ESG Risks and the Cross-Section of Stock Returns

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Abstract

This paper finds that environmental, social, and governance (ESG) risks generate negative long-run stock returns. A value-weighted U.S. portfolio with high ESG risks exhibits a four-factor alpha of −3.5% per year, even when controlling for other risk factors, industries, or firm characteristics. The negative alpha stems from unexpected costly ESG issues and from negative earnings surprises. These findings make three contributions. First, weak corporate social responsibility destroys shareholder value. Second, stock markets fail to incorporate the consequences of intangible risks. Third, shorting firms with high ESG risks is a profitable socially responsible investment strategy.

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1. Introduction

Is corporate social responsibility (CSR) beneficial to shareholder value? This question is particularly relevant given the widespread adoption of CSR in practice. Therefore, a large body of academic research has been devoted to this question, resulting in two competing perspectives. According to one view, CSR is simply the result of an agency problem inside the firm. Proponents of this view include Friedman (1970), who argued in his famous essay that the sole social responsibility of business is to increase profits. Another view, however, puts forward that CSR does not only further social goals, but also enhance shareholder value. In line of this reasoning, Bénabou and Tirole (2010) explain that "doing well by doing good" holds because CSR strengthens the firm's strategic market position and attracts socially responsible stakeholders that are willing to exchange money for moral value.

This paper takes a different stance. Instead of analyzing whether firms do well by doing good, it asks whether doing bad destroys shareholder value. To answer this question, the paper investigates the relationship between environmental, social, and governance (ESG) risks and long-run stock returns in the United States and in Europe. It finds that a value-weighted U.S. portfolio of firms with a notable history of ESG issues is associated with significant negative abnormal stock returns from January 2009 to December 2016, with an estimated alpha of between -3.48% and -3.72% per year. A similar European portfolio exhibits significant abnormal returns of between -2.04% and -2.88% per year. The negative alphas are robust to risk factors, industries, firm characteristics, and various other robustness checks. The paper provides two explanations for the negative alphas. The first is that investors are negatively surprised when firms with high ESG risks have new ESG issues, indicating that investors underestimate the persistence of weak CSR. The second is that firms with high ESG risks have significantly weaker operating performances, more negative earnings surprises, and more negative earnings announcement returns than peers.

The data on ESG risks are provided by RepRisk, a Zurich-based company. Since January 2007, RepRisk employs a rigorous research process to identify ESG issues. Specifically, RepRisk screens many thousand information sources (e. g. print and online media, NGOs, government

bodies) on 28 predefined ESG issues, such as environmental pollution, human rights violation, or fraud. This collection of ESG issues is then used to calculate an ESG-related reputational risk exposure score, the RepRisk Index, for each firm in the sample. In this process, RepRisk distinguishes major from minor issues, based on the severity, reach, and novelty of an issue. According to RepRisk's documentation, a firm has a high ESG risk exposure when its RepRisk Index reached values of larger than 50 over the past two years, indicating that the firm had many and severe ESG issues. The portfolio described above consists of exactly these firms. Note that these firms are different from the so called "sin" firms, which are firms producing alcohol, tobacco, or gaming (Hong and Kacperczyk 2009). In fact, most firms with high ESG risks do not operate in one of the three sin industries.

To measure the impact of ESG risks on shareholder value, I study long-run stock returns for the same reasons as Edmans (2011), who analyzes the shareholder value implications of employee satisfaction. Most importantly, stock returns have less reverse causality concerns than accounting measures such as earnings. These concerns arise because a negative correlation between ESG risks and earnings might not be the result of high ESG risks leading to lower earnings, but of financially bad-performing firms taking higher ESG risks. Stock returns, in contrast, should be less affected by this problem, given that the market immediately incorporates information about the firm's profitability into the stock prices. This holds especially when a firm presents weak earnings. Negative abnormal stock returns should therefore not stem from weak earnings, but from other factors that are more difficult to measure (such as ESG risks). In addition, stock returns are the most important measure of shareholder value because they represent the actual gains and losses of shareholders. As such, they take into account all channels through which ESG risks may destroy firm value.

This paper argues that firms with high ESG risks underperform their benchmarks because of weak CSR, but the data also allow non-causal explanations such as different risk exposures. Firms may have lower stock returns because of lower firm risks. This explanation, however, is very unlikely, given that firms with high ESG risks actually have *higher* and not *lower* risks. Several robustness checks confirm that the abnormal returns of these firms are not the result of common risk factors. Another explanation for the underperformance of firms with high ESG

risks may be an omitted variable. I account for this possibility by running many robustness tests. These tests rule out that the underperformance stems from underperforming industries, negative outliers, weak profitability, weak corporate governance, or many other firm or stock characteristics. Moreover, I provide evidence of two channels through which firms with high ESG risks underperform. Both channels are consistent with the hypothesis that investors underestimate the negative consequences of high ESG risks. Taken together, it is very unlikely that my findings are spurious, albeit I cannot completely rule out this explanation.

By showing that ESG risks entail negative abnormal long-run stock returns, this paper makes three contributions. First, it demonstrates that high ESG risks destroy shareholder value, revealing an important channel through which CSR affects shareholder value. Second, it shows that the stock markets do not fully capitalize the negative consequences of intangible risks. Third, it provides a socially responsible investment (SRI) strategy that is also profitable.

With the first contribution, this paper adds to the debate on whether CSR is beneficial to firm value. This question has serious implications for managers as well as for investors. If the agency view of CSR holds, managers should only serve to their shareholders and not spend money on CSR, and investors should not invest in firms that implemented CSR. However, this paper provides evidence against this view. It shows that "doing well by doing good" holds in the sense that weak CSR results in value-destroying ESG issues over the long-run. By finding a robust negative effect of high ESG risks on long-run stock returns, this paper extends prior studies on the short-term effects of negative CSR news (e. g. Krüger 2015). It also updates earlier studies that find no significant underperformance of firms with weak CSR.[1] These studies find different results because they measure CSR with KLD scores, which have several disadvantages against RepRisk's risk exposure scores. Unlike RepRisk, KLD does not measure weak CSR by systematically searching prior ESG issues, but by investigating a large number of equal-weighted CSR criteria. As these criteria are a mixture of major and minor CSR issues, KLD scores make it difficult to identify firms that pursue value-destroying CSR practices.

[1] While some studies find no significant relationship between CSR and stock returns (e. g. Galema, Plantinga, and Scholtens 2008), others find that firms with high CSR scores have significantly higher four-factor alphas than firms with low CSR scores (e. g. Kempf and Osthoff 2007; Statman and Glushkov 2009; Borgers et al. 2013). According to the latter strand of research, socially responsible firms perform better because they outperform their benchmarks and not because firms with weak CSR scores underperform.

The negative correlation between ESG risks and long-run stock returns does not only imply that weak CSR destroys shareholder value, but also that markets misprice the consequences of ESG risks. Risks by itself are intangible. This paper thereby extends the literature on the mispricing of intangibles. Earlier studies show that markets do not fully incorporate the value of intangible assets, such as R&D (Lev and Sougiannis 1996; Chan, Lakonishok, and Sougiannis 2001), advertising (Chan, Lakonishok, and Sougiannis 2001), patent citations (Deng, Lev, and Narin 1999), and software developments (Aboody and Lev 1998). These studies explain the mispricing by markets lacking detailed information about the intangibles. Edmans (2011) and Edmans, Li, and Zhang (2016) however find that worldwide markets underestimate the value of employee satisfaction, although this intangible is documented by highly public surveys. The findings of these two papers suggest that the lack-in-information hypothesis of prior studies provides no complete explanation for the mispricing of intangibles. This paper contributes that markets do not only misprice the value of intangible assets, but also the consequences of intangible risks. ESG risks are another example of a mispriced intangible that is highly visible, because ESG risks are measured by past ESG issues that appeared in the news. These results suggest that markets misprice intangibles, even when they do not lack information about the intangible, consistent with Edmans (2011).

Under a mispricing channel, markets are unaware of the true value of an intangible. A mispriced intangible only affects stock prices when the intangible subsequently manifests in tangible outcomes (Edmans 2011). This paper provides evidence that intangible ESG risks manifest in two tangible outcomes that are valued by the markets. The first are new ESG issues. A panel regression shows that firms with high ESG risks have more ESG issues in the next year than firms with low or medium ESG risks. Although investors should expect this, they are surprised when firms with high ESG risks have new ESG issues, as indicated by negative abnormal event returns. This finding reveals that investors underestimate the probability that firms with high ESG risks have new costly ESG issues. The first channel requires that ESG risks translate into ESG issues that become public. However, many negative consequences of high ESG risks will not become public. For example, reputational losses from past ESG issues may result in less attractive contracts with suppliers, less motivated employees, or critical

customers paying lower prices for the firm's products. These consequences will manifest in unexpectedly lower profits over time, if they are not capitalized by the stock markets. The second tangible outcome are therefore negative earnings surprises. Indeed, I find that firms with high ESG risks have significantly weaker operating performances, more negative earnings surprises, and more negative earnings announcement returns than peers. Taken together, both channels explain a large size of the negative alpha of ESG risks.

The third contribution of this paper relates to the research on the link between SRI and investment performance. Although there is no clear definition on SRI, a socially responsible investor usually only chooses firms that care for their stakeholders as well as for their shareholders. The literature has devoted much attention on the investment performance of SRI strategies, with mixed results. While many studies find a zero effect (Hamilton, Jo, and Statman 1993; Kurtz 1997; Guerard 1997; Bauer, Koedijk, and Otten 2005; Schröder 2007; Galema, Plantinga, and Scholtens 2008; Statman and Glushkov 2009) or a negative effect (Geczy, Stambaugh, and Levin 2005; Brammer, Brooks, and Pavelin 2006; Renneboog, Horst, and Zhang 2008; Hong and Kacperczyk 2009), some studies find evidence that SRI improves investment performance (Derwall et al. 2005; Edmans 2011; Borgers et al. 2013; Nofsinger and Varma 2014; Eccles, Ioannou, and Serafeim 2014; Edmans, Li, and Zhang 2016; Lins, Servaes, and Tamayo 2016). Most of these studies investigate SRI strategies that avoid certain firms and invest in others. This paper contributes a new SRI strategy that is profitable, namely to short U.S. or European firms with a notable history of ESG issues. Thereby, socially responsible investors can not only put pressure on these firms to improve their CSR standards, but also earn positive abnormal stock returns. The trading strategy is relatively easy to implement, as it requires to short less than hundred large firms with high institutional ownership.[2]

The paper proceeds as follows. Section 2 outlines the theoretical framework of the paper. Section 3 describes the data and presents summary statistics. Section 4 shows the results and Section 5 provides explanations for the results. Finally, Section 6 makes conclusions.

[2]Stocks of large firms with high institutional ownership can easily be borrowed for shorting, according to D'Avolio (2002). In my sample, U.S. firms with high ESG risks have a median market capitalization of 37 billion U.S. dollars and a median institutional ownership of 57%.

2. Theory

A negative relationship between ESG risks and long-run stock returns implies that ESG risks destroy firm value and that markets do not immediately capitalize this link. Subsection 2.1 and Subsection 2.2 provide the theoretical motivation for the two hypotheses.

2.1. ESG Risks, CSR, and Firm Value

Do ESG risks destroy firm value in the long-run? Given that ESG risk is defined as the risk of incurring ESG issues, this question boils down on whether ESG issues reduce firm value. In the case of severe (and often illegal) ESG issues such as human rights violations, workplace injuries, waste problems, pollution issues, or fraud, the negative consequences on firm value are obvious, given that firms must compensate the damage and pay severe penalties. However, even if ESG issues do not have such direct consequences, they always possess strong losses for the firm's reputational capital and thereby harm firm value.

Reputational capital is an important intangible asset, by which firms signal their key characteristics to the firms' stakeholders (Fombrun and Shanley 1990). Corporate reputation helps firms to show how their products, services, jobs, and strategies differ from their competitors (Fombrun 1996). A good reputation allows firms to charge premium prices (Klein and Leffler 1981; Milgrom and Roberts 1986a), attract high-skilled employees (Stigler 1962), enhance access to capital markets (Beatty and Ritter 1986), and attract shareholders (Milgrom and Roberts 1986b). One major aspect of corporate reputation is the firm's moral dimension. By integrating not only economic but also social considerations into their corporate strategies, firms can build strong reputations (Fombrun 1996). "Doing good" especially increases stakeholder support and thereby protects firms against downside risks and enhances the firm's ability to attract opportunities for future growth (Fombrun, Gardberg, and Barnett 2000; Godfrey 2005; Gardberg and Fombrun 2006).

These theoretical arguments are underscored by empirical evidence from Krüger (2015), who finds that environmental and social issues result in negative abnormal stock returns on the days surrounding the event. Firms can reduce the risk of costly ESG issues by implementing

better CSR standards. This is intuitively reasonable, given that CSR are corporate actions that are beneficial to the firm's stakeholders, the environment, or the society (Freeman 1984). In fact, according to Bénabou and Tirole (2010), reducing the risk of ESG issues is one important channel through which CSR can increase firm value.

Besides reducing risks, Bénabou and Tirole (2010) argue that CSR can also increase long-term value by strengthening the firm's strategic market position. For example, by treating employees well, managers can increase the motivation of their employees and attract high-skilled employees, which results in positive long-run stock returns (Edmans 2011; Edmans, Li, and Zhang 2016). Another channel through which CSR can increase firm value is delegated philanthropy. As argued by Bénabou and Tirole (2010), managers also maximize shareholder value by investing in CSR on behalf of the firms' stakeholders. This holds because some stakeholders are willing to sacrifice money to further social goals. Examples of this would be: morally motivated employees choosing socially responsible firms (Besley and Ghatak 2005; Brekke and Nyborg 2008) or customers preferring higher-priced products from socially responsible firms (Servaes and Tamayo 2013; Albuquerque, Durnev, and Koskinen 2016).[3]

However, a similar impressive strand of research casts doubts on the positive relationship between CSR and firm value. Dating back to Friedman (1970), this strand of research argues that the firm's foremost goal is to maximize its profits. In that view, CSR is simply the result of an agency problem inside the firm. According to Bénabou and Tirole (2010), CSR destroys shareholder value when it is not motivated by stakeholders' demands or willingness to delegate philanthropy. Managers engage in this type of philanthropy out of many reasons. Examples include creating the popular image of a socially responsible manager, avoiding conflicts with stakeholders, or supporting charities, think tanks, or political parties to which the manager has close ties. Indeed, Cheng, Hong, and Shue (2016) and Masulis and Reza (2015) provide evidence that firms with higher levels of insider ownership (and thus less agency problems) have lower CSR scores and less corporate giving. In addition, Hong, Kubik, and Scheinkman (2012) and Cronqvist and Yu (2015) find that managers invest more in CSR when they have financial

[3]Several other notable studies also find that CSR is consistent with shareholder value: Ferrell, Liang, and Renneboog (2016) analyze a large-scale global dataset and show that well-governed firms invest in CSR in order to enhance firm value. Dimson, Karakas, and Li (2015) and Flammer (2015) demonstrate that the adoption of CSR-related shareholder proposals improves the firm's financial performance.

slack or when they have daughters. Krüger (2015) adds that shareholders react negatively to positive CSR news when the positive news does not offset a history of negative CSR news.

2.2. Mispricing of ESG Risks

Assuming that capital markets are efficient, every risk that destroys firm value will immediately be capitalized in the stock price. If, however, investors are unaware of the risk and instead react to its consequences, abnormal stock returns will follow. Two arguments explain why investors misprice ESG risks. The first is that investors may underestimate the damage resulting from past ESG issues. The second is that investors may fail to recognize that firms with high ESG risks have weak CSR practices that are highly persistent.

Turning to the first argument, investors may underestimate the damage of ESG issues, because ESG issues incur losses to the firm's reputational capital that are difficult to quantify. In general, the value of reputational capital is often underestimated, because reputational capital is an intangible asset with highly unpredictable future benefits. Several studies give evidence that investors underprice the value of intangible assets. Lev and Sougiannis (1996) and Chan, Lakonishok, and Sougiannis (2001) find that R&D capital and R&D intensity relative to market value are associated with positive abnormal returns. Similar results are found for customer satisfaction (Fornell et al. 2006), advertising (Chan, Lakonishok, and Sougiannis 2001), patent citations (Deng, Lev, and Narin 1999), and software developments (Aboody and Lev 1998). Other studies find a negative alpha when the CEO uses a corporate jet (Yermack 2006) or a positive alpha when the firm operates in "sin" industries such as tobacco, alcohol, or gambling (Hong and Kacperczyk 2009). More broadly, investors also underprice the value of good corporate governance (Gompers, Ishii, and Metrick 2003; Bebchuk, Cohen, and Ferrell 2009; Giroud and Mueller 2011) and good stakeholder relations (Edmans 2011; Edmans, Li, and Zhang 2016; Lins, Servaes, and Tamayo 2016).

The second argument for a mispricing of ESG risks is that investors may underestimate the probability that firms with high ESG risks have new ESG issues. By definition, a firm with high ESG risks had many ESG issues. A notable history of ESG issues is usually not the result of bad luck, but of weak CSR, which is highly persistent. If investors underestimate the

persistence of weak CSR and regard ESG issues as independent negative events, firms with high ESG risks will exhibit negative abnormal stock returns over the long-run.

This argument assumes that weak CSR will sustain over time. Given that no manager has an interest in pursuing weak CSR practices that destroy shareholder value, it is necessary to have a convincing argument for why firms pursue weak CSR practices. According to Bénabou and Tirole (2010), managers do not invest enough in CSR because they are short-term oriented. One reason for why managers may be tempted to reduce investments in CSR and accept higher risks in the long-run is to increase short-term profits. For example, a mining company may reduce costs by lowering environmental standards, which would increase short-term profits, but would also create the risk of an environmental issue. Another reason for short-termism are financing frictions. When highly indebted firms are confronted with negative cash flow shocks, they may reduce spending on CSR to save financial resources. However, this would create the risk of costly ESG issues over the long-run. Cohn and Wardlaw (2016) provide empirical evidence that financing frictions negatively impact investment in workplace safety and thereby lead to higher injury rates among employees.

One could argue that firms learn from past ESG issues. When a firm had many ESG issues, it may decide to improve its CSR standards in order to reduce the risk of new issues. But such changes do not happen overnight. To improve CSR, managers must analyze the causes of the ESG issues, develop strategies to prevent new issues, and implement them. Implementing better CSR practices will take months or even years, given that it may be required to train workers on workplace safety, upgrade production processes to increase efficiency, or to enhance internal governance structures. Similarly, it will take much time to improve a reputation of weak stakeholder relations, as building a strong corporate reputation is the result of following consistent policies over some time period (Dierickx and Cool 1989). The negative consequences of a notable history of ESG issues, such as a high risk of new ESG issues and a weak corporate reputation, will therefore sustain over some time. As a result, firms with high ESG risks will continue to have competitive disadvantages against peers, even when managers decide to improve CSR practices after some severe ESG issues.

3. Data

3.1. The RepRisk Index

The dataset used in this study comes from RepRisk, a Zurich-based provider of ESG risk data. RepRisk employs a rigorous research process to identify ESG issues. The research scope of RepRisk are 28 core ESG issues. These issues were chosen based on popular ESG-related international standards.[4] Appendix B provides a description of the 28 ESG issues. The dataset begins in January 2007 and contains private and public firms from all industries and countries. RepRisk does not cover a defined list of firms. Instead, RepRisk includes every firm into the sample for which it identified an ESG issue.[5]

RepRisk uses a five-step process to identify and rate ESG issues. First, RepRisk screens over 80,000 information sources on firm incidents that are related to one of the 28 ESG issues. These sources include print and online media (including local, national, and international media), NGOs, government agencies, think tanks, social media, and many other sources. To screen that many sources, RepRisk uses a variety of artificial intelligence tools, such as advanced search algorithms, semantic web-tools, or web-crawls. Second, every identified incident is checked by a 1st-level RepRisk analyst who ensures that the incident is ESG-related, meets a severity threshold, and is not a duplicate of an older incident.[6] Third, the incident is analyzed by a 2nd-level RepRisk analyst who considers the severity of the incident, the reach of the information source, and the novelty of the incident. Fourth, every incident undergoes a quality review by a RepRisk senior analyst who ensures that the second and third steps are processed according to RepRisk's rules. Fifth, the incident is quantified by the RepRisk Index, a proprietary algorithm, which measures the ESG-related reputational risk exposure of a firm.

[4] ESG standards that were considered include the World Bank Group Environmental, Health, and Safety Guidelines, the IFC Performance Standards, the Equator Principles, the OECD Guidelines for Multinational Enterprises, the ILO Conventions, and the ten principles of the UN Global Compact.

[5] Sample selection issues do not arise in the portfolio analyses. However, they may be a problem when I compare firms with high ESG risks to firms without high ESG risks (panel regressions with the *high2* dummy). I address these concerns by running the panel regressions on the full CRSP-Compustat sample. Every firm that is not included in the RepRisk sample gets a 0 in the *high2* dummy. The untabulated results are qualitatively similar to the presented results, alleviating sample selection concerns.

[6] An old ESG incident is entered again in the database when a new development of an older incident appears, when the incident appears again in a more influential information source, *or* when the incident appears again for the same company in the same country after a 6-week period.

The RepRisk Index ranges from 0 to 100. According to RepRisk's documentation, a higher number denotes a higher ESG risk: An index value between 0–25 indicates a low risk, 26–50 a medium risk, 51–75 a high risk, and 76-100 a very high risk. The index of a firm increases whenever the firm is associated with an ESG issue. How much the index increases depends on the severity, the reach, and the novelty of the issue and on the intensity of the news about the issue.[7] For example, when the RepRisk Index of a firm increases by 30 points, it indicates that the firm had one or more severe ESG issues on that day. Whenever a firm has no new ESG issues for at least two weeks, the index decays according to some strict rules.[8] To compare firms along their ESG risk exposure, RepRisk recommends using the two-year peak value of the RepRisk Index, which is the highest level of the RepRisk Index over the past two years.

Previous literature has often studied ESG risks by using data from MSCI ESG, formerly known as KLD. KLD assesses the 3,000 largest public firms in the U.S. on more than hundred binary criteria related to ESG strengths and weaknesses. At a first glance, ESG weaknesses from KLD are similar to ESG risks from RepRisk. However, the data from RepRisk has several strong advantages. The most important is that the RepRisk Index is constructed on past ESG issues that are found by systematically searching through the news. KLD, in contrast, measures CSR by checking a list of more than hundred criteria on CSR. With this approach, KLD puts much more weight on the firm's own documents, such as its annual report, its website, or its CSR report, to assess a firm's CSR profile. As a result, firms can manipulate KLD ratings more easily than the RepRisk Index. Another advantage is that RepRisk distinguishes major from minor ESG issues, whereas KLD gives each ESG weakness the same weight. This may result in the surprising outcome that a firm with no minority representation in its board has a similar KLD weakness score than a firm that paid substantial fines due to heavy pollution. Finally, RepRisk updates the RepRisk Index whenever a new ESG issue is found, which allows to study the development of ESG issues much more precisely than with annual ratings from KLD.

[7] Table IA1 of the Internet Appendix provides a detailed description of these parameters.

[8] If a firm has no new ESG issues and its RepRisk Index is larger than 25, then the index decays at a rate of 25 every two months until it reaches 25. If the firm's RepRisk Index is at or below 25 and no new ESG issues appear, then the index decays at a rate of 25 every 18 months until it reaches 0.

3.2. Descriptive Statistics

This study concentrates on U.S. stock markets. Therefore, my sample contains all public firms that are traded at the NYSE, the AMEX, or the NASDAQ.[9] I match the RepRisk dataset to the Center for Research in Security Prices (CRSP) database, to Standard and Poor's Compustat database, and to the Institutional Brokers' Estimate System (IBES) database. To ensure that the matching is correct, I calculate string similarities between matched company names and manually check all entries where the names strongly differ.

Panel A of Table 1 provides descriptive statistics for the full U.S. sample. The sample is on a firm-month level because RepRisk provides me the ESG data on a monthly level. The sample contains data on the RepRisk Index for 2,572 unique public firms from January 2007 to December 2016, which accounts to 211,617 firm-months observations. The average firm in the RepRisk sample has a median market cap of about 2 billion U.S. dollars. Its median two-year peak RepRisk Index is 24, indicating a low ESG risk exposure.

Figure 1 plots the evolution of the RepRisk Index. It shows that the RepRisk Index increased heavily between 2007 and 2015. Three explanations are possible for this trend. First, firms have had an increasing number of ESG issues, indicating that they have become less socially responsible. Second, RepRisk has constantly increased the number of information sources that it screens for ESG issues. Third, the public has paid more attention to ESG issues.

The main interest in this study are firms with high or very high ESG risks. These are firms that have a two-year peak RepRisk Index of larger than 50. Panels B and C of Table 1 show descriptive statistics for the 38 firms with high ESG risks in December 2010 and for the 95 firms with high ESG risks in December 2014. Both panels show that firms with high ESG risks are very large, with a median market cap of 37 billion U.S. dollars in December 2010 and 49 billion U.S. dollars in December 2014. Unsurprisingly, firms with high ESG risks are larger than the average firm in the sample, given that large firms are more global-oriented and gain much more public attention on ESG issues. The most common industries of the 38 firms that had high ESG risks at the end of December 2010 were petroleum and natural

[9] Following Edmans (2011), the sample includes firms with only American Depository Receipts (ADRs) in the United States, because an investor constrained to U.S. stock markets may invest in such firms. As shown later, the results are similar when excluding firms with ADRs.

gas (7 firms), banking (5), chemicals (4), computers (3), and financial brokers (3). In December 2014, the most common industries of the 95 firms with high ESG risks were banking (9 firms), pharmaceutical products (8), retail (8), business services (7), and petroleum and natural gas (7).

4. Results

4.1. Event Study

In this section, I investigate the relationship between ESG issues and short-term stock returns in the United States. This is a first check of whether ESG issues have negative effects on the firm value, as predicted in the theoretical part of this paper. To show that these issues have shareholder value implications is important because they determine the level of a firm's RepRisk Index, which is the sorting criteria in the portfolio analysis of the next subsection. If the ESG issues from RepRisk had no short-term impacts on shareholder value, it would make no sense to investigate the long-term value effects of high ESG risks.

I do not have access to the individual ESG issues. However, as previously described, an increase in the RepRisk Index reveals that the firm had one or more ESG issues, where a higher increase signals more serious issues. Every positive change in the index can therefore be regarded as an individual event. As the RepRisk Index is provided to me on a monthly basis, I do not know the exact date of an issue. The event window must thus cover all trading days of the month in which the RepRisk Index increases.

To investigate the shareholder value implications of these ESG issues, I proceed with an event study following the methodology explained by MacKinlay (1997). First, I choose all events that have a certain minimum increase in the RepRisk Index to exclude very mild events. Second, for every event, I estimate the normal stock returns of a firm in a pre-event window ranging from 299 trading days to 50 trading days prior to the event. The coefficients of the pre-event regression are estimated using either the market model or the four-factor Carhart (1997) model. Third, I use the saved coefficients from the pre-event regression to calculate the event's cumulative abnormal return (CAR) during the event window covering either 21 or 31

trading days. Fourth, I calculate a t-statistic for the CARs by solving

$$t(CAR) = \frac{\frac{1}{N}\sum_{i=1}^{N} CAR_i}{\sqrt{\frac{1}{N^2}\sum_{i=1}^{N} Var(CAR_i)}}, \tag{1}$$

where N is the number of events and $Var(CAR)$ is the variance of the residuals of the pre-event regression multiplied with the number of trading days in the event window.

Table 2 shows that the events are associated with significant negative CARs. For example, an increase in the RepRisk Index of larger than 10 points has a significant negative CAR (estimated with the market model over a centered window of 21 trading days) of 0.40%. This amounts to a shareholder value loss of approximately 37.6 million U.S. dollars per event, as a firm in the RepRisk data sample has a mean market capitalization of 9.4 billion U.S. dollars.[10] If the RepRisk Index increases at least by 30 points (indicating more severe ESG issues), then the shareholder value loss is approximately 210.8 million U.S. dollars per event. The negative CARs confirm that the ESG issues found by RepRisk have strong negative effects on the shareholder value over the short-run.

These results compare roughly to the results of Krüger (2015), who also investigates the short-term effects of environmental and social issues on shareholder value. By studying negative CSR news from KLD, he finds that these events are associated with a mean 11-day (21-day) CAR of −0.88% (−1.31%). In his sample, this amounts to an average shareholder value loss of 60.4 (89.9) million U.S. dollars per event.

4.2. Portfolio Regressions

In this section, I investigate the relationship between ESG risks and long-run stock returns in the United States, using a portfolio strategy to estimate risk-adjusted abnormal returns. Specifically, I put firms into three different portfolios based on their highest level of the RepRisk Index over the past two years. When a firm has a two-year peak level between 0–25, 26–50, or 51–100, it is sorted into the low, medium, or high ESG risk portfolio, respectively. In creating

[10] I show the mean market capitalization and not the median because larger firms have more ESG issues.

the portfolios, I closely follow RepRisk's own classification system (see the data section).[11]

Given that the sample period starts in January 2007, I create the portfolios for the first time in January 2009 and hold them for two years. Then, I reform the portfolios in January 2011 and repeat the process every two years. This procedure results in a time series of monthly portfolio returns from January 2009 to December 2016. Table 3 gives information about the number of firms that belong to the portfolios. It shows that most firms belong to the portfolios with low or medium ESG risk exposure, as only a few firms have a two-year peak RepRisk Index of larger than 50. The portfolio with high ESG risks contains 56 firms on average.[12]

To ensure that different stock returns are not the result of different risk exposure, I control for the four risk factors of Carhart (1997). The abnormal risk-adjusted returns of the three portfolios are therefore estimated by

$$R_t - Rf_t = \alpha + \beta_1 MKT_t + \beta_2 HML_t + \beta_3 SMB_t + \beta_4 MOM_t + \epsilon_t, \tag{2}$$

where α is the abnormal risk-adjusted return, R_t is the portfolio return in month t, Rf_t is the risk-free return from Ibbotson Associates, MKT_t, SMB_t, HML_t, and MOM_t are the returns on the market, size, value, and momentum factors, and ϵ_t is the error term. I obtain the risk-free rate and the four factors from Kenneth French's homepage.[13]

While the Carhart (1997) factor model is very common in the literature on finance, it may estimate biased abnormal returns for the high ESG risk portfolio. The problem is that this portfolio consists primarily of very large and global-oriented firms, as described in the data section. Due to their global footprint, these firms may have stock returns that are correlated with international stock markets. US-based asset pricing models might thus be inappropriate to capture all the systematic risk of these multinational firms (Karolyi and Stulz 2003). Rather than choosing a local or global asset pricing model a priori, I follow Bartram, Brown, and Stulz (2012) and extend the regression model stated in equation 2 by a full set of world factors

[11] Note that RepRisk also distinguishes between firms with high (51–75) and very high (76–100) ESG risks. However, as almost no firm in the sample has very high ESG risks, I merge both categories.

[12] If a firm delists, I account for delisting returns by using the delisting returns when the delisting payment date is prior to the end of the month. If the delisting payment date is after the end of the month, I aggregate the delisting return and the monthly return when both are available.

[13] See `http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/`.

(WMKT, WSMB, WHML, and WMOM) and show the results for robustness.

Table 4 shows the results for the three portfolios estimated with the four-factor U.S. model in Panel A and with the eight-factor world model in Panel B. Panel A reveals that firms with low or medium ESG risks have insignificant alphas, whereas firms with high ESG risks are associated with an equal-weighted monthly alpha of -0.62%, which is significant at the 1% level. The value-weighted monthly alpha is lower, with a value of -0.29%, but it is still significant at the 1% level. Panel B shows however that the negative alpha of the equal-weighted portfolio with high ESG risks is likely overstated. When using the eight-factor world model to estimate the abnormal returns of this portfolio, the monthly alpha shrinks to -0.34% (-4.08% annually), approximately half the size of the four-factor alpha. Nevertheless, the negative alpha remains significant at the 1% level. The value-weighted portfolio of firms with high ESG risks has a monthly eight-factor alpha of -0.31% (-3.72% annually), which is roughly similar to the alpha estimated with the four-factor U.S. model. These results give evidence that a U.S. portfolio with high ESG risks underperforms its benchmarks by about 4% per year.

4.3. Portfolio Regressions Robustness

This section provides further evidence that firms with high ESG risks have significant negative risk-adjusted stock returns. I run several robustness tests, ruling out that the negative alpha stems from industries, outliers, misspecified factor models, or from ADRs.

My first concern is that the high ESG risk portfolio has a negative alpha because of some underperforming industries. As ESG issues are concentrated among few industries, it is necessary to control for industry returns. I investigate this problem by creating an industry-matched portfolio, using the 48-industry portfolios from Fama and French (1997). Specifically, for each stock with high ESG risks, I deduct the returns of the corresponding value-weighted industry portfolio from the stock's raw returns. Then, I regress the returns of the industry-matched portfolio on the risk factors to calculate the risk-adjusted stock returns. Panel A of Table 5 reveals that the alphas of the industry-matched portfolio remain negative, however they are only significant at the 5% level when the portfolio is equal-weighted. Economically, the alphas of the portfolios range between -1.44% and -5.16% annually.

Another approach to rule out that industry correlations drive the results is to match each firm with high ESG risks to firms that have comparable characteristics except that they have low ESG risks (two-year peak RepRisk Index between 0–25). Specifically, to each target firm, I match three control firms that are in the same two-digit SIC industry and have similar firm assets and book-to-market ratios, using the Mahalanobis distance criterion.[14] Panel B of Table 5 shows the risk-adjusted stock returns of a portfolio that is long in the firms with high ESG risks and short in the matched control firms. The equal-weighted alphas range between −6.00% and −7.92% annually, whereas the value-weighted alphas are between −3.24% and −5.40% annually. The alphas are significant at the 5% level when they are estimated with the eight-factor world model, which has a higher adjusted R^2 than the four-factor U.S. model. These results show that industry correlations cannot explain the negative alpha.

An additional concern is that outliers drive the results. I test this by winsorizing the stock returns of the firms with high ESG risks at the 1% and 99% levels before creating the portfolio. Panel C of Table 5 reveals that the winsorized portfolio exhibits negative alphas that range between −3.00% and −7.20% annually. As these alphas are significant at the 5% level, I conclude that my results do not stem from outliers.

In the Internet Appendix, I proceed with further robustness tests. When estimating abnormal returns, one important concern is a misspecified factor model. I address this problem by estimating two other asset pricing models besides the baseline model. The first other model is the four-factor Carhart (1997) model extended by the betting-against-beta factor (BAB) from Frazzini and Pedersen (2014) and the liquidity factor (LIQ) from Pastor and Stambaugh (2003). Including the BAB factor is important because the equal-weighted portfolio of firms with high ESG risks consists of high-beta stocks, as indicated by the market beta of about 1.2 (see the third column of Panel A of Table 4). These high-beta stocks may explain the negative alpha of firms with high ESG risks, because high-beta stocks underperform their benchmarks (Frazzini and Pedersen 2014). The second other asset pricing model is the five-factor Fama and French (2015) model. Table IA2 of the Internet Appendix shows that the alphas estimated with the two other models are slightly less negative compared to the baseline results. Nevertheless, the

[14]The results are similar when using propensity score matching and when varying the ratio of target firms to control firms between 1:1, 1:3, and 1:5.

negative alphas remain statistically significant at the 5% level.

Finally, I rule out that my findings stem from ADRs and I ensure that my trading strategy also works with weekly returns. Panel A of Table IA3 of the Internet Appendix shows the risk-adjusted stock returns of a portfolio with high ESG risks that includes only common stocks incorporated in the United States. The abnormal returns of this portfolio remain significantly negative, confirming that my results are not driven by ADRs. Furthermore, in Panel B of Table IA3 of the Internet Appendix, I run the portfolio regressions with weekly returns. The estimates of the weekly time-series regressions indicate that firms with high ESG risks have weekly alphas that are comparable in size to their monthly alphas.

4.4. Return Panel Regressions

This section uses a different approach to rule out that the underperformance of firms with high ESG risks stems from an unknown omitted variable. Instead of forming portfolios, I use a panel regression approach to control for a broad set of firm characteristics. The panel regression is specified by

$$R_{i,t} = a_0 + a_1 X_{i,t-2} + a_2 Z_{i,t} + \theta_t + \epsilon_{i,t}, \tag{3}$$

where $R_{i,t}$ is the raw return on stock i in month t, $X_{i,t-2}$ is a measure of the ESG risk exposure of firm i at the end of month $t-2$, $Z_{i,t}$ is a vector of control variables of firm i at month t, θ_t are month dummies, and $\epsilon_{i,t}$ is the error term. The stock returns $R_{i,t}$ are winsorized at the 1% and 99% levels to account for outliers. I cluster the standard errors on the firm level and on the time level to account for unknown firm and time effects.[15] I use three different variables to measure the ESG risk of a firm: a dummy indicating whether the firm has a two-year peak RepRisk Index of higher than 50 (*high2*), the two-year peak value of the RepRisk Index (*peak2*), and the current value of the RepRisk Index (*rri*).

Following Brennan, Chordia, and Subrahmanyam (1998) and Edmans (2011), the vector of control variables includes: Variable *size* is the logarithm of the market capitalization of firm i at the end of month $t-2$. Variable *bm* is the logarithm of the firm's book-to-market

[15] I do not use the Fama and MacBeth (1973) approach to estimate the model because it is robust only against time but not against firm effects (Petersen 2009). Instead, I estimate a pooled OLS panel regression with time dummies and double-clustered standard errors, which results in very conservative standard errors.

ratio. The ratio is calculated each July based on the book and market value as of the last calendar year-end and is held constant through the following June. Variable *yield* is the ratio of dividends paid in the last fiscal year over market value at previous calendar year-end. As with the book-to-market ratio, the variable is calculated each July and is held constant for one year. Variables *ret23*, *ret46*, and *ret712* are the logarithms of the cumulative returns over months $t-2$ through $t-3$, $t-4$ through $t-6$, and $t-7$ through $t-12$, respectively. Variable *dvol* is the logarithm of the dollar trading volume of stock i in month $t-2$. Variable *prc* is the logarithm of the reciprocal of the stock price of firm i at the end of month $t-2$.

Table 6 shows the results of the panel regressions. Column 1 shows that the variable *high2* has a coefficient of -0.00336. This indicates that firms with high ESG risks have 4.03% lower stock returns per year, which is in size comparable to the negative alpha of the portfolio with high ESG risks. The coefficient is not only economically significant, but also statistically significant at the 10% level (with a t-statistic of -1.78).[16] Column 2 finds a negative correlation between the two-year peak RepRisk Index and subsequent stock returns, which is significant at the 5% level. It is also economically significant, as a one standard deviation increase in the two-year peak RepRisk Index (17) results in 1.38% lower stock returns per year. In column 3, I investigate the current value of the RepRisk Index. This variable has the advantage that I do not lose the first two years of the sample period to estimate the two-year peak RepRisk Index. The sample period is thus from March 2007 to December 2016. Again, the coefficient on the *rri* variable is highly negative and significant at the 5% level. Economically, a one standard deviation increase in the current RepRisk Index (12) results in 1.16% lower stock returns per year. These results indicate that ESG risks have a significant negative effect on the stock returns of month $t+2$, providing further evidence that the relationship is robust.

To rule out that industry correlations explain the results, I repeat the analysis with industry-adjusted stock returns. Specifically, I deduct the return of the corresponding industry from each stock return. The industry portfolios are the value-weighted 48-industry portfolios from Fama and French (1997). For brevity, I present the results in Table IA4 of the Internet Appendix.

[16] The large standard errors result from noisy stock returns, a small sample size (eight years), and substantial multicollinearity between the independent variables. Gompers, Ishii, and Metrick (2003) suffer from similar problems when they study the effect of corporate governance on stock returns (see Table XIII of their study).

The results on the variables *peak2* and *rri* are roughly similar to the results in Table 6, but the coefficient on variable *high2* is lower. With a coefficient of −0.00222, firms with high ESG risks have 2.66% lower stock returns per year. The coefficient slightly fails the hurdle of statistical significance, as indicated by the t-statistic of −1.52.

In the Internet Appendix, I further test whether corporate governance can explain the negative correlation between ESG risks and stock returns. It is important to test this, given that weak corporate governance has a negative effect on stock returns (Gompers, Ishii, and Metrick 2003) and that weak corporate governance may also be correlated with ESG risks. Firms with high ESG risks may underperform not because of their ESG risks, but because of weak corporate governance. To investigate this concern, I rely on the governance score of the KLD dataset,[17] on a dummy indicating whether the CEO is also the Chairman of the Board, and on the entrenchment index of Bebchuk, Cohen, and Ferrell (2009). Tables IA5 and IA6 of the Internet Appendix present the results. Note that all corporate governance variables are available only for a small subsample, which results in a substantial loss of power. Because of this problem, I present baseline results on the restricted sample for each governance test. The tables reveal that all corporate governance variables are insignificant. More importantly, including the governance variables into the regressions does not change the coefficients of the variables on ESG risk exposure, indicating that corporate governance does not drive the underperformance of firms with high ESG risks.

4.5. Out-Of-Sample Test

One major concern of this study is the small sample period. As RepRisk does not provide ESG data before 2007, my portfolio regressions are conducted over only eight years, from 2009 to 2016.[18] To provide evidence that my findings are not spurious results in these eight years, I run an out-of-sample test with European stock data. Fortunately, RepRisk provides ESG data not only for the United States but also for many other countries.

In creating the European portfolio with high ESG risks, I use the same procedure as with the U.S. portfolio. The European portfolio with high ESG risks contains all European firms that

[17]The KLD governance score is the difference between governance strengths and weaknesses.
[18]The first two years of the sample period are necessary to estimate the two-year peak RepRisk Index.

reached levels of larger than 50 in their RepRisk Index over the past two years.[19] The portfolio is first created in January 2009 and reformed every two years, which results in a time series of monthly portfolio returns from January 2009 to December 2016. The European portfolio with high ESG risks contains 44 firms on average.

To investigate the risk-adjusted returns of this portfolio, I regress the portfolio returns on four European risk factors (market, size, value, and momentum), which come from Kenneth French's homepage. For robustness, I regress the portfolio returns also on an eight-factor world model consisting of the four European risk factors and of four world risk factors. The world risk factors have already been used in the U.S. portfolio analysis. Panel A of Table 7 presents the equal-weighted and value-weighted alphas of the European portfolio. The regressions show negative alphas, with values of between -1.44% and -2.88% annually, indicating that European firms with high ESG risks exhibit negative long-run stock returns. The negative alphas are statistically significant when the portfolio is value-weighted.

As the portfolio contains only 44 firms on average, it is important to control for outliers. Panel B winsorizes the stock returns at the 1% and 99% levels before creating the portfolio and running the regressions. The results show that the winsorized portfolio is associated with large negative alphas ranging between -2.40% and -4.08% annually. The negative alphas are significant at the 5% level with the four-factor European model and at the 1% level with the eight-factor world model. These results indicate that the European portfolio with high ESG risks generates negative risk-adjusted returns, which are in size slightly lower than the negative returns of the corresponding U.S. portfolio. This alleviates concerns about the small sample period of this study, as it shows that the negative relationship between ESG risks and long-run stock returns holds in the United States as well as in Europe.

[19] The European sample contains every firm that is incorporated and listed in one of these countries: Austria, Belgium, Switzerland, Germany, Denmark, Spain, Finland, France, Great Britain, Greece, Ireland, Italy, Netherlands, Norway, Portugal, and Sweden. Stock returns and market capitalizations of the European stocks are obtained from Bloomberg and are converted in U.S. dollars.

5. Explanations

This paper finds that ESG risks are significantly negatively correlated with future stock returns and that this correlation is robust to risk factors, industries, and firm characteristics. This indicates that the relationship is causal, however the question remains of explaining why firms with high ESG risks have a negative alpha. My explanation for these results is that stock markets underestimate the negative consequences of high ESG risks. Investors do not trade on intangible risks, but rather on the tangible outcomes of these risks.

This section provides evidence for two tangible outcomes that are valued by the stock markets. The first are unexpected ESG issues. Subsection 5.1 addresses this channel by investigating whether investors are surprised when firms with high ESG risks have new ESG issues. The second tangible outcome are lower earnings. Subsection 5.2 considers the second channel by analyzing earnings surprises and earnings announcement returns.

5.1. Unexpected ESG Issues

ESG risks by itself do not cost money. However, if these risks subsequently translate into costly ESG issues, then they will reduce shareholder value. This section investigates whether weak CSR practices are persistent, i. e. whether firms with many prior ESG issues have more ESG issues in the future than firms with low ESG risks. If investors are not aware of this persistence, firms with high ESG risks will have negative abnormal stock returns.

To analyze whether weak CSR is persistent, I regress the ESG issues of one year on lagged measures of the firm's ESG risk exposure. As done before, I treat every increase in the RepRisk Index as different ESG issues. The annual sum of the positive changes in the RepRisk Index indicates the overall amount of ESG issues in a year. Formally, I estimate the following equation by a pooled OLS regression

$$log(Issues_{i,t} + 1) = b_0 + b_1 X_{i,t-1} + b_2 Z_{i,t-1} + \eta_j + \theta_t + \epsilon_{i,t}, \tag{4}$$

where $Issues_{i,t}$ are the sum of all increases in the RepRisk Index of firm i in year t, $X_{i,t-1}$ is a measure of ESG risk exposure (either variable *high2*, *peak2*, or *rri*) of firm i in year $t-1$, $Z_{i,t-1}$

is a vector of control variables, η_i are two-digit SIC industry dummies, θ_t are year dummies, and $\epsilon_{i,t}$ is the error term. I take the natural logarithm of variable $Issues_{i,t}$ because it is highly skewed to the right. Note that variable $Issues_{i,t}$ is zero when a firm has no ESG issues in year t. The control variables include variables that may affect CSR, such as total book assets, book-to-market, return on assets, dividends, cash holdings, leverage, capital expenditures, tangible assets, R&D expenditures, firm age, and S&P 500 membership.

Table 8 presents the results of this analysis. It shows that every measure of ESG risk exposure is positive and significant at the 1% level. Column 1 shows that the coefficient on variable *high2* is 0.2615, indicating that a firm's RepRisk Index increases at a 30% higher rate over the next year when the firm had many ESG issues in the last two years. Similarly, columns 2 and 3 show that ESG risks are positively correlated with future increases in the RepRisk Index. These results show that firms with high ESG risks have more ESG issues in the next year than peers. This suggests that a notable history of ESG issues is not the result of bad luck, but instead of weak CSR practices that are highly persistent.

Rational stock markets will expect that ESG risks subsequently manifest in ESG issues and value the stock price accordingly. Investors of firms with high ESG risks should therefore not be surprised when these firms have new ESG issues. If investors, however, underestimate the persistence of weak CSR, they will be negatively surprised by new ESG issues. I investigate this hypothesis by estimating the cumulative abnormal returns of ESG issues that happen at firms with high ESG risks. Negative abnormal event returns would indicate that investors are negatively surprised by these issues.

Table 9 presents the results of the event study. The event study is similar to the one shown in Table 2 except that I only consider ESG issues at firms that had a two-year peak RepRisk Index of larger than 50 in the second month before the event.[20] To impact the influence of outliers in the small sample, I delete events with very large CARs (at the 1% and 99% percentiles). The results show that the ESG issues of firms with high ESG risks are associated with negative CARs, which range between -0.31% and -0.76% per event. The negative CARs

[20] In this event study, I investigate primarily small increases in the RepRisk Index. The reason for this is that RepRisk takes into account when firms had many ESG issues. Firms with high ESG risks are less sensitive to new issues. As a result, even small index increases indicate severe issues.

are statistically significant when the CARs are estimated with the market model. With the four-factor Carhart (1997) model, four of the six event studies show significant negative CARs. The abnormal returns indicate that investors are negatively surprised when firms with high ESG risks have new ESG issues, indicating that stock markets underestimate the persistence of weak CSR. Stock markets misprice the consequences of ESG risks and react only when the intangible risks manifest in tangible ESG issues. This is the first channel explaining why firms with high ESG risks have negative alphas.

How much of the alpha is explained by this channel? The event study shows that an increase in the RepRisk Index of equal or larger than 5 (indicating severe issues) is associated with a mean 21-day CAR of -0.57%, when using the market model to estimate the CARs. The sample includes 6,005 firm-month observations with a two-year peak RepRisk Index of larger than 50. With 959 observations being an event, a firm with high ESG risks has 1.9 events per year on average. Therefore, the abnormal returns of unexpected ESG issues account for -1.08% per year, which explains about one third of the negative alpha of the portfolio with high ESG risks.

5.2. Earnings Announcements

The previous subsection has shown that ESG risks translate into new ESG issues that become public. This section argues that high ESG risks also have negative consequences that do not become public. As discussed previously, a notable history of ESG issues could result in reputational losses resulting in less attractive contracts with suppliers, less motivated employees depressing productivity, or critical customers paying lower prices for the firm's products. These negative consequences will likely not become public, but they will manifest in lower earnings over time. If the lower earnings are unexpected by the stock markets, shareholders will put downward pressure on the stock price when the lower earnings are revealed.

I first investigate whether ESG risks have negative consequences on the firm's operating performance in the next year. Under a mispricing channel, intangible ESG risks will result in tangible outcomes such as lower profits. I test this prediction by estimating the following model

by a pooled OLS regression

$$M'_{i,t} = c_0 + c_1 X_{i,t-1} + c_2 Z_{i,t-1} + \eta_j + \theta_t + \epsilon_{i,t}, \tag{5}$$

where $M'_{i,t}$ is an industry-adjusted measure of operating performance of firm i in fiscal year t, $X_{i,t-1}$ is a measure of ESG risk exposure (either variable *high2*, *peak2*, or *rri*) of firm i in fiscal year $t-1$, $Z_{i,t-1}$ is a vector of control variables, η_i are two-digit SIC industry dummies, θ_t are year dummies, and $\epsilon_{i,t}$ is the error term. I measure operating performance with four different ratios: return on equity (ROE), one-year sales growth (Growth), net profit margin (NPM), and return on assets (ROA).[21] Following Gompers, Ishii, and Metrick (2003), I adjust the operating performance measures by deducting the industry median in a given Fama and French (1997) 48-industry and year and by winsorizing them at the 5% and 95% levels to minimize the impact of outliers. The control variables are the total book assets, book-to-market ratio, leverage, capital expenditures, tangible assets, R&D expenditures, firm age, and S&P 500 membership.

Table 10 regresses the operating performance measures on the lagged *high2* dummy. The coefficient of the dummy is negative in all models and statistically significant in three of the four models. These results indicate that a firm with many prior ESG issues has a significant weaker operating performance in the next year, suggesting that high ESG risks do in fact manifest in lower profits. The results on the ESG risk measures *peak2* and *rri* are presented in Tables IA7 and IA8 of the Internet Appendix. Both variables show qualitatively similar results.

A weaker operating performance will only result in negative abnormal stock returns, if it is unexpected by the markets. Following Core, Guay, and Rusticus (2006) and Giroud and Mueller (2011), I investigate earnings surprises by estimating the pooled OLS regression

$$Surprise_{i,t} = d_0 + d_1 X_{i,t-1} + d_2 Z_{i,t-1} + \eta_j + \theta_t + \epsilon_{i,t}, \tag{6}$$

where $Surprise_{i,t}$ is the one-year earnings surprise of firm i at fiscal year t, $X_{i,t-1}$ is an ESG risk variable (either variable *high2*, *peak2*, or *rri*) measured at the end of fiscal year $t-1$, $Z_{i,t-1}$

[21] The operating performance measures are calculated as follows: ROE is the ratio of net income over the sum of common equity and deferred taxes, Growth is the ratio of sales over sales from the previous fiscal year, NPM is the ratio of net income over sales, and ROA is the ratio of net income over total book assets.

is a vector of control variables, η_i are two-digit SIC industry dummies, θ_t are year dummies, and $\epsilon_{i,t}$ is the error term. The one-year earnings surprise is calculated as the difference between the actual earnings per share for fiscal year t and the median IBES analyst forecast, scaled by the stock price at the end of fiscal year t. Following the literature, I remove all observations that have a forecast error of larger than 10% of the stock price.[22] The consensus forecast is measured eight months prior to the end of the fiscal year. ESG risk exposure is measured twelve months prior to the end of the fiscal year, i. e. four months before the analysts make their estimates. This ensures that analysts have enough time to gain information about a firm's ESG risk exposure before they estimate the earnings. The control variables are the logarithm of the market capitalization and the logarithm of the book-to-market ratio.

Table 11 presents the results. Column 1 shows that the coefficient on variable *high2* is negative and significant at the 1% level, indicating that analysts overestimate the earnings of firms with high ESG risks. Columns 2 and 3 reveal that the two-year peak value and the current value of the RepRisk Index are also significantly negative. The negative earnings surprises indicate that analysts underestimate the negative consequences of ESG risks.[23]

Next, I investigate the stock price consequences of the negative earnings surprises. For each quarterly earnings announcement, I calculate the three-day (t_{-1}, t_0, t_{+1}) cumulative abnormal return in excess of a market model. Following Edmans (2011), the market model is estimated on a pre-event window ranging from 300 trading days to 46 trading days prior to the event. To account for outliers, I winsorize the CARs at the 1% and 99% levels. Using a similar regression model as in the previous analysis, I regress the estimated abnormal returns on an ESG risk variable, on firm controls, and on year dummies. All independent variables are measured twelve months before the quarterly earnings announcement. The control variables are the logarithm of the market capitalization and the logarithm of the book-to-market ratio.

Table 12 shows the results of this analysis. Columns 2 and 3 find that variables *peak2* and *rri* are negatively correlated with the abnormal earnings announcement returns. The correlations however are not significant, which is likely the result of noisy estimated abnormal returns.

[22] See e. g. Lim (2001), Teoh and Wong (2002), or Giroud and Mueller (2011).

[23] The results are similar when I restrict the analysis to firms with a minimum of five analysts or when I use mean earnings surprises instead of median earnings surprises.

Nevertheless, column 1 shows that the coefficient on variable *high2* is negative and significant at the 5% level, indicating that firms with high ESG risks have lower earnings announcement returns than firms with low or medium ESG risks. The abnormal returns of the earnings announcements amount to −0.43% per quarter or −1.72% per year, explaining about half the size of the negative alpha of the portfolio with high ESG risks. This is the second channel through which ESG risks generate negative abnormal stock returns.[24]

6. Conclusions

This paper studies the effect of ESG risks on shareholder value, using a risk metric from RepRisk that measures a firm's risk exposure to ESG issues. A firm has high ESG risks when it has a notable history of ESG issues. This paper shows that a portfolio of these firms generates negative stock returns in the United States and in Europe, even when controlling for risk factors, industries, or firm characteristics. These results provide evidence that weak CSR destroys firm value by increasing the risk of new ESG issues. This finding contributes to a large debate on whether CSR is beneficial to shareholder value, because it provides empirical evidence for the often-claimed hypothesis of "doing well by doing good". Doing well by doing good holds in the sense that doing bad destroys shareholder value.

Negative abnormal stock returns on ESG risks imply that markets do not fully incorporate the negative consequences of intangible risks into stock valuations. Thereby, this finding is also related to the literature about markets mispricing intangibles. A substantial literature finds evidence that markets underestimate the value of intangible assets. Under a mispricing channel, an intangible only affects stock returns when it manifests in tangible outcomes. This paper shows that stock markets learn about the negative consequences of ESG risks through new ESG issues and through negative earnings surprises. The second contribution is therefore that markets do not only misprice the value of intangible assets (as shown by prior studies), but also underestimate the negative consequences of intangible risks such as ESG risks. Finally, the third contribution of this paper is a profitable socially responsible investment strategy. By

[24] In untabulated robustness checks, I find similar results when using a five-day event window instead of a three-day event window or when using the Carhart (1997) four-factor model instead of the market model to estimate the normal returns during the pre-event window.

shorting firms with a notable history of ESG issues, socially responsible investors can earn positive abnormal stock returns and put pressure on these firms to improve their CSR standards. This contrasts prior findings in the literature that SRI has a zero or even a negative effect on the investment performance.

Appendix A Variables Description

Variable	Description
high2	A dummy indicating whether a firm's RepRisk Index reached values of larger than 50 over the past two years.
peak2	The two-year peak value of the RepRisk Index.
rri	The current value of the RepRisk Index.
size	The natural log of the stock's market capitalization from CRSP in billions.
bm	The natural log of the book-to-market ratio. Book value is the sum of book common equity (Compustat item 60) and deferred taxes (Compustat item 74) from the most recent fiscal year before calendar year-end. Market value is price multiplied with shares outstanding (from CRSP) measured at calendar year-end.
yield	The ratio of common dividends (Compustat item 21) in the fiscal year over market capitalization measured at calendar year-end.
retX	The natural log of the cumulative stock returns over months t_2-t_3 (ret23), months t_4-t_6 (ret46), and months t_7-t_{12} (ret712) from CRSP.
dvol	The natural log of the dollar trading volume from CRSP in millions.
price	The natural log of the reciprocal of the stock price from CRSP.
assets	The natural log of the total book assets (Compustat item 6).
btm	The book-to-market ratio measured at fiscal year-end. It is calculated as the ratio of the common equity (Compustat item 60) plus deferred taxes (Compustat item 74) over the market value of common stock (Compustat items 24×25).
roa	The ratio of net income (Compustat item 172) over total book assets.
dividends	The ratio of common dividends (Compustat item 21) over total book assets.
cash	The ratio of cash holdings (Compustat item 1) over total book assets.
leverage	The sum of the long-term debt (Compustat item 9) and current debt (Compustat item 34) over total book assets.
capex	The ratio of capital expenditures (Compustat item 128) over total book assets.
ppe	The ratio of total net property, plant, and equipment (Compustat item 8) over total book assets.
rd	The ratio of research and development expenditures (Compustat item 46) over total book assets.
age	The natural log of the time in years since the stock first appeared in CRSP.
sp500	A dummy indicating whether a firm is a member of the S&P 500.
Xmiss	A dummy indicating whether a variable is missing in Compustat.

Appendix B ESG Issues Description

Environmental Issues

- Impacts on ecosystem/landscapes, such as contamination of groundwater, forests, rivers, or seas, deforestation, or impacts on wildlife.
- Global pollution and climate change, which includes atmospheric pollution and criticism related to climate change, carbon, and other greenhouse gas emissions.
- Local pollution, which is pollution into local air, water, and soil.
- Overuse and wasting of resources, which includes inefficient use or waste of renewable or non-renewable resources, such as water, energy, or commodities.
- Waste issues, such as inappropriate disposal or handling of waste.
- Animal mistreatment, which includes torture, mistreatment or abuse of animals, through experiments, husbandry, or trophy hunting.

Social Issues

- Impacts on communities, such as land or water-grabbing, negative impacts on a community's livelihood or employment opportunities, relocation of communities, safety impacts, or access to lifesaving drugs.
- Human rights abuses and corporate complicity, such as violence against humans, human trafficking, organ trafficking, privatization of water sources, supporting oppressive regimes, or supporting terrorist organizations.
- Local participation issue, which arises when local communities or individuals are not consulted about the firm's activities or when they do not benefit appropriately, and when critics are silenced by unethical tactics.
- Social discrimination, which refers to treating people differently because of certain characteristics, such as gender, racial, ethnic, or religious.
- Child labor, which also includes child prostitution, pornography, and trafficking.
- Forced labor, such as bonded labor, prison labor, exploitative practices, restrictions on freedom of movement, or withholding of wages.
- Occupational health and safety issues, such as lack of safety for employees at work or negligence resulting in work-related accidents.
- Poor employment conditions, such as "slave-like" working conditions, issues to labor contracts or pay, or spying on employees.

Social Issues (continued)

- Freedom of association and collective bargaining, which refers to violations of workers' rights to organize and collectively bargain.
- Discrimination in employment, which is social discrimination against employees.

Governance Issues

- Corruption, bribery, extortion and money laundering, which includes slush funds, aggressive lobbying, and overcharging nepotism.
- Fraud, which are intentional deceptions made for personal gain or damage to another individual, including counterfeiting, false advertising, misleading investors, or stock price manipulations.
- Tax evasion, such as not paying taxes by illegal means, but also the use of tax havens.
- Tax optimization, which are non-illegal practices of minimizing tax liability.
- Anti-competitive practices, which are practices that prevent, reduce, or manipulate competition in markets, such as bid-rigging, dumping, exclusive dealing, or price fixing.
- Executive compensation issues, such as excessive salaries or bonuses.
- Misleading communication, such as "greenwashing", false advertising, off-label marketing, or "astroturfing".

Supplementary Issues

- Products and services issues resulting in health or environmental damage, such as toxic or dangerous products, contaminated food, and medical treatments with unintended health consequences.
- Controversial products and services, which refers to the sale of products or services that provoke strong disagreement or disapproval (e. g. alcohol, weapons, gambling).
- Supply chain issues, which refers to problems at suppliers, vendors, or subcontractors.
- Violation of international standards, set by international governmental organizations or treaties with a global nature and international customary law.
- Violation of national legislation, which refers to the violation of national and state legislation related to environmental, social, and governance issues.

References

Aboody, David and Baruch Lev (1998). "The value relevance of intangibles: The case of software capitalization." *Journal of Accounting Research* 36, 161–191.

Albuquerque, Rui, Art Durnev, and Yrjö Koskinen (2016). "Corporate social responsibility and firm risk: Theory and empirical evidence." Working paper.

Bartram, Söhnke M., Gregory Brown, and René M. Stulz (2012). "Why are U.S. stocks more volatile?" *Journal of Finance* 67 (4), 1329–1370.

Bauer, Rob, Kees Koedijk, and Rogér Otten (2005). "International evidence on ethical mutual fund performance and investment style." *Journal of Banking & Finance* 29 (7), 1751–1767.

Beatty, Randolph P. and Jay R. Ritter (1986). "Investment banking, reputation, and the underpricing of initial public offerings." *Journal of Financial Economics* 15 (1-2), 213–232.

Bebchuk, Lucian, Alma Cohen, and Allen Ferrell (2009). "What matters in corporate governance?" *Review of Financial Studies* 22 (2), 783–827.

Bénabou, Roland and Jean Tirole (2010). "Individual and corporate social responsibility." *Economica* 77 (305), 1–19.

Besley, Timothy and Maitreesh Ghatak (2005). "Competition and incentives with motivated agents." *American Economic Review* 95 (3), 616–636.

Borgers, Arian, Jeroen Derwall, Kees Koedijk, and Jenke Ter Horst (2013). "Stakeholder relations and stock returns: on errors in investors' expectations and learning." *Journal of Empirical Finance* 22, 159–175.

Brammer, Stephen, Chris Brooks, and Stephen Pavelin (2006). "Corporate social performance and stock returns: UK evidence from disaggregate measures." *Financial Management* 35 (3), 97–116.

Brekke, Kjell Arne and Karine Nyborg (2008). "Moral hazard and moral motivation: Corporate social responsibility as labor market screening." *Resource and Energy Economics* 30 (4), 509–526.

Brennan, Michael J., Tarun Chordia, and Avanidhar Subrahmanyam (1998). "Alternative factor specifications, security characteristics, and the cross-section of expected stock returns." *Journal of Financial Economics* 49 (3), 345–373.

Carhart, Mark M. (1997). "On persistence in mutual fund performance." *Journal of Finance* 52 (1), 57–82.

Chan, Louis K. C., Josef Lakonishok, and Theodore Sougiannis (2001). "The stock market valuation of research and development expenditures." *Journal of Finance* 56 (6), 2431–2456.

Cheng, Ing-Haw, Harrison Hong, and Kelly Shue (2016). "Do managers do good with other people's money?" Working paper.

Cohn, Jonathan B. and Malcolm I. Wardlaw (2016). "Financing constraints and workplace safety." *Journal of Finance* 71 (5), 2017–2058.

Core, John E., Wayne R. Guay, and Tjomme O. Rusticus (2006). "Does weak governance cause weak stock returns? An examination of firm operating performance and investors' expectations." *Journal of Finance* 61 (2), 655–687.

Cronqvist, Henrik and Frank Yu (2015). "Shaped by their daughters: executives, female socialization, and corporate social responsibility." *Journal of Financial Economics*. Forthcoming.

D'Avolio, Gene (2002). "The market for borrowing stock." *Journal of Financial Economics* 66 (2–3), 271–306.

Deng, Zhen, Baruch Lev, and Francis Narin (1999). "Science and technology as predictors of stock performance." *Financial Analysts Journal* 55 (3), 20–32.

Derwall, Jeroen, Nadja Guenster, Rob Bauer, and Kees Koedijk (2005). "The eco-efficiency premium puzzle." *Financial Analysts Journal* 61 (2), 51–63.

Dierickx, Ingemar and Karel Cool (1989). "Asset stock accumulation and sustainability of competitive advantage." *Management Science* 35 (12), 1504–1511.

Dimson, Elroy, Oguzhan Karakas, and Xi Li (2015). "Active ownership." *Review of Financial Studies* 28 (12), 3225–3268.

Eccles, Robert G., Ioannis Ioannou, and George Serafeim (2014). "The impact of corporate sustainability on organizational processes and performance." *Management Science* 60 (11), 2835–2857.

Edmans, Alex (2011). "Does the stock market fully value intangibles? Employee satisfaction and equity prices." *Journal of Financial Economics* 101 (3), 621–640.

Edmans, Alex, Lucius Li, and Chendi Zhang (2016). "Employee satisfaction, labor market flexibility, and stock returns around the world." Working paper.

Fama, Eugene F. and Kenneth R. French (1997). "Industry costs of equity." *Journal of Financial Economics* 43 (2), 153–193.

Fama, Eugene F. and Kenneth R. French (2015). "A five-factor asset pricing model." *Journal of Financial Economics* 116 (1), 1–22.

Fama, Eugene F. and James D. MacBeth (1973). "Risk, return, and equilibrium." *Journal of Political Economy* 81 (3), 607–636.

Ferrell, Allen, Hao Liang, and Luc Renneboog (2016). "Socially responsible firms." *Journal of Financial Economics* 122 (3), 585–606.

Flammer, Caroline (2015). "Does corporate social responsibility lead to superior financial performance? A regression discontinuity approach." *Management Science* 61 (11), 2549–2568.

Fombrun, C. and M. Shanley (1990). "What's in a name? Reputation building and corporate strategy." *Academy of Management Journal* 33 (2), 233–258.

Fombrun, Charles (1996). "Reputation." Boston.

Fombrun, Charles J., Naomi A. Gardberg, and Michael L. Barnett (2000). "Opportunity platforms and safety nets: Corporate citizenship and reputational risk." *Business and Society Review* 105 (1), 85–106.

Fornell, Claes, Sunil Mithas, Forrest V. Morgeson III, and Mayuram S. Krishnan (2006). "Customer satisfaction and stock prices: High returns, low risk." *Journal of Marketing* 70 (1), 3–14.

Frazzini, Andrea and Lasse Heje Pedersen (2014). "Betting against beta." *Journal of Financial Economics* 111 (1), 1–25.

Freeman, R. Edward (1984). "Strategic management: A stakeholder approach." Boston.

Friedman, Milton (1970). "The social responsibility of business is to increase its profits." *New York Times Magazine*. September 13, 1970, 122–126.

Galema, Rients, Auke Plantinga, and Bert Scholtens (2008). "The stocks at stake: Return and risk in socially responsible investment." *Journal of Banking & Finance* 32 (12), 2646–2654.

Gardberg, Naomi A. and Charles J. Fombrun (2006). "Corporate citizenship: Creating intangible assets across institutional environments." *Academy of Management Review* 31 (2), 329–346.

Geczy, Christopher C., Robert F. Stambaugh, and David Levin (2005). "Investing in socially responsible mutual funds." Working paper, University of Pennsylvania.

Giroud, Xavier and Holger M. Mueller (2011). "Corporate governance, product market competition, and equity prices." *Journal of Finance* 66 (2), 563–600.

Godfrey, Paul C. (2005). "The relationship between corporate philanthropy and shareholder wealth: A risk management perspective." *Academy of Management Review* 30 (4), 777–798.

Gompers, Paul A., Joy L. Ishii, and Andrew Metrick (2003). "Corporate governance and equity prices." *Quarterly Journal of Economics* 118 (1), 107–156.

Guerard, John Baynard (1997). "Is there a cost to being socially responsible in investing?" *Journal of Forecasting* 16 (7), 475–490.

Hamilton, Sally, Hoje Jo, and Meir Statman (1993). "Doing well while doing good? The investment performance of socially responsible mutual funds." *Financial Analysts Journal* 49 (6), 62–66.

Hong, Harrison and Marcin Kacperczyk (2009). "The price of sin: The effects of social norms on markets." *Journal of Financial Economics* 93 (1), 15–36.

Hong, Harrison, Jeffrey D. Kubik, and José Scheinkman (2012). "Financial constraints on corporate goodness." Working paper, Princeton University.

Karolyi, G. Andrew and René M. Stulz (2003). "Are financial assets priced locally or globally?" *Handbook of the economics of finance. Volume 1B*. Ed. by George M. Constantinides, Milton Harris, and René M. Stulz. 1st ed. Amsterdam and Boston, 975–1020.

Kempf, Alexander and Peer Osthoff (2007). "The effect of socially responsible investing on portfolio performance." *European Financial Management* 13 (5), 908–922.

Klein, Benjamin and Keith B. Leffler (1981). "The role of market forces in assuring contractual performance." *Journal of Political Economy* 89 (4), 615–641.

Krüger, Philipp (2015). "Corporate goodness and shareholder wealth." *Journal of Financial Economics* 115 (2), 304–329.

Kurtz, Lloyd (1997). "No effect, or no net effect? Studies on socially responsible investing." *Journal of Investing* 6 (4), 37–49.

Lev, Baruch and Theodore Sougiannis (1996). "The capitalization, amortization, and value-relevance of R&D." *Journal of Accounting and Economics* 21 (1), 107–138.

Lim, Terence (2001). "Rationality and analysts' forecast bias." *Journal of Finance* 56 (1), 369–385.

Lins, Karl V., Henri Servaes, and Ane Tamayo (2016). "Social capital, trust, and firm performance: The value of corporate social responsibility during the financial crisis." *Journal of Finance*. Forthcoming.

MacKinlay, A. Craig (1997). "Event studies in economics and finance." *Journal of Economic Literature* 35 (1), 13–39.

Masulis, Ronald W. and Syed Walid Reza (2015). "Agency problems of corporate philanthropy." *Review of Financial Studies* 28 (2), 592–636.

Milgrom, Paul and John Roberts (1986a). "Price and advertising signals of product quality." *Journal of Political Economy* 94 (4), 796–821.

Milgrom, Paul and John Roberts (1986b). "Relying on the information of interested parties." *RAND Journal of Economics* 17 (1), 18–32.

Newey, Whitney K. and Kenneth D. West (1987). "A simple, positive semi-definite, heteroskedasticity and autocorrelation consistent covariance matrix." *Econometrica* 55 (3), 703–708.

Nofsinger, John and Abhishek Varma (2014). "Socially responsible funds and market crises." *Journal of Banking & Finance* 48, 180–193.

Pastor, Lubos and Robert F. Stambaugh (2003). "Liquidity risk and expected stock returns." *Journal of Political Economy* 111 (3), 642–685.

Petersen, Mitchell A. (2009). "Estimating standard errors in finance panel data sets: Comparing approaches." *Review of Financial Studies* 22 (1), 435–480.

Renneboog, Luc, Jenke Ter Horst, and Chendi Zhang (2008). "Socially responsible investments: Institutional aspects, performance, and investor behavior." *Journal of Banking & Finance* 32 (9), 1723–1742.

Schröder, Michael (2007). "Is there a difference? The performance characteristics of SRI equity indices." *Journal of Business Finance & Accounting* 34 (1–2), 331–348.

Servaes, Henri and Ane Tamayo (2013). "The impact of corporate social responsibility on firm value: The role of customer awareness." *Management Science* 59 (5), 1045–1061.

Statman, Meir and Denys Glushkov (2009). "The wages of social responsibility." *Financial Analysts Journal* 65 (4), 33–46.

Stigler, George J. (1962). "Information in the labor market." *Journal of Political Economy* 70 (5, Part 2), 94–105.

Teoh, Siew Hong and Tak Jun Wong (2002). "Why new issues and high-accrual firms underperform: The role of analysts' credulity." *Review of Financial Studies* 15 (3), 869–900.

Thompson, Samuel B. (2011). "Simple formulas for standard errors that cluster by both firm and time." *Journal of Financial Economics* 99 (1), 1–10.

Yermack, David (2006). "Flights of fancy. Corporate jets, CEO perquisites, and inferior shareholder returns." *Journal of Financial Economics* 80 (1), 211–242.

Table 1: Descriptive statistics

The table presents the mean, median, standard deviation (std), 10%-quantile (st10), 90%-quantile (st90), and the number of observations (Obs) of the firm-month observations that are included in the U.S. sample. Panel A shows the full sample, Panel B shows all firms with high ESG risks in December 2010, and Panel C shows all firms with high ESG risks in December 2014. A firm has high ESG risks when the peak value of the RepRisk Index was larger than 50 over the past two years.

Panel A: Full sample from January 2007 to December 2016

Variable	Mean	Median	Std	St10	St90	Obs
Current RepRisk Index	9.228	0	12.283	0	25	211,617
2-Year Peak RepRisk Index	19.554	24	16.904	0	40	170,480
Market Cap	9.401	2.001	27.975	0.163	20.175	211,617
Book Assets	26.982	2.890	146.056	0.245	36.261	203,281
Book-to-Market	0.606	0.500	0.962	0.137	1.216	189,835
Dividend Yield	0.095	0.006	2.011	0	0.058	201,958
Stock Price	123.387	26.400	3,687.403	4.830	74.300	211,617

Panel B: Firms with high ESG risks in December 2010

Variable	Mean	Median	Std	St10	St90	Obs
Current RepRisk Index	43.079	44.500	13.797	23.400	58.300	38
2-Year Peak RepRisk Index	58.211	58	5.241	51	64.600	38
Market Cap	70.501	37.399	85.306	5.709	171.169	38
Book Assets	434.313	66.325	731.270	10.158	1,909.249	38
Book-to-Market	0.589	0.509	0.364	0.226	0.913	34
Dividend Yield	0.110	0.015	0.237	0.0003	0.333	37
Stock Price	56.668	50.305	54.328	14.838	91.863	38

Panel C: Firms with high ESG risks in December 2014

Variable	Mean	Median	Std	St10	St90	Obs
Current RepRisk Index	43.284	48	15.170	24	60	95
2-Year Peak RepRisk Index	58.316	57	5.332	52	65	95
Market Cap	83.436	49.200	106.356	1.902	205.747	95
Book Assets	261.024	77.478	550.518	8.695	656.560	91
Book-to-Market	0.575	0.429	0.498	0.113	1.264	82
Dividend Yield	0.165	0.025	0.479	0	0.430	90
Stock Price	72.894	54.820	81.279	15.576	113.872	95

Table 2: RepRisk event study

The table presents the results of several event studies. Each row is a different event study. An event is a positive change in the RepRisk Index of a firm, as an increase indicates that the firm had one or more ESG issues in that month. The columns show the minimum increase in the RepRisk Index (reprisksmin), the length of the event window (twindow), the model used to estimate the abnormal returns (model), the number of events (events), the mean of the cumulative abnormal returns (car), and the t-statistic (t). The events happen between January 2007 and December 2016. The sample includes events from all firms that are traded at U.S. stock markets.

Panel A: Abnormal returns estimated with the market model

reprisksmin	twindow	model	events	car	t
reprisks(>=10)	[-10;+10]	market	6104	-0.402	-2.88***
reprisks(>=10)	[-15;+15]	market	6091	-0.468	-2.76***
reprisks(>=20)	[-10;+10]	market	3017	-0.630	-2.85***
reprisks(>=20)	[-15;+15]	market	3008	-0.601	-2.24**
reprisks(>=30)	[-10;+10]	market	1301	-2.243	-6.36***
reprisks(>=30)	[-15;+15]	market	1297	-2.386	-5.59***
reprisks(>=40)	[-10;+10]	market	213	-4.168	-4.96***
reprisks(>=40)	[-15;+15]	market	211	-3.492	-3.46***

Panel B: Abnormal returns estimated with the four-factor model

reprisksmin	twindow	model	events	car	t
reprisks(>=10)	[-10;+10]	4factor	6104	-0.446	-3.33***
reprisks(>=10)	[-15;+15]	4factor	6091	-0.663	-4.08***
reprisks(>=20)	[-10;+10]	4factor	3017	-0.700	-3.28***
reprisks(>=20)	[-15;+15]	4factor	3008	-0.812	-3.14***
reprisks(>=30)	[-10;+10]	4factor	1301	-2.187	-6.43***
reprisks(>=30)	[-15;+15]	4factor	1297	-2.525	-6.13***
reprisks(>=40)	[-10;+10]	4factor	213	-4.241	-5.24***
reprisks(>=40)	[-15;+15]	4factor	211	-3.359	-3.46***

Table 3: Number of firms in the U.S. portfolios

The table presents the number of firms that are included in the three U.S. portfolios used in this study. The portfolios are formed based on a firm's two-year peak RepRisk Index. The first column shows the dates on which the portfolios are formed. The remaining columns present the number of firms (N) included in the portfolios and the portfolios' percentage market shares as of total market capitalization (mcap).

Portfolio Formation	Low Risk		Medium Risk		High Risk	
	N	mcap	N	mcap	N	mcap
Jan 2009	1,331	24.0	409	38.6	33	13.9
Jan 2011	1,209	20.9	529	38.4	38	14.3
Jan 2013	998	16.7	649	36.5	58	20.0
Jan 2015	816	13.1	743	34.0	95	26.1

Table 4: Baseline portfolios

The table presents the results of monthly time-series regressions of ESG risk portfolios on the four U.S. Carhart (1997) factors in Panel A and on the four U.S. and four world Carhart (1997) factors in Panel B. The portfolios consist only of firms that are traded at U.S. stock markets. Each column shows the regression results of a different portfolio. The first three columns show equal-weighted portfolios with low/medium/high ESG risks, and the last three columns show value-weighted portfolios with low/medium/high ESG risks. A two-year peak RepRisk Index between 0–25 indicates low ESG risks, 26–50 indicate medium ESG risks, and 51–100 indicate high ESG risks. Standard errors (presented in parenthesis) are calculated according to Newey and West (1987). The sample period is from January 2009 to December 2016.

Panel A: Four-factor U.S. model

	Dependent variable:					
	I(EQRF_RET)			I(VWRF_RET)		
	Low	Mid	High	Low	Mid	High
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	−0.0002	−0.0009	−0.0062***	0.0001	0.0001	−0.0029***
	(0.0012)	(0.0011)	(0.0020)	(0.0006)	(0.0006)	(0.0011)
MKT	1.0694***	1.0724***	1.2213***	1.0308***	0.9696***	1.0623***
	(0.0246)	(0.0291)	(0.0657)	(0.0199)	(0.0140)	(0.0274)
SMB	0.6561***	0.3008***	−0.2876***	0.2501***	−0.0747***	−0.4613***
	(0.0461)	(0.0459)	(0.0877)	(0.0234)	(0.0174)	(0.0577)
HML	0.0297	0.0877*	0.0085	−0.0768***	−0.0428***	0.1290***
	(0.0588)	(0.0465)	(0.0704)	(0.0251)	(0.0143)	(0.0389)
MOM	−0.2907***	−0.2078***	−0.2079***	−0.0462***	−0.0112	0.0455
	(0.0347)	(0.0205)	(0.0350)	(0.0132)	(0.0083)	(0.0323)
Observations	96	96	96	96	96	96
Adjusted R^2	0.9752	0.9683	0.8975	0.9825	0.9868	0.9307

Panel B: Eight-factor world model

	Dependent variable:					
	I(EQRF_RET)			I(VWRF_RET)		
	Low	Mid	High	Low	Mid	High
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	−0.0003	−0.0002	−0.0034***	0.0008	0.0002	−0.0031***
	(0.0010)	(0.0010)	(0.0012)	(0.0006)	(0.0005)	(0.0011)
MKT	0.9804***	0.7845***	0.3963***	0.8087***	0.9256***	1.0126***
	(0.1016)	(0.1063)	(0.1490)	(0.0747)	(0.0595)	(0.1558)
SMB	0.5600***	0.3211***	−0.1775**	0.3520***	−0.0268	−0.5895***
	(0.0679)	(0.0702)	(0.0830)	(0.0432)	(0.0361)	(0.0885)
HML	0.0071	0.0526	0.1622	−0.0160	−0.0774**	0.2447***
	(0.1012)	(0.0907)	(0.1133)	(0.0561)	(0.0355)	(0.0908)
MOM	−0.2713***	−0.1929***	−0.0538	−0.0869***	−0.0540*	0.0919
	(0.0495)	(0.0492)	(0.0791)	(0.0327)	(0.0275)	(0.0619)
WMKT	0.1220	0.2877***	0.7950***	0.1909***	0.0315	0.0857
	(0.1029)	(0.1013)	(0.1544)	(0.0630)	(0.0529)	(0.1409)
WSMB	0.2644***	0.0661	0.0204	−0.1773**	−0.0928*	0.2957**
	(0.0995)	(0.1049)	(0.1717)	(0.0689)	(0.0554)	(0.1255)
WHML	0.0860	0.1155	−0.1418	−0.0869	0.0595	−0.1585
	(0.1390)	(0.1248)	(0.2329)	(0.0693)	(0.0573)	(0.1423)
WMOM	0.0164	0.0285	−0.1068	0.0660*	0.0578	−0.0297
	(0.0685)	(0.0638)	(0.1168)	(0.0366)	(0.0381)	(0.0769)
Observations	96	96	96	96	96	96
Adjusted R^2	0.9780	0.9728	0.9184	0.9840	0.9872	0.9344

Table 5: Portfolio robustness

The table presents robustness to the baseline results on the U.S. portfolio with high ESG risks (two-year peak RepRisk Index of larger than 50). In Panel A, I construct an industry-matched portfolio by deducting the returns of the value-weighted 48-industry portfolios of Fama and French (1997) from the raw stock returns. In Panel B, I match each firm with high ESG risks with three comparable firms that have low ESG risks. The matching is based on the sic2 industry, the logarithm of the total book assets, and the logarithm of the book-to-market ratio, using the Mahalanobis distance criterion. In Panel C, I winsorize the firm's raw stock returns at the 1% and 99% levels before creating the portfolio. The first and second columns show the equal-weighted portfolio alpha estimated with the 4-factor U.S. model and with the 8-factor world model, and the third and fourth columns show the value-weighted portfolio alpha estimated with the 4-factor U.S. model and with the 8-factor world model. The coefficients on the risk factors are omitted for brevity. Standard errors (presented in parenthesis) are calculated according to Newey and West (1987). The sample period is from January 2009 to December 2016.

Panel A: Adjusted by industry returns

	Dependent variable:			
	I(EQIND_RET)		I(VWIND_RET)	
	4-factor	8-factor	4-factor	8-factor
	(1)	(2)	(3)	(4)
Constant	-0.0043^{***}	-0.0026^{**}	-0.0012	-0.0015
	(0.0014)	(0.0011)	(0.0009)	(0.0010)
Observations	96	96	96	96
Adjusted R^2	0.3628	0.4507	0.4728	0.4558

Panel B: Matching with three control firms with low ESG risks

	Dependent variable:			
	I(EQMATCH_RET)		I(VWMATCH_RET)	
	4-factor	8-factor	4-factor	8-factor
	(1)	(2)	(3)	(4)
Constant	-0.0066^{***}	-0.0050^{***}	-0.0027	-0.0045^{**}
	(0.0016)	(0.0014)	(0.0019)	(0.0019)
Observations	96	96	96	96
Adjusted R^2	0.5092	0.5275	0.4368	0.4882

Panel C: Winsorizing returns before calculating portfolio returns

	Dependent variable:			
	I(EQRF_RET)		I(VWRF_RET)	
	4-factor	8-factor	4-factor	8-factor
	(1)	(2)	(3)	(4)
Constant	-0.0060^{***}	-0.0032^{***}	-0.0025^{**}	-0.0028^{**}
	(0.0021)	(0.0012)	(0.0010)	(0.0012)
Observations	96	96	96	96
Adjusted R^2	0.8666	0.8967	0.9241	0.9274

Table 6: Panel stock return regressions

The table presents the results of OLS panel regressions of raw stock returns on lagged variables of ESG risk exposure, a broad set of firm characteristics, and on month fixed effects. The three ESG risk exposure variables are a dummy indicating whether a firm has a two-year peak RepRisk Index of larger than 50 (high2), the two-year peak value of the RepRisk Index (peak2), and the current value of the RepRisk Index (rri). The dependent variable is winsorized at the 1% and 99% levels. Standard errors (presented in parenthesis) are double-clustered on firm and month levels according to Thompson (2011). The sample includes only firms that are traded at U.S. stock markets. The sample period is from February 2009 to December 2016 in the first two columns and from March 2007 to December 2016 in the last column.

	Dependent variable:		
	Return		
	(1)	(2)	(3)
high2	-0.003359^{*}		
	(0.001886)		
peak2		-0.000068^{**}	
		(0.000029)	
rri			-0.000079^{**}
			(0.000038)
size	0.001749	0.001904	0.002052
	(0.001502)	(0.001478)	(0.001277)
bm	0.000263	0.000372	0.000227
	(0.000747)	(0.000744)	(0.000661)
yield	-0.000167^{*}	-0.000158^{*}	−0.000058
	(0.000089)	(0.000088)	(0.000097)
ret23	−0.001384	−0.001585	0.003338
	(0.010393)	(0.010417)	(0.008848)
ret46	−0.003837	−0.004048	−0.004363
	(0.009784)	(0.009815)	(0.008604)
ret712	0.002333	0.002148	0.002637
	(0.006328)	(0.006337)	(0.005674)
dvol	−0.001626	−0.001572	−0.001859
	(0.001315)	(0.001318)	(0.001171)
price	−0.001091	−0.001033	−0.001533
	(0.001003)	(0.001006)	(0.000940)
Month FE	*Yes*	*Yes*	*Yes*
Observations	143,038	143,038	177,353
Adjusted R^2	0.204979	0.205021	0.216842

Table 7: European firms with high ESG risks

The table presents the results of monthly time-series regressions of a European portfolio with high ESG risks on several risk factors. The first and second columns show the equal-weighted portfolio alpha estimated with the 4-factor European model and the 8-factor world model, and the third and fourth columns show the value-weighted portfolio alpha estimated with the 4-factor European model and the 8-factor world model. Panel A shows the results without winsorized stock returns and Panel B shows the results for winsorized stock returns (at the 1% and 99% levels). Panel B omits the coefficients on the risk factors for brevity. The four-factor model consists of four European risk factors (EMKT, ESMB, EHML, EMOM) and the eight-factor world model extends the four-factor European model by four world risk factors (WMKT, WSMB, WHML, WMOM). Standard errors (presented in parenthesis) are calculated according to Newey and West (1987). The sample period is from January 2009 to December 2016.

Panel A: European stock returns not winsorized

	Dependent variable:			
	I(EQRF_RET)		I(VWRF_RET)	
	(1)	(2)	(3)	(4)
Constant	−0.0012	−0.0023	−0.0017*	−0.0024***
	(0.0014)	(0.0015)	(0.0009)	(0.0007)
EMKT	1.0699***	0.9788***	0.9908***	0.9272***
	(0.0318)	(0.0964)	(0.0302)	(0.1085)
ESMB	−0.0729	−0.0884	−0.1938**	−0.1189
	(0.0818)	(0.1184)	(0.0749)	(0.1095)
EHML	0.1869**	0.3492***	0.1130*	0.0213
	(0.0926)	(0.1052)	(0.0660)	(0.0928)
EMOM	−0.3100***	−0.0660	−0.0853***	−0.0999
	(0.0416)	(0.0957)	(0.0254)	(0.0973)
WMKT		0.0969		0.0994
		(0.1178)		(0.1217)
WSMB		−0.0871		−0.0883
		(0.1505)		(0.0944)
WHML		−0.2049*		0.1545*
		(0.1149)		(0.0816)
WMOM		−0.2832***		0.0201
		(0.1065)		(0.1105)
Observations	96	96	96	96
Adjusted R^2	0.9666	0.9679	0.9704	0.9705

Panel B: European stock returns winsorized at the 1% and 99% levels

	Dependent variable:			
	I(EQRF_RET)		I(VWRF_RET)	
	4-factor	8-factor	4-factor	8-factor
	(1)	(2)	(3)	(4)
Constant	−0.0029**	−0.0034***	−0.0020**	−0.0025***
	(0.0012)	(0.0013)	(0.0010)	(0.0008)
Observations	96	96	96	96
Adjusted R^2	0.9683	0.9682	0.9687	0.9686

Table 8: Lagged ESG risk exposure and ESG issues

This table presents OLS panel regressions of RepRisk issues on lagged variables of ESG risk exposure, firm controls, sic2 industry fixed effects, and year fixed effects. RepRisk issues are calculated as the logarithm of the sum of all positive changes in the RepRisk Index during the next year plus 1. The three ESG risk exposure variables are a dummy indicating whether a firm has a two-year peak RepRisk Index of larger than 50 (high2), the two-year peak value of the RepRisk Index (peak2), and the current value of the RepRisk Index (rri). Standard errors (presented in parenthesis) are clustered on the firm level. The sample includes only firms that are traded at U.S. stock markets. The sample period is from fiscal years 2009 to 2016 in the first two columns and from fiscal years 2008 to 2016 in the last column.

	Dependent variable:		
	log(Issues + 1)		
	(1)	(2)	(3)
high2	0.2615***		
	(0.0721)		
peak2		0.0043***	
		(0.0010)	
rri			0.0097***
			(0.0013)
assets	0.2911***	0.2827***	0.2682***
	(0.0113)	(0.0114)	(0.0108)
btm	0.0002	0.0003	0.0002
	(0.0012)	(0.0012)	(0.0013)
roa	−0.3972**	−0.3744**	−0.3729**
	(0.1662)	(0.1640)	(0.1488)
dividends	0.0753	0.0681	0.0431
	(0.0460)	(0.0444)	(0.0354)
cash	0.4102***	0.3999***	0.3644***
	(0.1063)	(0.1037)	(0.0934)
leverage	0.0296	0.0266	0.0279
	(0.0753)	(0.0729)	(0.0676)
capex	0.7267***	0.7432***	0.5410**
	(0.2810)	(0.2793)	(0.2470)
capexmiss	0.5914**	0.5784**	0.6079***
	(0.2410)	(0.2318)	(0.2079)
ppe	−0.1167	−0.1221	−0.0916
	(0.1140)	(0.1103)	(0.1049)
ppemiss	−0.5009***	−0.4794***	−0.4022***
	(0.1158)	(0.1127)	(0.1061)
rd	−0.0482	−0.0463	−0.1537
	(0.1544)	(0.1555)	(0.1371)
rdmiss	−0.0460	−0.0495	−0.0527
	(0.0418)	(0.0404)	(0.0379)
age	−0.0057	−0.0090	0.0025
	(0.0137)	(0.0133)	(0.0122)
sp500	0.3886***	0.3732***	0.3716***
	(0.0428)	(0.0419)	(0.0402)
Year FE	*Yes*	*Yes*	*Yes*
Industry FE	*Yes*	*Yes*	*Yes*
Observations	12,376	12,376	14,382
Adjusted R^2	0.2296	0.2303	0.2460

Table 9: ESG issues at firms with high ESG risks

The table presents the results of several event studies. Each row is a different event study. An event is a positive change in the RepRisk Index of a firm, as an increase indicates that the firm had one or more ESG issues in that month. *The table includes only events of firms that had high ESG risks defined as having a two-year peak RepRisk Index of larger than 50 at the second month-end before the event.* The columns show the minimum increase in the RepRisk Index (reprisksmin), the length of the event window (twindow), the model used to estimate the abnormal returns (model), the number of events (events), the mean of the cumulative abnormal returns (car), and the t-statistic (t). Events with very large CARs are deleted (the 1% and 99% percentile). The events happen between January 2009 and December 2016. The sample includes events from all firms that are traded at U.S. stock markets.

Panel A: Abnormal returns estimated with the market model

reprisksmin	twindow	model	events	car	t
reprisks(>=3)	[-10;+10]	market	1495	-0.436	-2.04**
reprisks(>=3)	[-15;+15]	market	1495	-0.492	-1.92*
reprisks(>=5)	[-10;+10]	market	959	-0.567	-2.15**
reprisks(>=5)	[-15;+15]	market	959	-0.668	-2.11**
reprisks(>=7)	[-10;+10]	market	687	-0.665	-2.10**
reprisks(>=7)	[-15;+15]	market	687	-0.763	-1.98**

Panel B: Abnormal returns estimated with the four-factor model

reprisksmin	twindow	model	events	car	t
reprisks(>=3)	[-10;+10]	4factor	1495	-0.314	-1.58
reprisks(>=3)	[-15;+15]	4factor	1495	-0.312	-1.30
reprisks(>=5)	[-10;+10]	4factor	959	-0.465	-1.88*
reprisks(>=5)	[-15;+15]	4factor	959	-0.576	-1.93*
reprisks(>=7)	[-10;+10]	4factor	687	-0.582	-1.95*
reprisks(>=7)	[-15;+15]	4factor	687	-0.660	-1.84*

Table 10: Operating performance regressions

The table presents OLS panel regressions of operating performance measures on lagged variables of ESG risk exposure, a broad set of firm characteristics, sic2 industry fixed effects, and year fixed effects. The operating performance measures are return on equity (ROE), one-year sales growth (Growth), net profit margin (NPM), and return on assets (ROA). The ESG risk exposure variable is a dummy indicating whether a firm has a two-year peak RepRisk Index of larger than 50 (peak2). The operating performance measures are industry-adjusted and winsorized at the 5% and 95% levels. All coefficients are multiplied with 100. Standard errors (presented in parenthesis) are clustered on the firm level. The sample includes only firms that are traded at U.S. stock markets. The sample period is from fiscal years 2009 to 2016.

	Dependent variable:			
	ROE	Growth	NPM	ROA
	(1)	(2)	(3)	(4)
high2	-1.696	-2.350^{***}	-2.903^{**}	-1.119^{*}
	(1.544)	(0.842)	(1.409)	(0.640)
assets	1.835^{***}	-0.253^{*}	2.386^{***}	0.814^{***}
	(0.282)	(0.152)	(0.283)	(0.136)
btm	-3.133^{***}	-1.528^{***}	-2.126^{***}	-1.120^{***}
	(0.614)	(0.290)	(0.366)	(0.182)
leverage	-2.575	-4.298^{***}	-10.452^{***}	-5.466^{***}
	(2.320)	(1.066)	(1.844)	(1.306)
capex	11.487^{*}	16.836^{***}	5.254	6.176^{**}
	(6.602)	(5.307)	(6.466)	(2.860)
capexmiss	-2.148	6.398^{*}	-1.801	-2.265^{***}
	(1.792)	(3.513)	(3.846)	(0.789)
ppe	-6.035^{***}	-4.551^{***}	-9.345^{***}	-3.491^{***}
	(2.237)	(1.446)	(2.388)	(1.133)
ppemiss	-2.693^{*}	-0.903	1.351	-2.228^{***}
	(1.630)	(1.623)	(2.376)	(0.677)
rd	-24.362	4.593	-34.589^{***}	-19.738^{***}
	(16.651)	(2.964)	(9.201)	(5.391)
rdmiss	-1.640^{*}	-1.281^{**}	-1.556^{**}	-1.072^{**}
	(0.988)	(0.506)	(0.779)	(0.419)
age	0.737^{**}	-2.806^{***}	0.335	0.284^{**}
	(0.303)	(0.206)	(0.292)	(0.135)
sp500	2.099^{**}	0.402	0.502	1.185^{***}
	(0.856)	(0.450)	(0.779)	(0.363)
Year FE	*Yes*	*Yes*	*Yes*	*Yes*
Industry FE	*Yes*	*Yes*	*Yes*	*Yes*
Observations	11,886	11,900	12,015	12,015
Adjusted R^2	0.104	0.069	0.198	0.178

Table 11: Analyst forecast error

The table presents results on OLS panel regressions of the median forecast error on lagged variables of ESG risk exposure, firm controls, sic2 industry fixed effects, and year fixed effects. A forecast error is the difference between the actual earnings and the forecast of the analysts, scaled by the stock price at the end of the fiscal year. Forecast errors of larger than 10% of the stock price are deleted. The three ESG risk exposure variables are a dummy indicating whether a firm has a two-year peak RepRisk Index of larger than 50 (high2), the two-year peak value of the RepRisk Index (peak2), and the current value of the RepRisk Index (rri). All coefficients are multiplied with 100. Standard errors (presented in parenthesis) are clustered on the firm level. The sample includes only firms that are traded at U.S. stock markets. The sample period is from fiscal years 2009 to 2016 in the first two columns and from fiscal years 2008 to 2016 in the last column.

	Dependent variable:		
	Surprise_median		
	(1)	(2)	(3)
high2	-0.426^{***}		
	(0.140)		
peak2		-0.004^{**}	
		(0.002)	
rri			-0.006^{**}
			(0.002)
assets	0.098^{***}	0.100^{***}	0.089^{***}
	(0.019)	(0.021)	(0.020)
bm	-0.127^{***}	-0.131^{***}	-0.161^{***}
	(0.032)	(0.033)	(0.031)
Year FE	*Yes*	*Yes*	*Yes*
Industry FE	*Yes*	*Yes*	*Yes*
Observations	9,846	9,846	11,320
Adjusted R^2	0.030	0.029	0.030

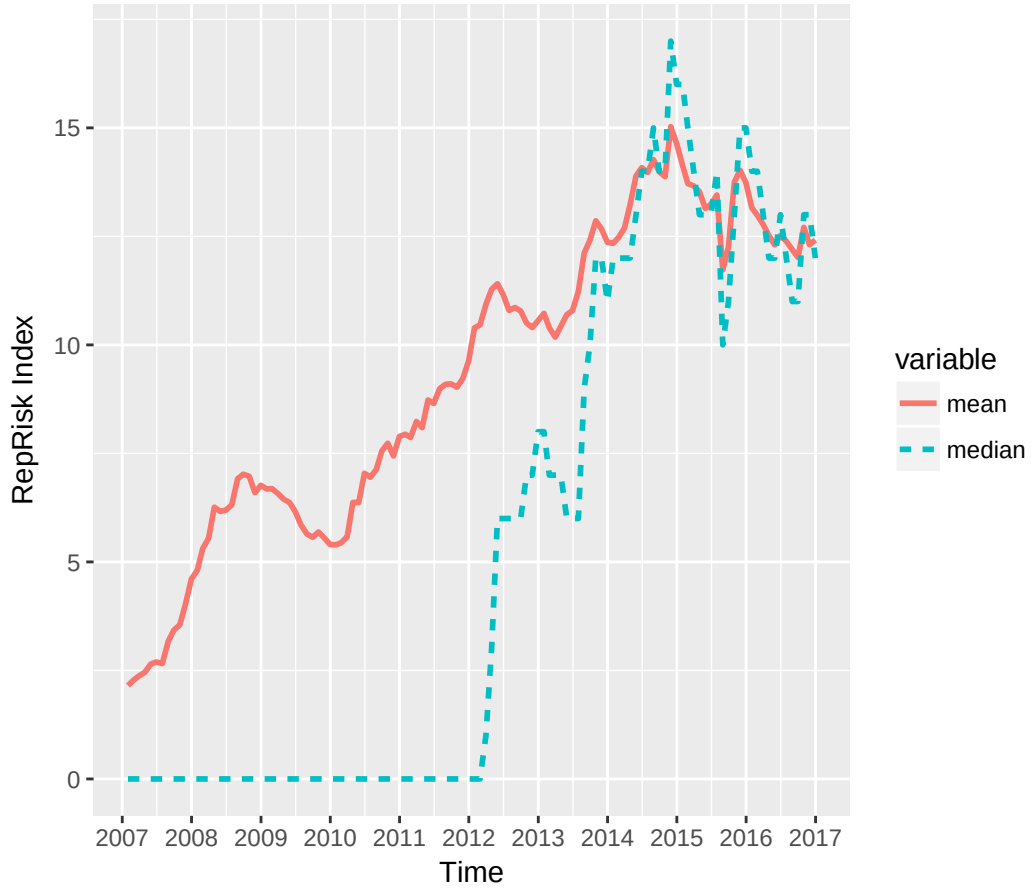
Table 12: Earnings announcement returns

The table presents results on OLS panel regressions of quarterly earnings announcement returns on lagged variables of ESG risk exposure, firm controls, and year fixed effects. The cumulative abnormal returns are estimated with the market model and are winsorized at the 1% and 99% level. The market model is calibrated on a pre-event window ranging from 300 trading days to 46 trading days prior to the event. The three ESG risk exposure variables are a dummy indicating whether a firm has a two-year peak RepRisk Index of larger than 50 (high2), the two-year peak value of the RepRisk Index (peak2), and the current value of the RepRisk Index (rri). All coefficients are multiplied with 100. Standard errors (presented in parenthesis) are clustered on the firm level. The sample includes only firms that are traded at U.S. stock markets. The sample period is from the fourth quarter of 2009 to the fourth quarter of 2016 in the first two columns and from the first quarter of 2008 to the fourth quarter of 2016 in the last column.

	Dependent variable:		
	CAR		
	(1)	(2)	(3)
high2	-0.427^{**}		
	(0.168)		
peak2		-0.001	
		(0.003)	
rri			-0.001
			(0.003)
assets	0.051^{**}	0.043	0.013
	(0.025)	(0.027)	(0.026)
bm	-0.006	-0.006	0.022
	(0.042)	(0.043)	(0.042)
Year FE	*Yes*	*Yes*	*Yes*
Observations	37,692	37,692	47,746
Adjusted R^2	0.0004	0.0003	0.001

Figure 1: The RepRisk Index

This figure presents the evolution of the current value of the RepRisk Index. The dashed line shows the cross-section median, whereas the solid line shows the cross-section mean. The sample period is from January 2007 to December 2016. According to RepRisk's documentation, a value between 0–25 indicates low ESG risks, 26–50 indicate medium ESG risks, 51–75 indicates high ESG risks, and 76–100 indicates very high ESG risks.



INTERNET APPENDIX

Table IA1: Parameters of the RepRisk Index

This table describes the parameters used to calculate the RepRisk Index. The RepRisk Index describes the ESG-related reputational risk exposure of a firm. The index is based on a firm's history of ESG incidents and has four parameters. Each ESG incident is related to one of the 28 core ESG issues defined by RepRisk.

Parameters of the RepRisk Index
• Incident Severity: The severity of an incident depends on three questions. First, what are the consequences of the incident with respect to health and safety? Second, what is the extent of the incident in terms of affected people or regions? Third, is the incident the result of an accident, negligence, or of intention?
• Incident Reach: The reach of the information source, in which the ESG incident appeared, depends on RepRisk's own rating of sources. Low influence sources include local media, smaller NGOs, local government bodies, blogs, and internet sites. Medium influence sources include national and regional media, international NGOs, and state, national, and international governmental bodies. High influence sources are the few international media, such as the Financial Times, the New York Times, BBC, and others.
• Incident Novelty: The novelty of an incident depends on whether the firm had similar incidents in the past. For example, if a firm had many workplace injuries in the past, new workplace injuries would not be considered as novel incidents.
• News Intensity: The intensity of the news about the incident depends on the frequency and timing of the information. The sequence of the news, however, is no parameter in the calculation of the index.

Table IA2: Portfolio robustness through additional risk factors

This table presents monthly time-series regressions of the stock returns of a U.S. portfolio with high ESG risks on several risk factors. A firm has high ESG risks when its two-year peak RepRisk Index is larger than 50. The first three columns show the results for the equal-weighted portfolio and the last three columns show the results for the value-weighted portfolio. The first and fourth columns present the four-factor Carhart (1997) model. The second and fifth columns present the four-factor Carhart (1997) model extended by the Pastor and Stambaugh (2003) liquidity factor LIQ and the Frazzini and Pedersen (2014) betting-against-beta factor BAB. The third and sixth columns present the five-factor Fama and French (2015) model, which introduces the profitability factor RMW and the investment factor CMA. Standard errors (presented in parenthesis) are calculated according to Newey and West (1987). The sample period is from January 2009 to December 2016.

	Dependent variable:					
	I(EQRF_RET)			I(VWRF_RET)		
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	-0.0062^{***}	-0.0044^{**}	-0.0051^{**}	-0.0029^{***}	-0.0029^{***}	-0.0026^{**}
	(0.0020)	(0.0018)	(0.0020)	(0.0011)	(0.0010)	(0.0012)
MKT	1.2213^{***}	1.2167^{***}	1.2495^{***}	1.0623^{***}	1.0629^{***}	1.0424^{***}
	(0.0657)	(0.0517)	(0.0579)	(0.0274)	(0.0269)	(0.0242)
SMB	-0.2876^{***}	-0.3755^{***}	-0.2775^{***}	-0.4613^{***}	-0.4706^{***}	-0.4702^{***}
	(0.0877)	(0.0832)	(0.0843)	(0.0577)	(0.0607)	(0.0639)
HML	0.0085	0.0264	0.3048^{***}	0.1290^{***}	0.1359^{***}	0.1977^{***}
	(0.0704)	(0.0781)	(0.1142)	(0.0389)	(0.0506)	(0.0428)
MOM	-0.2079^{***}	-0.1833^{***}		0.0455	0.0461	
	(0.0350)	(0.0333)		(0.0323)	(0.0346)	
LIQ		0.1572^{**}			0.0213	
		(0.0728)			(0.0477)	
BAB		-0.1629^{**}			-0.0042	
		(0.0681)			(0.0469)	
RMW			-0.0485			-0.0888
			(0.1110)			(0.0834)
CMA			-0.4374^{**}			-0.1272
			(0.2195)			(0.1207)
Observations	96	96	96	96	96	96
Adjusted R^2	0.8975	0.9053	0.8744	0.9307	0.9293	0.9317

Table IA3: Portfolio robustness extended

The table presents robustness to the baseline results on the U.S. portfolio with high ESG risks (two-year peak RepRisk Index of larger than 50). In Panel A, I include only common stocks that are incorporated in the United States into the portfolio, excluding firms with ADRs. In Panel B, I use weekly returns to estimate the risk-adjusted returns. The first and second columns show the equal-weighted portfolio alpha estimated with the 4-factor U.S. model and with the 8-factor world model, and the third and fourth columns show the value-weighted portfolio alpha estimated with the 4-factor U.S. model and with the 8-factor world model. The coefficients on the risk factors are omitted for brevity. Standard errors (presented in parenthesis) are calculated according to Newey and West (1987). The sample period is from January 2009 to December 2016 in both panels.

Panel A: Only common stock incorporated in the U.S.

	Dependent variable:			
	I(EQRF_RET)		I(VWRF_RET)	
	4-factor	8-factor	4-factor	8-factor
	(1)	(2)	(3)	(4)
Constant	-0.0041^{**}	-0.0028^{**}	-0.0024^{**}	-0.0029^{**}
	(0.0017)	(0.0013)	(0.0011)	(0.0012)
Observations	96	96	96	96
Adjusted R^2	0.9102	0.9142	0.9281	0.9317

Panel B: Weekly time-series regressions

	Dependent variable:			
	I(EQRF_RET)		I(VWRF_RET)	
	4-factor	8-factor	4-factor	8-factor
	(1)	(2)	(3)	(4)
Constant	-0.0011^{***}	-0.0008^{**}	-0.0007^{**}	-0.0007^{**}
	(0.0004)	(0.0004)	(0.0003)	(0.0003)
Observations	420	420	420	420
Adjusted R^2	0.9216	0.9381	0.9410	0.9417

Table IA4: Panel return regression industry robustness

The table presents the results of OLS panel regressions of industry-adjusted stock returns on lagged variables of ESG risk exposure, a broad set of firm characteristics, and on month fixed effects. I calculate industry-adjusted returns by deducting the returns of the value-weighted 48-industry portfolios of Fama and French (1997) from the raw stock returns. The three ESG risk exposure variables are a dummy indicating whether a firm has a two-year peak RepRisk Index of larger than 50 (high2), the two-year peak value of the RepRisk Index (peak2), and the current value of the RepRisk Index (rri). The dependent variable is winsorized at the 1% and 99% levels. Standard errors (presented in parenthesis) are double-clustered on firm and month levels according to Thompson (2011). The sample includes only firms that are traded at U.S. stock markets. The sample period is from February 2009 to December 2016 in the first two columns and from March 2007 to December 2016 in the last column.

	Dependent variable:		
	Return−Industry		
	(1)	(2)	(3)
high2	−0.002217		
	(0.001454)		
peak2		−0.000062**	
		(0.000025)	
rri			−0.000081**
			(0.000032)
size	0.001168	0.001350	0.001626
	(0.001212)	(0.001214)	(0.001038)
bm	0.000211	0.000334	0.000457
	(0.000606)	(0.000597)	(0.000514)
yield	−0.000181**	−0.000173*	−0.000091
	(0.000089)	(0.000089)	(0.000091)
ret23	−0.002163	−0.002373	0.003775
	(0.009083)	(0.009091)	(0.007594)
ret46	−0.006527	−0.006743	−0.006157
	(0.009128)	(0.009144)	(0.007752)
ret712	0.000040	−0.000148	0.000841
	(0.005425)	(0.005430)	(0.004706)
dvol	−0.001109	−0.001067	−0.001428
	(0.001086)	(0.001090)	(0.000960)
price	−0.000797	−0.000724	−0.001545*
	(0.000973)	(0.000972)	(0.000900)
Month FE	*Yes*	*Yes*	*Yes*
Observations	139,443	139,443	173,753
Adjusted R^2	0.020972	0.021032	0.019252

Table IA5: Panel return regression with KLD governance controls

The table presents the results of OLS panel regressions of raw stock returns on lagged variables of ESG risk exposure, corporate governance variables, a broad set of firm characteristics, and on month fixed effects. The three ESG risk exposure variables are a dummy indicating whether a firm has a two-year peak RepRisk Index of larger than 50 (high2), the two-year peak value of the RepRisk Index (peak2), and the current value of the RepRisk Index (rri). The corporate governance variable is the difference between KLD governance strengths and KLD governance weaknesses (cgov). The dependent variable is winsorized at the 1% and 99% levels. Standard errors (presented in parenthesis) are double-clustered on firm and month levels according to Thompson (2011). The sample includes only firms that are traded at U.S. stock markets. The sample period is from February 2009 to December 2013 in the first four columns and from March 2007 to December 2013 in the last two columns.

	Dependent variable:					
	Return					
	(1)	(2)	(3)	(4)	(5)	(6)
high2	−0.002577	−0.002672				
	(0.002846)	(0.002813)				
peak2			−0.000038	−0.000038		
			(0.000032)	(0.000032)		
rri					−0.000079*	−0.000080*
					(0.000042)	(0.000042)
cgov		−0.000525		−0.000501		0.000489
		(0.000991)		(0.000997)		(0.000833)
size	−0.000687	−0.000651	−0.000582	−0.000552	0.001253	0.001243
	(0.002609)	(0.002595)	(0.002574)	(0.002561)	(0.001935)	(0.001929)
bm	0.001593	0.001585	0.001634	0.001626	0.000442	0.000459
	(0.001369)	(0.001366)	(0.001361)	(0.001358)	(0.001159)	(0.001155)
yield	0.005675	0.005682	0.005836	0.005842	0.003109	0.003065
	(0.005815)	(0.005817)	(0.005845)	(0.005847)	(0.004722)	(0.004722)
ret23	−0.011885	−0.011903	−0.011991	−0.012006	0.002953	0.002932
	(0.015287)	(0.015292)	(0.015313)	(0.015318)	(0.012013)	(0.012007)
ret46	−0.020940	−0.020961	−0.021051	−0.021069	−0.016214	−0.016224
	(0.013780)	(0.013786)	(0.013812)	(0.013817)	(0.011317)	(0.011316)
ret712	−0.004809	−0.004805	−0.004911	−0.004906	−0.003370	−0.003389
	(0.009060)	(0.009060)	(0.009073)	(0.009073)	(0.007663)	(0.007665)
dvol	0.000071	0.000030	0.000086	0.000048	−0.001542	−0.001496
	(0.002082)	(0.002063)	(0.002073)	(0.002054)	(0.001635)	(0.001607)
price	0.002080	0.002076	0.002106	0.002100	0.001434	0.001456
	(0.001377)	(0.001373)	(0.001386)	(0.001381)	(0.001225)	(0.001219)
Month FE	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Observations	71,064	71,064	71,064	71,064	99,078	99,078
Adjusted R^2	0.270982	0.270981	0.270994	0.270992	0.275237	0.275238

Table IA6: Panel return regression with ISS governance controls

The table presents the results of OLS panel regressions of raw stock returns on lagged variables of ESG risk exposure, corporate governance variables, a broad set of firm characteristics, and on month fixed effects. The three ESG risk exposure variables are a dummy indicating whether a firm has a two-year peak RepRisk Index of larger than 50 (high2), the two-year peak value of the RepRisk Index (peak2), and the current value of the RepRisk Index (rri). The corporate governance variables are a dummy indicating whether the CEO is also the chairman of the board (dual) and the entrenchment index (eindex) from Bebchuk, Cohen, and Ferrell (2009). The dependent variable is winsorized at the 1% and 99% levels. Standard errors (presented in parenthesis) are double-clustered on firm and month levels according to Thompson (2011). The sample includes only firms that are traded at U.S. stock markets. The sample period is from February 2009 to December 2014 in the first four columns and from March 2007 to December 2014 in the last two columns.

	Dependent variable:					
	Return					
	(1)	(2)	(3)	(4)	(5)	(6)
high2	−0.002683	−0.002906				
	(0.002471)	(0.002478)				
peak2			−0.000041	−0.000044		
			(0.000032)	(0.000032)		
rri					−0.000028	−0.000029
					(0.000038)	(0.000038)
dual		0.000883		0.000911		0.000949
		(0.000863)		(0.000867)		(0.000688)
eindex		−0.000409		−0.000405		0.000244
		(0.000458)		(0.000457)		(0.000391)
size	−0.001031	−0.001145	−0.000968	−0.001081	0.000861	0.000842
	(0.002522)	(0.002520)	(0.002465)	(0.002463)	(0.002120)	(0.002117)
bm	−0.000974	−0.000991	−0.000933	−0.000948	−0.001016	−0.001063
	(0.001219)	(0.001209)	(0.001211)	(0.001201)	(0.001010)	(0.001003)
yield	0.009586	0.009269	0.009865	0.009557	0.006799	0.006456
	(0.019231)	(0.019173)	(0.019358)	(0.019305)	(0.012125)	(0.012141)
ret23	−0.023394	−0.023356	−0.023523	−0.023489	−0.009422	−0.009316
	(0.018822)	(0.018790)	(0.018867)	(0.018836)	(0.015223)	(0.015213)
ret46	−0.026874*	−0.026838*	−0.027018*	−0.026987*	−0.023156*	−0.023039*
	(0.015671)	(0.015654)	(0.015713)	(0.015698)	(0.012914)	(0.012895)
ret712	−0.007661	−0.007627	−0.007789	−0.007760	−0.005103	−0.005010
	(0.009967)	(0.009956)	(0.009995)	(0.009985)	(0.008698)	(0.008695)
dvol	0.000057	0.000150	0.000115	0.000213	−0.001956	−0.001961
	(0.002147)	(0.002135)	(0.002137)	(0.002128)	(0.001946)	(0.001939)
price	0.001952	0.001999	0.001954	0.002003	0.001860	0.001973*
	(0.001282)	(0.001275)	(0.001287)	(0.001280)	(0.001146)	(0.001142)
Month FE	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Observations	58,514	58,514	58,514	58,514	76,098	76,098
Adjusted R^2	0.287420	0.287427	0.287432	0.287440	0.293298	0.293302

Table IA7: Operating performance regressions

The table presents OLS panel regressions of operating performance measures on lagged variables of ESG risk exposure, a broad set of firm characteristics, sic2 industry fixed effects, and year fixed effects. The operating performance measures are return on equity (ROE), one-year sales growth (Growth), net profit margin (NPM), and return on assets (ROA). The ESG risk exposure variable is the two-year peak value of the RepRisk Index (peak2). All coefficients are multiplied with 100. The operating performance measures are industry-adjusted and winsorized at the 5% and 95% levels. Standard errors (presented in parenthesis) are clustered on the firm level. The sample includes only firms that are traded at U.S. stock markets. The sample period is from fiscal years 2009 to 2016.

	Dependent variable:			
	ROE	Growth	NPM	ROA
	(1)	(2)	(3)	(4)
peak2	-0.031^{*}	-0.061^{***}	-0.070^{***}	-0.025^{***}
	(0.018)	(0.012)	(0.016)	(0.007)
assets	1.898^{***}	-0.093	2.562^{***}	0.874^{***}
	(0.290)	(0.156)	(0.290)	(0.140)
btm	-3.139^{***}	-1.538^{***}	-2.138^{***}	-1.125^{***}
	(0.614)	(0.290)	(0.366)	(0.182)
leverage	-2.579	-4.338^{***}	-10.495^{***}	-5.478^{***}
	(2.315)	(1.082)	(1.872)	(1.322)
capex	11.357^{*}	16.717^{***}	5.067	6.101^{**}
	(6.586)	(5.296)	(6.449)	(2.861)
capexmiss	-2.084	6.507^{*}	-1.674	-2.218^{***}
	(1.786)	(3.427)	(3.816)	(0.777)
ppe	-6.006^{***}	-4.508^{***}	-9.305^{***}	-3.475^{***}
	(2.238)	(1.440)	(2.388)	(1.138)
ppemiss	-2.849^{*}	-1.204	0.986	-2.359^{***}
	(1.639)	(1.599)	(2.379)	(0.685)
rd	-24.295	4.851^{*}	-34.344^{***}	-19.658^{***}
	(16.660)	(2.948)	(9.215)	(5.395)
rdmiss	-1.620	-1.276^{**}	-1.547^{**}	-1.066^{**}
	(0.988)	(0.504)	(0.779)	(0.419)
age	0.757^{**}	-2.761^{***}	0.386	0.302^{**}
	(0.303)	(0.206)	(0.291)	(0.135)
sp500	2.211^{***}	0.614	0.748	1.274^{***}
	(0.852)	(0.447)	(0.776)	(0.361)
Year FE	*Yes*	*Yes*	*Yes*	*Yes*
Industry FE	*Yes*	*Yes*	*Yes*	*Yes*
Observations	11,886	11,900	12,015	12,015
Adjusted R^2	0.104	0.071	0.200	0.179

Table IA8: Operating performance regressions

The table presents OLS panel regressions of operating performance measures on lagged variables of ESG risk exposure, a broad set of firm characteristics, sic2 industry fixed effects, and year fixed effects. The operating performance measures are return on equity (ROE), one-year sales growth (Growth), net profit margin (NPM), and return on assets (ROA). The ESG risk exposure variable is the current value of the RepRisk Index (rri). All coefficients are multiplied with 100. The operating performance measures are industry-adjusted and winsorized at the 5% and 95% levels. Standard errors (presented in parenthesis) are clustered on the firm level. The sample includes only firms that are traded at U.S. stock markets. The sample period is from fiscal years 2008 to 2016.

	Dependent variable:			
	ROE	Growth	NPM	ROA
	(1)	(2)	(3)	(4)
rri	−0.027	−0.055***	−0.091***	−0.030***
	(0.023)	(0.015)	(0.021)	(0.010)
assets	1.848***	−0.274*	2.499***	0.857***
	(0.277)	(0.143)	(0.281)	(0.136)
btm	−3.613***	−1.694***	−2.422***	−1.292***
	(0.686)	(0.295)	(0.381)	(0.212)
leverage	−2.370	−4.070***	−11.040***	−5.798***
	(2.232)	(0.980)	(1.791)	(1.220)
capex	10.466*	20.727***	7.923	6.884**
	(6.257)	(4.933)	(6.168)	(2.727)
capexmiss	−3.434	3.292	−5.371	−2.657***
	(2.567)	(3.554)	(3.840)	(0.939)
ppe	−5.303**	−4.331***	−8.411***	−3.182***
	(2.155)	(1.373)	(2.318)	(1.088)
ppemiss	−2.098	−1.237	1.581	−2.244***
	(1.657)	(1.617)	(2.398)	(0.721)
rd	−24.746	3.197	−36.431***	−20.271***
	(15.104)	(3.083)	(8.959)	(5.043)
rdmiss	−1.720*	−1.197**	−1.766**	−1.105***
	(0.911)	(0.485)	(0.747)	(0.397)
age	0.660**	−2.856***	0.313	0.261**
	(0.286)	(0.187)	(0.278)	(0.127)
sp500	2.159***	0.539	0.719	1.238***
	(0.833)	(0.420)	(0.759)	(0.355)
Year FE	*Yes*	*Yes*	*Yes*	*Yes*
Industry FE	*Yes*	*Yes*	*Yes*	*Yes*
Observations	13,833	13,842	13,982	13,982
Adjusted R^2	0.103	0.074	0.195	0.174