between 0 and 1, which indicates a negative impact of global EFP on the probability of occurrence of adverse events. ORs are also very similar from one specification to another. For example, specification [5] indicates that an increase of one unit of the firm's rating reduces its probability of facing adverse events during the following year by 8% (= 1- 0.92). This result support our first research hypothesis, *H1*, and indicates that EFP is an indicator of ESG risk.

Moreover, based on specification [5], we also find that the size of the firm, its presence in a controversial sector, the volatility of its returns and its losses during year t are all associated with an increase in the likelihood of facing an adverse event in the next year. In contrast, past returns reduce the probability of occurrence of adverse events. Finally, we observe that the macroeconomic environment has a significant impact on ESG risk. For example, economic growth (GDP_{t-1}) increases the probability of occurrence of adverse ESG-related events, which can be explained by the fact that operational risk increases with the volume of activities.

[**Insert table 4 here**]

4.2 Test of *H2*: Impact of dimensional extra-financial performance

EFP _ GLOBAL is a global measure that captures the firm's overall EFP over the seven dimensions of CSR. In this section, we test *H2* and examine how each of the firm's dimensional EFP affects its ESG risk.

Table 5 reports the results for five specifications of model (5). ORs for the Human Rights and Products dimensions are statistically significant and range between 0 and 1 for all five specifications. An increase in the firm's EFP in either one of these two dimensions therefore reduces the likelihood of dealing with adverse ESG-related events. On the other hand, we note that an increase in EFP for the Diversity dimension and, to a lesser extent, for the Environment dimension is associated with an increase in the probability of occurrence of adverse events (OR > 1). These results support *H2*, which states that the impact of EFP on ESG risk is conditional on the dimension. We also note that EFP for the Community, Employee and Governance dimensions has no (or very little) impact on the probability of occurrence of adverse events. In terms of magnitude, it is the extra-financial rating for the Product dimension that seems to have the greatest impact on ESG risk. For example, specification [5] indicates that an increase of *EFP_PROD* reduces the probability of facing adverse events by 24% (= 1- 0.763), while increasing *EFP-HUM* by one unit only reduces the probability by 11.5% (= 1 – 0.885).

Our results partly complement those by Bouslah et al. (2013) who suggest that investors associate an increase in EFP for the Human Rights dimension with a less risky venture. We show that, for that dimension, their observed lower total risk *can* be attributed to lower ESG risk. However, Bouslah et al.'s (2013) results on total risk, and those by Oikonomou et al. (2012) on systematic risk, reveal that investors associate EFP for the Employee dimension (for Bouslah et al., 2013 and for Oikonomou et al., 2012) and for the Community and Environment dimensions (for Oikonomou et al., 2012) to a less financially risky firm, while our results indicate that EFP for this dimension is not related to a lower probability of adverse events (or to a lower ESG risk). The lower-risk perception by stock investors must thus come from another source. Finally, while our results indicate that the rating for the Product dimension helps predict the occurrence of adverse events, Bouslah et al. (2013) and Oikonomou et al. (2012) find that it does not influence financial risks.

[**Insert table 5 here**]

4.3 Test of *H3*: Intra-dimensional impact

The third part of our study consists of a more granular empirical analysis aimed at checking whether EFP ratings in each of the seven CSR dimensions has an impact on the probability of occurrence of adverse events related to this same dimension. For this, we disaggregate adverse events into seven categories that correspond to the seven CSR dimensions. Specifically, we estimate seven specifications of model (5) in which the dependent variable is estimated from adverse events related to a given dimension while the main independent variable is the dimensional-EFP. For example, for the Environment dimension, y_{it} is estimated by only taking into account adverse environmental events, while the measure of EFP corresponds to the environmental performance, *EFP_ENV*.

Table 6 presents the results. For four of the seven dimensions (i.e. Environment, Human Rights, Products and Governance), we observe a negative and significant relationship between dimensional-ratings and ESG risk. This implies that the more firms improve their EFP in either one of these four dimensions, the more they can reduce their probability of dealing with adverse events related to these dimensions. Our results therefore support *H3*. In terms of magnitude, the effect is most important for the Environment (OR = 0.709) and Products (OR = 0.715) dimensions, for which an increase of one unit of dimensional-rating reduces the likelihood of dealing with adverse environmental- or product-quality-events by almost 30%. The intra-dimensional mitigation effect is lower for the Human Rights (19.6%) and Governance (16.1%) dimensions, but nevertheless statistically significant.

These results are in contrast to those of Bouslah et al (2013) and Oikonomou et al. (2012) who study total and systematic risk respectively, and that suggest that investors associate a risk of exposure to CSR dimensions that is not related to ESG risk. Specifically, the authors observe that concerns associated with the Employees, Diversity and Governance dimensions (in the case of Bouslah et al., 2013) or Community, Employees and Environment dimensions (in the case of Oikononou et al., 2012) positively affect firms' financial risk. In contrast, our results indicate that the impact on ESG risk rather comes from ratings associated with the Environment, Human Rights, Products and Governance dimensions. Therefore, with the exception of the Governance and the Environment dimensions, there appears to be a difference between ESG dimensions that are

sensitive to investors (in order to assess financial risk) and those that are effectively related to ESG risk.

[**Insert table 6 here**]

4.4 Test of *H4*: Inter-dimensional impact

The fourth component of our empirical analysis is to examine the inter-dimensional effect of EFP, whereby we test if EFP in a given dimension affects ESG risk associated with the other dimensions. To do this, we estimate seven variants of model (5) in which the probability of occurrence of adverse events is estimated as in the previous section, but in which we include the seven dimensional-ratings as explanatory variables.

Table 7 presents the results. We observe an important inter-dimensional effect. For example, an increase in the rating associated with the Product dimension (for example via CSR policies to improve product quality) not only reduces the likelihood of dealing with adverse Product-related events, but also the likelihood of facing adverse events associated with other dimensions. Similarly, an improvement of EFP in terms of Human rights reduces the probability of occurrence of negative events related to Human Rights as well as in other ESG-dimensions. Interestingly, we observe that governance-related performance (*EFP_GOV*) is only related to a reduction of governance-related adverse events. Higher environmental performance (*EFP_ENV*) reduces the likelihood of dealing with adverse environmental events (OR = 0.769) but increases the probability of Diversity-, Employee-, Product- or Governance-related adverse events. One possible explanation is that companies may improve their environmental performance when they anticipate the publication of negative events associated with other ESG-dimensions in order to look good and mitigate any negative impact. Surprisingly, an increase in employee-related ratings (*EFP_EMP*) does not affect the probability of occurrence of employee-related events but reduces the probability of events in the Community (OR = 0.797), Diversity (OR = 0.829) and Human Rights (OR = 0.788) dimensions, which are all dimensions associated with the Social factor (the "S" in ESG).

Similarly, community-related performance (*EFP_COMM*) is not related to community-related ESG risk but reduces it for environmental-related events and increases it for diversity- and employee-related events. This can be explained for example by firms that acknowledge a weakness or an exposure in a given CSR dimension and compensate with positive actions in other dimensions (for e.g. by investing in community-based or philanthropic charities when they know they are

exposed to Diversity- or Employee-related events). Finally, diversity-related performance is not related to the probability of diversity-related events but is positively related to the probability of events in the Community (OR = 1.523, Employee (OR = 1.19) and Product (OR = 1.184) dimensions.

[**Insert table 7 here**]

4.5 Test of *H5a* and *H5b*: Impact of ESG strengths and concerns

So far, we have examined overall measures of extra-financial performance, which are based on the difference between strengths and concerns (overall or for each dimension). However, strengths and concerns can capture different aspects of EFP and can potentially have a different impact on ESG risk. To examine this question and thus test *H5a* and *H5b*, we break down overall ratings into strengths-ratings (positive actions) and concerns-ratings (negative actions).

4.5.1 Test of *H5a*: Impact of ESG concerns

Table 8 presents the results on the impact of ESG concerns on ESG risk. Specification [1] in Panel A presents the results for the estimation of model (5) where EFP is measured by overall concerns-ratings. We observe that a one-unit increase in concerns-ratings increases the probability of adverse ESG-related events by 57.8% (OR = 1.578), which supports *H5a*. Specification [2] presents the results where EFP is measured by dimensional-concerns. Results show that, with the exception of Environmental concerns, an increase in concerns in any dimension significantly increases the probability of facing adverse ESG-related events. Once again, concerns about the Product dimension have the largest impact in terms of magnitude (OR = 1.435).

Panel B in Table 8 presents the results for the estimation of model (5) for which ESG risk is divided into the seven ESG dimensions. Results on the diagonal show that, with the exception of the Community dimension for which no significant effect is observed, concerns for the other six dimensions increase the likelihood of dealing with adverse events in the dimension (OR > 1). Moreover, we observe a clear inter-dimensional effect for all dimensions except the Environment, whereby concerns in a given dimension increase the ESG risk associated with other dimensions. For example, higher concerns for the Product dimension increases the likelihood of dealing with adverse events in all categories. For six of the seven dimensions, our results show that EFP is useful for investors because it helps to predict the risk of the occurrence of media events that can be detrimental to the firm's reputation, among other things.

[**Insert table 8 here**]

4.5.2 Test of *H5b*: Impact of ESG strengths

Table 9 presents the results on the impact of ESG strengths (positive actions) on ESG risk. We observe very contrasting results, which supports hypothesis *H5b*. In specification [1] in Panel A, we observe that, as for concerns, overall strengths are related to an increase in the probability of adverse ESG-related events, albeit to a lesser extent. Specifically, a one-unit increase in ESG strengths increases the probability of occurrence of adverse events by 43.3% (OR = 1.433). Moreover, the analysis of specification [2] shows that, with the exception of the Human Rights dimension, for which an increase reduces the probability of occurrence of adverse events (OR = 0.918), a rise in strengths for most of the other dimensions increases the likelihood of adverse ESG-related events. In terms of magnitude, the most important dimensional-EFPs are for the Diversity (OR = 1.275), Employee (OR = 1.09), Governance (OR = 1.087) and Product (OR = 1.074) dimensions.

Finally, by disaggregating events by category (see Panel B in Table 9), we can observe a relatively large inter-dimensional effect. For example, an increase in Human Rights strengths is not related to the probability of occurrence of Human Rights-related events but is negatively related to events in the Diversity' (OR = 0.798), Employee (OR = 0.92) and Products (OR = 0.914) dimensions. On the other hand, an increase in strengths associated with the Diversity dimension predicts an increase in the probability of dealing with adverse events in all dimensions except the Environment dimension.

[**Insert table 9 here**]

Overall, while ESG concerns are systematically associated with an increase in ESG risk, the impact of ESG strengths is more ambiguous and depends on the dimension. The observed positive relationship between ESG strengths and ESG risk for some dimensions can be explained, among others, with the agency theory (Barnea and Rubin, 2010; Cespa and Cestone, 2007), or the CSR compensation theory by which companies do good to compensate for their (bad behavior) social irresponsibility (Krüger, 2015 or Kotchen and Moon, 2012). However, we leave this important question for future research.

4.6 Test of *H6*: Impact of EFP on the probability of occurrence of low-media-coverage and high-media-coverage events

The probability of occurrence of low-media-coverage and high-media-coverage events as a function of EFP (low, medium or high) is presented in table 10. We find that the probability of having a low-media-coverage event decreases with the level of EFP, regardless of the media coverage measure (i.e. for all four specifications). For instance, the probability of a low-media-coverage event is 7.10%, 6.77% and 6.45% for low, medium and high EFP, respectively. The same negative function of EFP occurs for high-media-coverage events, even if these events are less frequent. These observations are similar for the four measures of media coverage intensity that are used. Interestingly, our classification of events into low-media-coverage and high-media-coverage differs according to the measure of coverage intensity. For example, based on the number of words (specification [3]), we obtain 422 low-coverage and 422 high-coverage events, while based on the coverage length (specification [2]), we obtain 700 low-coverage and 144 high-coverage events. Despite these different distributions, our results remain robust.

Overall, our results suggest that corporate EFP reduces ESG-risk, regardless of the media coverage, which supports hypothesis *H6*. These results can provide support for the insurance theory which implies that the probability of media coverage of negative events would be lower for high-EFP firms, no matter the intensity of the media coverage. Further tests would however be needed to formally test the insurance theory.

[Insert table 10 here]

5. CONCLUSION

We construct a unique database of negative ESG-related media events and examine whether corporate extra-financial ratings are related to the probability of the occurrence of adverse ESG-related events that can be harmful to the firm and thus a measure of ESG risk. We test measures of extra-financial performance that combine positive performance (strengths) and negative performance (concerns) over the seven dimensions of CSR (i.e. Community, Diversity, Employees, Environment, Human Right, Products and Governance). We also the individual effect of strengths and concerns.

Our main findings reveal that a higher extra-financial rating is related to a lower probability for the firm of dealing with adverse ESG-related events, and thus to a lower ESG risk. These results are consistent with the idea that companies that actively engage in CSR refrain from bad behavior, and thus reduce their likelihood of dealing with adverse events. The attenuation effect is

particularly important for the rating associated with the Products dimension increase of the performance in the Product dimension (for example through the establishment of CSR policies that improve product quality) reduce not only the likelihood of dealing with adverse Product-related events, but also events associated with other dimensions. Our results also indicate that while concerns are significantly and positively related to ESG risk, the impact of strengths is more contrasted and depends on the dimension.

The results of our study can be very useful for investors. Our results can notably provide information regarding the link between extra-financial ratings and ESG risk. This knowledge can help them minimize the ESG risk of their investments by reducing the exposure of firms in their portfolio to adverse ESG-related events.

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Tableau 1 – ESG-related event keywords

Panel B – Keywords associated with events

Concern	Lawsuit	Complaint	Assessment	Sanctions	Controversy	Doubt
Misgiving	Harassment	Failure	Knights	Disaster	Sourcing	Compliance
Spill	Releases	Management	Impact	Risks	Criticism	Illegal

Panel A – Keywords associated with "ESG-related" events

1. Community (Com)	**5. Product (Pro.)**	**7. Environment (Env)**
Charity	Product responsibility	Air pollution
Volunteer	Product recall	Water pollution
Housing	Innovation	Recycling
Education	Quality	Energy
Community relations	Customer relationship	Hazard
Community support	Supplier relationships	Toxic
Poverty	**6. Governance (Gov.)**	Waste
2. Diversity (Div)	Audit	Chemicals
Diversity	Scandal	Emissions
Minority	Price fixing	Agriculture
Women	Governance	Nuclear
Disabled	Ponzi scheme	Gas
Sexual orientation	Greenmail	Environmental Hazard
Homosexual	Voting	Ecological
Age	Indemnification	Ozone
Equality	Secret ballot	Oil
Discrimination	Board of directors	Forest
Harassment	Fraud	Fuels
3. Employee relations (Emp.)	Accounting	Mining
Employee relations	Tax	Ocean
Union	Transparency	Wildlife
Layoff	Shareholder provisions	Fauna
Employment	Bylaws	Flora
Health	Fair price	Drinking water
Safety	Pension	Public health
Workforce	Severance package	Contamination
Dismissal	Staggered	Regulation
Wage	Politics	Activists
Promotion	Insider trading	Mismanagement
Working conditions	Conflict of interest	Climate change
Benefits	Ownership	Water stress
4. Human Rights Hum.)	Accountability	Biodiversity
Child	Shareholder rights	Land use
Labor Rights	Compensation plan	Raw material
Human rights	Golden parachute	Regulatory
Indigenous	Poison pill	
Humanitarian cause	Silver parachute	
Privacy	Antitrust	

Table 2 – Descriptive statistics for adverse ESG-related events

This table presents the descriptive statistics for adverse ESG-related events between 2001 and 2013 used in the study. Panel A presents the distribution of events and the number of firms involved for the seven CSR dimensions considered. Panel B presents statistics on the coverage of the events in the media.

Panel A: ESG-related events

Dimension	Environment (ENV)	Community (COM)	Diversity (DIV)	Employee (EMP)	Human Rights (HUM)	Products (PRO)	Governance (CGOV)	Total
Number of events	183	137	232	711	175	533	178	2149
% of events	8.52%	6.38%	10.80%	33.09%	8.14%	24.80%	8.28%	100%
Number of articles	327	220	329	1173	352	987	1289	4677
Number of firms	148	111	173	463	129	362	167	844

Panel B: Media coverage of events

	Events	**Mean**	**Min**	**Median**	**Max**	**Stdev**	**Skewness**	**Kurtosis**	**N**
ALL	Number of articles	4.14	1	2	146	9.28	7.73	87.66	844
	Coverage length (number of days)	307.16	1	1	4578	724.33	3.35	14.58	844
	Number of words	2720.82	47	855	166006	8070.19	12.00	211.10	844
	Cover page article	0.11	0	0	1	0.32	2.45	7.01	844
ENV	Number of articles	2.21	1	1	21	2.99	3.98	20.96	148
	Coverage length (number of days)	170.74	1	1	4360	517.01	5.20	36.02	148
	Number of words	1272.93	83	646.5	13626	1926.78	3.84	20.10	148
	Cover page article	0.07	0	0	1	0.26	3.25	11.53	148
COM	Number of articles	1.98	1	1	17	2.32	3.69	19.81	111
	Coverage length (number of days)	154.16	1	1	3702	479.39	5.06	32.89	111
	Number of words	1601.05	145	892	15721	2036.20	4.03	24.49	111
	Cover page article	0.12	0	0	1	0.32	2.38	6.67	111
DIV	Number of articles	1.90	1	1	22	2.36	5.23	38.15	173
	Coverage length (number of days)	134.21	1	1	3663	476.84	5.95	41.21	173
	Number of words	1127.38	73	534	13602	1837.46	4.27	24.85	173
	Cover page article	0.03	0	0	1	0.18	5.09	26.87	173
EMP	Number of articles	2.53	1	1	60	4.59	7.41	74.68	463
	Coverage length (number of days)	169.95	1	1	3756	539.82	4.75	26.54	463
	Number of words	1483.82	47	650	37242	3163.25	7.20	69.06	463
	Cover page article	0.06	0	0	1	0.24	3.69	14.60	463
HUM	Number of articles	2.73	1	1	57	6.13	6.78	54.79	129
	Coverage length (number of days)	247.79	1	1	3702	756.89	3.62	15.00	129
	Number of words	1877.16	73	691	34546	4348.78	6.09	43.88	129
	Cover page article	0.09	0	0	1	0.29	2.80	8.85	129
PRO	Number of articles	2.73	1	1	68	5.12	7.64	82.70	362
	Coverage length (number of days)	199.24	1	1	3682	535.58	4.05	21.03	362
	Number of words	1803.70	80	785	57278	4026.55	8.87	108.08	362
	Cover page article	0.09	0	0	1	0.29	2.78	8.75	362
CGOV	Number of articles	7.72	1	3	145	16.03	5.22	37.81	167
	Coverage length (number of days)	710.31	1	272	4578	1024.32	1.74	5.34	167
	Number of words	5730.02	144	1636	165200	15329.41	7.48	72.90	167
	Cover page article	0.26	0	0	1	0.44	1.11	2.23	167

Table 3 – Descriptive statistics for extra-financial performance and other variables

This table presents the descriptive statistics for the variables used in the study, defined in section 3. Panel A presents the descriptive statistics for the global extra-financial performance as well as the seven dimensional performance measures used in model (5). Panel B presents statistics on company-specific control variables included in vector X_{t-1} in model (5). Panel C presents statistics on the macroeconomic and financial control variables included in vector Z_{t-1} in model (5). N represents the number of observations.

	Mean	Min	p25	Median	p75	Max	Stdev	Skewness	Kurtosis	N
Panel A: Extra-financial performance										
Overall ratings										
EFP_GLOBAL $_{t-1}$	-0.0127	-0.4252	-0.0748	-0.0204	0.0357	0.5357	0.1079	0.6780	5.1131	844
EFP_ENV $_{t-1}$	0.0178	-0.7143	0.0000	0.0000	0.0238	0.8333	0.1952	0.2654	5.5520	844
EFP_COM $_{t-1}$	0.0200	-1.0000	0.0000	0.0000	0.1429	1.0000	0.2395	-0.6734	8.3244	844
EFP_DIV $_{t-1}$	0.0930	-1.0000	0.0000	0.1250	0.2500	1.0000	0.2847	0.0670	3.3521	844
EFP_EMP $_{t-1}$	-0.0290	-1.0000	-0.2000	0.0000	0.1429	0.7778	0.2171	-0.1886	3.8953	844
EFP_HUM $_{t-1}$	-0.0099	-0.6667	0.0000	0.0000	0.0000	1.0000	0.1031	3.0282	31.0494	844
EFP_PROD $_{t-1}$	-0.1052	-1.0000	-0.2500	0.0000	0.0000	0.7500	0.2471	-0.7294	4.0325	844
EFP_GOV $_{t-1}$	-0.0753	-1.0000	-0.1667	-0.1429	0.0000	1.0000	0.1949	1.2250	7.1914	844
Strengths										
STR $_{t-1}$	0.0908	0.0000	0.0204	0.0587	0.1190	0.6429	0.0973	1.9477	7.4999	844
STR_ENV $_{t-1}$	0.0992	0.0000	0.0000	0.0000	0.1667	0.8333	0.1658	1.9093	6.3177	844
STR_COM $_{t-1}$	0.0972	0.0000	0.0000	0.0000	0.1429	1.0000	0.1711	2.1736	8.3412	844
STR_DIV $_{t-1}$	0.2006	0.0000	0.0000	0.1250	0.3333	1.0000	0.2131	1.1183	3.7951	844
STR_EMP $_{t-1}$	0.1101	0.0000	0.0000	0.0000	0.1429	0.8333	0.1447	1.4962	5.1815	844
STR_HUM $_{t-1}$	0.0148	0.0000	0.0000	0.0000	0.0000	1.0000	0.0892	7.1381	61.1974	844
STR_PRO $_{t-1}$	0.0535	0.0000	0.0000	0.0000	0.0000	0.7500	0.1223	2.2685	7.8572	844
STR_GOV $_{t-1}$	0.0603	0.0000	0.0000	0.0000	0.0000	1.0000	0.1512	2.9796	12.7758	844
Concerns										
CON $_{t-1}$	0.1035	0.0000	0.0408	0.0833	0.1451	0.6565	0.0860	1.4144	5.7073	844
CON_ENV $_{t-1}$	0.0814	0.0000	0.0000	0.0000	0.1429	0.7143	0.1523	2.0051	6.3887	844
CON_COM $_{t-1}$	0.0772	0.0000	0.0000	0.0000	0.0000	1.0000	0.2008	3.4043	15.0920	844
CON_DIV $_{t-1}$	0.1075	0.0000	0.0000	0.0000	0.3333	1.0000	0.1742	1.3264	3.8161	844
CON_EMP $_{t-1}$	0.1390	0.0000	0.0000	0.0000	0.2000	1.0000	0.1735	1.2546	4.4210	844
CON_HUM $_{t-1}$	0.0246	0.0000	0.0000	0.0000	0.0000	0.6667	0.0687	3.2956	16.1893	844
CON_PRO $_{t-1}$	0.1587	0.0000	0.0000	0.0000	0.2500	1.0000	0.2236	1.3839	4.2990	844
CON_GOV $_{t-1}$	0.1357	0.0000	0.0000	0.1667	0.1667	1.0000	0.1277	0.9614	4.7714	844
Panel B: Company-specific control variables										
SIZE $_{t-1}$	9.3163	5.6405	8.5535	9.2141	9.9358	13.3480	1.1169	0.4616	3.3219	844
MB $_{t-1}$	3.5598	-1256.255	1.6235	2.5301	4.0605	827.940	29.1135	-4.3591	918.437	844
RET $_{t-1}$	0.0085	-0.1923	-0.0057	0.0100	0.0245	0.2056	0.0308	-0.2228	6.7367	844
ROA $_{t-1}$	0.0509	-4.5831	0.0175	0.0498	0.0916	0.5034	0.1138	-16.6378	570.6474	844
LOSS $_{t-1}$	0.1004	0.0000	0.0000	0.0000	0.0000	1.0000	0.3006	2.6585	8.0679	844
SIGMA $_{t-1}$	0.0933	0.0171	0.0561	0.0795	0.1130	0.8766	0.0573	2.6284	17.2264	844
DTURNOVER $_{t-1}$	0.0087	-1.5729	-0.0229	0.0048	0.0342	2.4029	0.1081	1.6716	74.6505	844
CONTROVERSE $_{t-1}$	0.1659	0.0000	0.0000	0.0000	0.0000	1.0000	0.3720	1.7965	4.2274	844
Panel C : Macroeconomic and financial control variables										
GDP $_{t-1}$	0.0189	-0.0278	0.0160	0.0222	0.0281	0.0409	0.0183	-1.2862	4.3740	13
LEVEL $_{t-1}$	0.3954	-0.9903	-0.3601	0.0963	0.8901	4.0391	1.3499	1.5186	5.0845	13
SLOPE $_{t-1}$	-0.5374	-4.3848	-1.7005	-0.4092	-0.1894	4.4089	1.9942	0.6518	4.7515	13
SPREAD $_{t-1}$	0.1623	-0.6716	-0.2097	-0.0180	0.2889	1.9138	0.6240	1.6534	5.9740	13
DIV $_{t-1}$	0.0773	-0.3286	-0.0156	0.0801	0.1281	0.6299	0.2281	0.7319	4.2445	13

Table 4 – Impact of global EFP on ESG risk

This table presents the results of the estimation of model (5) where EFP is measured by *EFP-GLOBAL*. All variables are defined in section 3. For each variable, the table presents the odds ratios which are the exponentials of the logit regression coefficients estimated by the maximum likelihood method as well as the *p* values which are calculated using the Wald tests (here z-tests). The sample includes 5914 firm/year observations from 2001 to 2013. The R^2 is the McFadden adjusted pseudo R-squared. *, ** and *** indicate level of significance at the 10%, 5% and 1%, respectively.

	[1]	[2]	[3]	[4]	[5]
Extra-financial rating					
EFP_GLOBAL $_{t-1}$	0.915**	0.92**	0.919**	0.921**	0.92**
	(-2.38)	(-2.12)	(-2.17)	(-2.09)	(-2.1)
Company-specific control variables					
SIZE $_{t-1}$		3.004***	3.019***	3.007***	3.019***
		(24.62)	(24.64)	(24.6)	(24.62)
MB $_{t-1}$		0.99	0.98	0.98	0.98
		(-0.32)	(-0.37)	(-0.38)	(-0.4)
RET $_{t-1}$		0.734***	0.737***	0.734***	0.736***
		(-7.01)	(-6.91)	(-6.98)	(-6.92)
ROA $_{t-1}$		0.93	0.94	0.94	0.94
		(-1.47)	(-1.27)	(-1.4)	(-1.28)
LOSS $_{t-1}$		1.426**	1.551**	1.43**	1.513**
		(2.09)	(2.55)	(2.09)	(2.4)
SIGMA $_{t-1}$		1.307***	1.3***	1.305***	1.301***
		(5.48)	(5.37)	(5.4)	(5.35)
DTURNOVER $_{t-1}$		1.04	1.04	1.04	1.04
		(0.85)	(0.85)	(0.85)	(0.87)
CONTROVERSE $_{t-1}$		1.623***	1.623***	1.637***	1.64***
		(4.28)	(4.27)	(4.34)	(4.35)
Industry dummies	No	Yes	Yes	Yes	Yes
Macroeconomic and financial control variables					
GDP $_{t-1}$			1.188***		1.155***
			(3.91)		(2.88)
LEVEL $_{t-1}$				0.97	0.94
				(-0.56)	(-1.22)
SLOPE $_{t-1}$				0.887***	0.94
				(-2.62)	(-1.25)
SPREAD $_{t-1}$				0.845**	0.87
				(-2)	(-1.64)
DIV $_{t-1}$				1.22***	1.15*
				(2.59)	(1.75)
Constant	0.166***	0.201***	0.198***	0.2***	0.197***
	(-48.18)	(-17.79)	(-17.91)	(-17.83)	(-17.93)
# of observations	5914	5914	5914	5914	5914
# of firms	844	844	844	844	844
Adj. R-squared	0.001	0.18	0.183	0.182	0.183

Table 5 – Impact of dimensional EFP on ESG risk

This table presents the results of the estimation of model (5) where EFP is measured by the seven dimensional EFP measure. All variables are defined in section 3. For each variable, the table presents the odds ratios which are the exponentials of the logit regression coefficients estimated by the maximum likelihood method as well as the *p* values which are calculated using the Wald tests (here z-tests). The sample includes 5914 firm/year observations from 2001 to 2013. The R^2 is the McFadden adjusted pseudo R-squared. *, ** and *** indicate level of significance at the 10%, 5% and 1%, respectively.

	[1]	[2]	[3]	[4]	[5]
Extra-financial ratings					
EFP_ENV_{t-1}	1.077*	1.07	1.07	1.075*	1.078*
	(1.78)	(1.56)	(1.64)	(1.66)	(1.72)
EFP_COM_{t-1}	1.075*	0.99	0.99	0.99	0.99
	(1.89)	(-0.25)	(-0.28)	(-0.3)	(-0.32)
EFP_DIV_{t-1}	1.495***	1.16***	1.16***	1.163***	1.162***
	(9.54)	(3.24)	(3.23)	(3.29)	(3.28)
EFP_EMP_{t-1}	1.01	1.02	1.02	1.02	1.02
	(0.12)	(0.48)	(0.44)	(0.42)	(0.41)
EFP_HUM_{t-1}	0.786***	0.889***	0.885***	0.887***	0.885***
	(-6.67)	(-3.23)	(-3.34)	(-3.28)	(-3.34)
EFP_PROD_{t-1}	0.591***	0.767***	0.763***	0.764***	0.763***
	(-14.35)	(-6.52)	(-6.6)	(-6.59)	(-6.61)
EFP_GOV_{t-1}	0.89***	0.95	0.96	0.96	0.96
	(-3.03)	(-1.24)	(-1.11)	(-1.07)	(-1.03)
Company-specific control variables					
$SIZE_{t-1}$		2.557***	2.568***	2.56***	2.57***
		(19.22)	(19.27)	(19.23)	(19.27)
MB_{t-1}		0.99	0.99	0.99	0.99
		(-0.22)	(-0.28)	(-0.27)	(-0.31)
RET_{t-1}		0.744***	0.747***	0.744***	0.746***
		(-6.69)	(-6.6)	(-6.67)	(-6.6)
ROA_{t-1}		0.95	0.96	0.95	0.96
		(-1.13)	(-0.91)	(-1.06)	(-0.94)
$LOSS_{t-1}$		1.416**	1.547**	1.426**	1.511**
		(2.04)	(2.52)	(2.07)	(2.38)
$SIGMA_{t-1}$		1.298***	1.29***	1.296***	1.292***
		(5.29)	(5.18)	(5.22)	(5.17)
$DTURNOVER_{t-1}$		1.03	1.03	1.03	1.03
		(0.65)	(0.64)	(0.65)	(0.65)
$CONTROVERSE_{t-1}$		1.533***	1.528***	1.543***	1.545***
		(3.72)	(3.68)	(3.76)	(3.76)
Industry dummies	No	Yes	Yes	Yes	Yes
Macroeconomic and financial control variables					
GDP_{t-1}			1.2***		1.162***
			(4.06)		(2.95)
$LEVEL_{t-1}$				0.97	0.94
				(-0.52)	(-1.2)
$SLOPE_{t-1}$				0.877***	0.93
				(-2.82)	(-1.42)
$SPREAD_{t-1}$				0.836**	0.861*
				(-2.09)	(-1.72)
DIV_{t-1}				1.23***	1.157*
				(2.66)	(1.8)
Constant	0.136***	0.191***	0.186***	0.189***	0.185***
	(-46.25)	(-17.74)	(-17.88)	(-17.81)	(-17.91)
# of observations	5914	5914	5914	5914	5914
# of firms	844	844	844	844	844
Adj. R-squared	0.091	0.192	0.195	0.193	0.194

Table 6 – Intra-dimensional impact of EFP on ESG risk

This table presents the results of the estimation of model (5) where EFP is measured by one of seven dimensional EFP measures, and where ESG risk is measured by considering only dimension-related events. All variables are defined in section 3. For each variable, the table presents the odds ratios which are the exponentials of the logit regression coefficients estimated by the maximum likelihood method as well as the *p* values which are calculated using the Wald tests (here z-tests). The sample includes 5914 firm/year observations from 2001 to 2013. The R^2 is the McFadden adjusted pseudo R-squared. *, ** and *** indicate level of significance at the 10%, 5% and 1%, respectively.

	Event dimension						
	ENV	**COM**	**DIV**	**EMP**	**HUM**	**PRO**	**GOV**
Extra-financial ratings							
EFP_ENV_{t-1}	0.709***						
	(-4.88)						
EFP_COM_{t-1}		0.98					
		(-0.28)					
EFP_DIV_{t-1}			1.08				
			(0.89)				
EFP_EMP_{t-1}				1.02			
				(0.42)			
EFP_HUM_{t-1}					0.804***		
					(-3.12)		
EFP_PROD_{t-1}						0.715***	
						(-6.19)	
EFP_GOV_{t-1}							0.839**
							(-2.18)
Company-specific control variables							
$SIZE_{t-1}$	2.158***	3.804***	3.414***	2.91***	2.809***	2.68***	2.423***
	(9.3)	(13.28)	(14.76)	(19.92)	(11.29)	(15.43)	(11.35)
MB_{t-1}	0.93	0.90	0.95	0.97	0.95	1.05	0.85**
	(-0.91)	(-1.12)	(-0.58)	(-0.63)	(-0.54)	(0.88)	(-2.43)
RET_{t-1}	0.95	0.88	0.846*	0.704***	0.90	0.826***	0.722***
	(-0.56)	(-1.03)	(-1.84)	(-6.28)	(-1.03)	(-2.96)	(-4.02)
ROA_{t-1}	1.261**	1.04	0.99	0.909*	1.07	0.94	0.847**
	(2.08)	(0.31)	(-0.07)	(-1.71)	(0.57)	(-0.95)	(-2.28)
$LOSS_{t-1}$	0.78	4.549***	2.275**	2.23***	1.17	1.27	0.75
	(-0.5)	(3.78)	(2.33)	(3.99)	(0.36)	(0.89)	(-0.83)
$SIGMA_{t-1}$	0.97	0.93	1.207*	1.328***	1.309**	1.294***	1.379***
	(-0.29)	(-0.52)	(1.78)	(4.64)	(2.37)	(3.48)	(3.51)
$DTURNOVER_{t-1}$	1.12	0.98	1.10	0.98	1.13	1.10	1.09
	(0.91)	(-0.14)	(1.07)	(-0.43)	(1.3)	(1.39)	(1.25)
$CONTROVERSE_{t-1}$	2.298***	1.21	1.17	1.818***	0.99	1.445**	0.85
	(3.97)	(0.76)	(0.72)	(4.4)	(-0.04)	(2.21)	(-0.67)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Macroeconomic and financial control variables							
GDP_{t-1}	0.90	0.86	1.16	1.221***	0.95	1.181**	1.14
	(-1.07)	(-1.37)	(1.5)	(3)	(-0.51)	(2.28)	(1.33)
$LEVEL_{t-1}$	1.03	0.98	0.93	0.93	1.00	0.97	0.76**
	(0.26)	(-0.15)	(-0.76)	(-1.09)	(0.03)	(-0.49)	(-2.41)
$SLOPE_{t-1}$	0.98	0.99	0.779**	0.91	0.756**	0.96	0.97
	(-0.16)	(-0.1)	(-2.24)	(-1.53)	(-2.48)	(-0.49)	(-0.26)
$SPREAD_{t-1}$	0.96	0.78	0.69*	0.96	0.78	0.766**	0.685**
	(-0.23)	(-1.18)	(-1.94)	(-0.43)	(-1.22)	(-2.15)	(-2.31)
DIV_{t-1}	0.88	1.14	1.08	1.18	1.20	1.223*	1.21
	(-0.69)	(0.66)	(0.51)	(1.62)	(1.03)	(1.77)	(1.29)
Constant	0.016***	0.015***	0.028***	0.088***	0.023***	0.073***	0.027***
	(-18.4)	(-18.39)	(-19.75)	(-20.8)	(-18.89)	(-20.73)	(-18.84)
# of observations	5914	5914	5914	5914	5914	5914	5914
# of firms	148	111	173	463	129	362	167
Adj. R-squared	0.14	0.196	0.184	0.169	0.136	0.222	0.108

Table 7 – Inter-dimensional impact of EFP on ESG risk

This table presents the results of the estimation of model (5) where EFP is measured by the seven dimensional EFP measures, and where ESG risk is measured by considering only dimension-related events. All variables are defined in section 3. For each variable, the table presents the odds ratios which are the exponentials of the logit regression coefficients estimated by the maximum likelihood method as well as the *p* values which are calculated using the Wald tests (here z-tests). The sample includes 5914 firm/year observations from 2001 to 2013. The R^2 is the McFadden adjusted pseudo R-squared. *, ** and *** indicate level of significance at the 10%, 5% and 1%, respectively.

	Event dimension						
	ENV	**COM**	**DIV**	**EMP**	**HUM**	**PRO**	**GOV**
Extra-financial ratings							
EFP_ENV_{t-1}	0.769***	0.90	1.215**	1.2***	0.96	1.121*	1.344***
	(-3.47)	(-1.11)	(2.23)	(3.32)	(-0.42)	(1.8)	(3.06)
EFP_COM_{t-1}	0.773***	1.01	1.234***	1.104*	1.11	1.04	0.93
	(-3.24)	(0.16)	(2.73)	(1.95)	(1.2)	(0.76)	(-0.97)
EFP_DIV_{t-1}	1.04	1.523***	1.05	1.19***	1.04	1.184**	1.05
	(0.44)	(3.67)	(0.59)	(3.03)	(0.36)	(2.52)	(0.59)
EFP_EMP_{t-1}	1.11	0.797**	0.829**	1.00	0.788**	1.10	0.96
	(1.22)	(-2.23)	(-2.22)	(-0.05)	(-2.58)	(1.59)	(-0.44)
EFP_HUM_{t-1}	0.92	0.847**	0.832***	0.879***	0.82***	1.00	0.89*
	(-1.21)	(-2.25)	(-2.85)	(-2.92)	(-2.75)	(0.07)	(-1.66)
EFP_PROD_{t-1}	0.841**	0.641***	0.865*	0.854***	0.862*	0.694***	0.85**
	(-2.17)	(-4.54)	(-1.87)	(-3.14)	(-1.67)	(-6.61)	(-2.06)
EFP_GOV_{t-1}	1.11	1.03	1.02	0.96	1.07	1.03	0.834**
	(1.3)	(0.28)	(0.23)	(-0.82)	(0.82)	(0.51)	(-2.2)
Company-specific control variables							
$SIZE_{t-1}$	1.998***	2.743***	3.117***	2.537***	2.683***	2.547***	2.203***
	(7.17)	(8.85)	(12.19)	(15.57)	(9.72)	(13.67)	(8.89)
MB_{t-1}	0.94	0.93	0.96	0.97	0.96	1.04	0.857**
	(-0.75)	(-0.68)	(-0.51)	(-0.55)	(-0.41)	(0.8)	(-2.26)
RET_{t-1}	0.95	0.88	0.841*	0.712***	0.90	0.84***	0.727***
	(-0.48)	(-1.08)	(-1.89)	(-6.06)	(-1.06)	(-2.68)	(-3.91)
ROA_{t-1}	1.276**	1.14	1.06	0.93	1.12	0.92	0.857**
	(2.17)	(0.9)	(0.52)	(-1.4)	(0.92)	(-1.15)	(-2.09)
$LOSS_{t-1}$	0.75	4.464***	2.557***	2.316***	1.19	1.28	0.75
	(-0.57)	(3.74)	(2.63)	(4.14)	(0.39)	(0.92)	(-0.82)
$SIGMA_{t-1}$	1.01	0.93	1.17	1.318***	1.311**	1.318***	1.344***
	(0.08)	(-0.46)	(1.47)	(4.45)	(2.39)	(3.72)	(3.21)
$DTURNOVER_{t-1}$	1.10	0.95	1.10	0.97	1.11	1.09	1.09
	(0.8)	(-0.45)	(1.04)	(-0.67)	(1.18)	(1.26)	(1.17)
$CONTROVERSE_{t-1}$	2.175***	0.93	1.15	1.8***	0.92	1.514**	0.83
	(3.6)	(-0.28)	(0.61)	(4.23)	(-0.35)	(2.48)	(-0.74)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Macroeconomic and financial control variables							
GDP_{t-1}	0.92	0.85	1.17	1.232***	0.94	1.186**	1.16
	(-0.93)	(-1.44)	(1.57)	(3.1)	(-0.55)	(2.33)	(1.5)
$LEVEL_{t-1}$	1.04	1.02	0.93	0.92	1.01	0.95	0.754**
	(0.35)	(0.15)	(-0.69)	(-1.16)	(0.09)	(-0.64)	(-2.47)
$SLOPE_{t-1}$	0.98	0.96	0.772**	0.901*	0.748**	0.96	0.96
	(-0.19)	(-0.31)	(-2.3)	(-1.65)	(-2.55)	(-0.55)	(-0.36)
$SPREAD_{t-1}$	0.93	0.75	0.674**	0.94	0.78	0.758**	0.674**
	(-0.37)	(-1.38)	(-2.05)	(-0.56)	(-1.21)	(-2.22)	(-2.4)
DIV_{t-1}	0.90	1.20	1.10	1.19*	1.21	1.229*	1.22
	(-0.56)	(0.92)	(0.6)	(1.69)	(1.08)	(1.81)	(1.36)
Constant	0.015***	0.011***	0.022***	0.079***	0.019***	0.073***	0.024***
	(-17.89)	(-17.74)	(-19.35)	(-21.24)	(-18.31)	(-20.27)	(-18.43)
# of observations	5914	5914	5914	5914	5914	5914	5914
# of firms	148	111	173	463	129	362	167
Adj. R-squared	0.146	0.226	0.194	0.18	0.135	0.225	0.11

Table 8 – Impact of CSR concerns on ESG risk

This table presents the results of the estimation of model (5) where EFP is measured by CSR concerns, globally and for the seven dimensions. In Panel A, ESG risk is measured by considering event from all dimensions. In Panel B, ESG risk is measured by considering only dimension-related events. All variables are defined in section 3. For each variable, the table presents the odds ratios which are the exponentials of the logit regression coefficients estimated by the maximum likelihood method as well as the *p* values which are calculated using the Wald tests (here z-tests). The sample includes 5914 firm/year observations from 2001 to 2013. The R^2 is the McFadden adjusted pseudo R-squared. *, ** and *** indicate level of significance at the 10%, 5% and 1%, respectively.

	Panel A - All events		**Panel B - Events by dimension**						
	[1]	**[2]**	**ENV**	**COM**	**DIV**	**EMP**	**HUM**	**PRO**	**GOV**
Extra-financial performance measures									
CON_{t-1}	1.578***								
	(10.42)								
CON_ENV_{t-1}		1.00	1.369***	1.12	0.818**	0.92	0.89	0.96	0.787**
		(0)	(3.77)	(1.11)	(-2.1)	(-1.39)	(-1.07)	(-0.64)	(-2.28)
CON_COMt-1		1.077*	1.174**	1.01	0.93	1.03	1.02	0.96	1.09
		(1.71)	(2.03)	(0.13)	(-0.84)	(0.52)	(0.17)	(-0.7)	(1.06)
CON_DIVt-1		1.085**	0.98	0.96	1.271***	1.189***	1.219**	1.00	1.05
		(1.97)	(-0.28)	(-0.47)	(3.27)	(3.49)	(2.35)	(-0.01)	(0.62)
CON_EMPt-1		1.113**	1.02	1.12	1.359***	1.201***	1.322***	1.04	1.05
		(2.55)	(0.24)	(1.17)	(4.03)	(3.63)	(3.3)	(0.71)	(0.6)
CON_HUMt-1		1.103***	1.09	1.166**	1.07	1.112**	1.239***	0.95	1.05
		(2.6)	(1.31)	(2.14)	(1.02)	(2.39)	(3.17)	(-0.97)	(0.71)
CON_PRODt-1		1.435***	1.22**	1.728***	1.328***	1.281***	1.27***	1.659***	1.23**
		(8.51)	(2.44)	(5.73)	(3.6)	(4.79)	(2.66)	(8.86)	(2.54)
CON_GOVt-1		1.176***	0.96	1.09	1.09	1.189***	0.91	1.10	1.224**
		(3.75)	(-0.41)	(0.86)	(1.08)	(3.25)	(-1.01)	(1.62)	(2.51)
Company-specific control variables									
$SIZE_{t-1}$	2.377***	2.206***	1.587***	2.342***	2.71***	2.192***	2.298***	2.323***	1.99***
	(17.47)	(15.29)	(4.27)	(6.64)	(9.65)	(12.26)	(7.33)	(11.15)	(7.11)
MB_{t-1}	1.00	0.99	0.95	0.94	0.96	0.99	0.98	1.03	0.857**
	(0.03)	(-0.16)	(-0.72)	(-0.68)	(-0.5)	(-0.29)	(-0.28)	(0.61)	(-2.21)
RET_{t-1}	0.751***	0.754***	0.97	0.91	0.857*	0.717***	0.93	0.836***	0.733***
	(-6.47)	(-6.37)	(-0.27)	(-0.81)	(-1.71)	(-5.98)	(-0.73)	(-2.76)	(-3.85)
ROA_{t-1}	1.02	1.02	1.387***	1.17	1.12	0.99	1.15	0.97	0.87*
	(0.34)	(0.38)	(2.88)	(1.1)	(1.02)	(-0.16)	(1.13)	(-0.44)	(-1.88)
$LOSS_{t-1}$	1.39*	1.406*	0.77	4.683***	2.389**	2.094***	1.18	1.21	0.72
	(1.9)	(1.96)	(-0.53)	(3.85)	(2.45)	(3.65)	(0.38)	(0.72)	(-0.93)
$SIGMA_{t-1}$	1.269***	1.241***	1.01	0.88	1.11	1.237***	1.27**	1.276***	1.318***
	(4.81)	(4.26)	(0.06)	(-0.86)	(0.94)	(3.35)	(2.09)	(3.24)	(2.96)
$DTURNOVER_{t-1}$	1.02	1.03	1.07	0.97	1.10	0.98	1.11	1.09	1.09
	(0.53)	(0.69)	(0.54)	(-0.29)	(1.11)	(-0.38)	(1.16)	(1.3)	(1.23)
$CONTROVERSE_{t-1}$	1.323**	1.335**	1.968***	0.81	1.11	1.54***	0.90	1.373*	0.86
	(2.38)	(2.43)	(3.12)	(-0.79)	(0.47)	(3.04)	(-0.43)	(1.85)	(-0.61)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Macroeconomic and financial control variables									
GDP_{t-1}	1.162***	1.169***	0.91	0.86	1.186*	1.244***	0.95	1.188**	1.16
	(2.94)	(3.03)	(-0.99)	(-1.35)	(1.72)	(3.18)	(-0.46)	(2.31)	(1.52)
$LEVEL_{t-1}$	0.93	0.93	1.02	0.97	0.89	0.92	0.97	0.93	0.747**
	(-1.34)	(-1.37)	(0.15)	(-0.23)	(-1.11)	(-1.24)	(-0.3)	(-0.92)	(-2.53)
$SLOPE_{t-1}$	0.93	0.93	0.97	0.98	0.779**	0.899*	0.747**	0.96	0.97
	(-1.49)	(-1.51)	(-0.26)	(-0.14)	(-2.21)	(-1.69)	(-2.55)	(-0.54)	(-0.35)
$SPREAD_{t-1}$	0.87	0.865*	0.94	0.76	0.677**	0.96	0.79	0.766**	0.675**
	(-1.58)	(-1.66)	(-0.3)	(-1.3)	(-2)	(-0.42)	(-1.18)	(-2.11)	(-2.38)
DIV_{t-1}	1.147*	1.151*	0.89	1.14	1.06	1.18	1.18	1.21*	1.21
	(1.68)	(1.72)	(-0.63)	(0.67)	(0.34)	(1.57)	(0.91)	(1.65)	(1.3)
Constant	0.184***	0.171***	0.015***	0.011***	0.017***	0.068***	0.016***	0.065***	0.023***
	(-18.2)	(-18.19)	(-17.83)	(-17.51)	(-19.4)	(-21.49)	(-18.27)	(-20.44)	(-18.34)
# of observations	5914	5914	5914	5914	5914	5914	5914	5914	5914
# of firms	844	844	148	111	173	463	129	362	167
Adj. R-squared	0.205	0.21	0.147	0.231	0.211	0.193	0.151	0.238	0.111

Table 9 – Impact of CSR strengths on ESG risk

This table presents the results of the estimation of model (5) where EFP is measured by CSR strengths, globally and for the seven dimensions. In Panel A, ESG risk is measured by considering event from all dimensions. In Panel B, ESG risk is measured by considering only dimension-related events. All variables are defined in section 3. For each variable, the table presents the odds ratios which are the exponentials of the logit regression coefficients estimated by the maximum likelihood method as well as the *p* values which are calculated using the Wald tests (here z-tests). The sample includes 5914 firm/year observations from 2001 to 2013. The R^2 is the McFadden adjusted pseudo R-squared. *, ** and *** indicate level of significance at the 10%, 5% and 1%, respectively.

	Panel A - All events		**Panel B - Events by dimension**						
	[1]	**[2]**	**ENV**	**COM**	**DIV**	**EMP**	**HUM**	**PRO**	**GOV**
Extra-financial ratings									
STR_{t-1}	1.433***								
	(8.6)								
STR_ENVt-1		1.07	0.92	1.03	0.93	1.107*	0.82*	1.05	1.162*
		(1.56)	(-0.97)	(0.3)	(-0.86)	(1.9)	(-1.9)	(0.71)	(1.7)
STR_COMt-1		1.06	0.89	1.07	1.10	1.139**	1.10	1.00	0.99
		(1.31)	(-1.29)	(0.71)	(1.21)	(2.55)	(1.04)	(-0.09)	(-0.17)
STR_DIVt-1		1.275***	0.89	1.435***	1.47***	1.456***	1.309**	1.293***	1.177*
		(5.01)	(-1.05)	(3.18)	(4.17)	(6.25)	(2.55)	(3.72)	(1.73)
STR_EMPt-1		1.09**	1.226**	0.767**	1.05	1.139**	0.98	1.10	0.93
		(1.96)	(2.41)	(-2.38)	(0.6)	(2.4)	(-0.22)	(1.52)	(-0.79)
STR_HUMt-1		0.918**	0.98	0.97	0.798***	0.92*	0.96	0.914*	0.88
		(-2.3)	(-0.21)	(-0.39)	(-2.61)	(-1.89)	(-0.63)	(-1.72)	(-1.51)
STR_PRODt-1		1.074*	1.02	1.09	1.19***	1.106**	1.13	1.091*	1.04
		(1.82)	(0.25)	(0.98)	(2.62)	(2.21)	(1.52)	(1.69)	(0.48)
STR_GOVt-1		1.087**	1.149*	1.13	1.07	1.03	1.00	1.127**	0.94
		(1.99)	(1.78)	(1.42)	(0.94)	(0.62)	(0.03)	(2.16)	(-0.79)
Company-specific control variables									
$SIZE_{t-1}$	2.44***	2.425***	2.305***	3.165***	2.68***	2.09***	2.599***	2.477***	2.347***
	(17.73)	(17.31)	(8.21)	(9.86)	(10.41)	(11.85)	(9.19)	(12.69)	(9.11)
MB_{t-1}	0.99	0.98	0.92	0.92	0.96	0.98	0.95	1.05	0.86**
	(-0.34)	(-0.38)	(-1.05)	(-0.93)	(-0.56)	(-0.37)	(-0.57)	(0.92)	(-2.26)
RET_{t-1}	0.77***	0.766***	0.95	0.92	0.88	0.74***	0.93	0.856**	0.731***
	(-5.84)	(-5.94)	(-0.49)	(-0.63)	(-1.43)	(-5.27)	(-0.71)	(-2.4)	(-3.82)
ROA_{t-1}	0.95	0.97	1.17	1.13	1.09	0.95	1.09	0.96	0.854**
	(-0.99)	(-0.75)	(1.37)	(0.84)	(0.75)	(-0.87)	(0.66)	(-0.59)	(-2.15)
$LOSS_{t-1}$	1.425**	1.441**	0.74	4.768***	2.214**	2.094***	1.08	1.24	0.74
	(2.03)	(2.08)	(-0.58)	(3.82)	(2.2)	(3.57)	(0.16)	(0.79)	(-0.86)
$SIGMA_{t-1}$	1.32***	1.332***	0.94	0.95	1.25**	1.369***	1.338***	1.355***	1.415***
	(5.68)	(5.85)	(-0.51)	(-0.37)	(2.11)	(5.1)	(2.59)	(4.19)	(3.84)
$DTURNOVER_{t-1}$	1.02	1.01	1.13	0.95	1.07	0.93	1.12	1.08	1.09
	(0.36)	(0.31)	(0.99)	(-0.39)	(0.75)	(-1.32)	(1.17)	(1.07)	(1.14)
$CONTROVERSE_{t-1}$	1.685***	1.692***	2.601***	1.25	1.24	1.786***	1.15	1.669***	0.78
	(4.59)	(4.59)	(4.63)	(0.84)	(0.97)	(4.12)	(0.55)	(3.08)	(-1)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Macroeconomic and financial control variables									
GDP_{t-1}	1.155***	1.158***	0.91	0.86	1.16	1.229***	0.93	1.184**	1.14
	(2.83)	(2.87)	(-1.01)	(-1.34)	(1.48)	(2.99)	(-0.64)	(2.31)	(1.35)
$LEVEL_{t-1}$	0.93	0.93	1.00	1.00	0.95	0.93	1.01	0.94	0.757**
	(-1.37)	(-1.33)	(0.01)	(0)	(-0.5)	(-1)	(0.11)	(-0.82)	(-2.45)
$SLOPE_{t-1}$	0.93	0.93	0.96	0.97	0.772**	0.89*	0.758**	0.96	0.97
	(-1.41)	(-1.43)	(-0.37)	(-0.2)	(-2.28)	(-1.81)	(-2.46)	(-0.52)	(-0.35)
$SPREAD_{t-1}$	0.862*	0.853*	0.92	0.75	0.677**	0.94	0.81	0.739**	0.674**
	(-1.71)	(-1.83)	(-0.44)	(-1.37)	(-2.02)	(-0.57)	(-1.03)	(-2.43)	(-2.41)
DIV_{t-1}	1.157*	1.17*	0.92	1.18	1.10	1.208*	1.18	1.255**	1.23
	(1.8)	(1.93)	(-0.47)	(0.84)	(0.58)	(1.81)	(0.9)	(2.01)	(1.41)
Constant	0.198***	0.192***	0.016***	0.013***	0.025***	0.08***	0.022***	0.075***	0.027***
	(-17.95)	(-17.99)	(-18.2)	(-18.2)	(-19.8)	(-21.4)	(-18.78)	(-20.57)	(-18.69)
# of observations	5914	5914	5914	5914	5914	5914	5914	5914	5914
# of firms	844	844	148	111	173	463	129	362	167
Adj. R-squared	0.197	0.198	0.122	0.207	0.208	0.205	0.131	0.222	0.103

Table 10 – Impact of EFP on ESG risk for different media coverage intensities

This table presents the results of the estimation of model (6) where EFP is measured by the global extra-financial performance, *EXP-GLOBAL*, that has been classified into three categories: low EFP, medium EFP and high EFP. Model (6) is estimated for 4 specifications of the dependent variables, according to the measurement of media coverage intensity: (1) number of articles, (2) media coverage length, (3) number of words and (4) cover page article. Variables are defined in section 3. For each regression and for each level of EFP, the table presents the probability of occurrence estimated by the maximum likelihood method The sample includes 5914 firm/year observations from 2001 to 2013. The R^2 is the McFadden adjusted pseudo R-squared.

	[1] Number of articles		[2] Coverage length		[3] Number of words		[4] Cover page article
	Low	High	Low	High	Low	High	High
	1	≥ 2	< 365 days	≥ 365 days	< Median	≥ Median	≥ 1
Low EFP	7.104%	2.928%	8.526%	1.504%	5.671%	4.408%	0.871%
Medium EFP	6.768%	2.620%	8.235%	1.176%	5.389%	4.034%	0.691%
High EFP	6.445%	2.343%	7.947%	0.918%	5.118%	3.690%	0.547%
# of events	569	275	700	144	422	422	95
# of firms	244	153	264	103	212	185	61
Chi-2	975.552	975.552	982.904	982.904	978.261	978.261	174.240
prob	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Adj. R-squared	0.159	0.159	0.169	0.169	0.157	0.157	0.142