Risk Mitigation of Corporate Social Performance in US Class Action Lawsuits

Daniel V. Fauser (ID) and Sebastian Utz (ID)

Daniel V. Fauser is a researcher at the University of St. Gallen, Switzerland. Sebastian Utz is an assistant professor of finance at the University of St. Gallen, Switzerland.

We investigated the relationship between corporate environmental, social, and governance (ESG) performance and litigation risk by examining US class action lawsuits. We found that a 1 standard deviation improvement in the ESG controversies of an average company in the sample reduced litigation risk from 3.1% to 2.4%. Moreover, an average company with low ESG performance exhibited a loss in market value twice as large as that of a company with high ESG performance—an abnormal loss of US$1.14 billion. Implementation of our findings with a trading strategy yielded positive monthly alphas, suggesting that investors benefit from lower litigation risk and the insurance-like protection of high ESG performance.

"Dieselgate" and Volkswagen's systematic and blatant fraud shook the public in 2015. The emissions scandal was described by numerous renowned media outlets as the most outrageous corporate fraud of the 21st century. On the one hand, such corporate scandals may seriously affect customers (e.g., by causing them to overpay for cars) and the public (e.g., through externalized environmental costs). On the other hand, corporate scandals and managerial misconduct entail considerable financial (e.g., compensation-related) and reputational risks to the companies responsible. Managerial misconduct, which often culminates in serious corporate scandals, might be driven by low standards of corporate environmental sustainability and social responsibility. Research on corporate social responsibility has, therefore, repeatedly studied the link between a company's environmental, social, and corporate governance engagement—so-called corporate social performance (CSP)—and firm value and risk (e.g., Aouadi and Marsat 2018; Bouslah, Kryzanowski, and M'Zali 2013).

CSP is a multidimensional construct that combines diverse company behavior regarding environmental issues (e.g., pollution control), social issues (e.g., diversity), and corporate governance (e.g., stakeholder strategy) (Waddock and Graves 1997).[1] Research indicates that CSP has risk-reducing characteristics (Cai, Cui, and Jo 2016; Harjoto and Laksmana 2018). From an investment perspective, a major motivation to consider information on CSP is its relevance to investment performance and company risk (Amel-Zadeh and Serafeim 2018; Bouslah et al. 2013). An important aspect of company risk is determined by the probability of extreme events with substantial negative consequences. We investigated US class action lawsuits as examples of such extreme events. Previous research has neglected the potential explanatory power of environmental, social, and governance (ESG) controversies and performance in the context of class action lawsuits. ESG controversies represent negative CSP; ESG performance represents positive CSP.

Therefore, we investigated (1) to what extent past ESG controversies and ESG performance predict future class action lawsuits and (2) whether high ESG performance mitigates the negative impact of class action filings on firm value. Furthermore, we synthesized the findings on these objectives in a trading strategy to analyze whether predicted litigation risk and ESG performance have asset pricing implications.

Our study reinforces the notion of positive and negative CSP as indicators of both transparency and risk management policies. CSP measures offer insights into companies that cannot be derived from financial reporting and thus increase transparency. The disclosure of CSP measures may reduce stakeholders' search and evaluation costs for such nonfinancial information (Kennett 1980). Moreover, engaging in CSP has been perceived as a risk management initiative (Cai et al. 2016; Harjoto and Laksmana 2018). Bouslah et al. (2013) supported this notion of risk management. In line with this theory, we used ESG controversies as a proxy for *weak* risk management policies and sound ESG performance as a proxy for *strong* risk management policies.

Furthermore, class action lawsuits have negative effects on short- and long-term financial performance (Bauer and Braun 2010). We posited that once a class action lawsuit has occurred, positive CSP mitigates the negative effects on firm value because it acts as a "reservoir of goodwill." By generating this reservoir, companies can build up moral capital among various stakeholders and thus insure themselves against negative events (Fombrun and Shanley 1990) and against negative effects on performance during a corporate crisis (Godfrey 2005; Koh, Qian, and Wang 2014). Thus, companies that consider the interests of all stakeholders achieve long-term financial success to the extent that these interests are aligned (Freeman 2010). For instance, the financial performance of companies benefited from high positive CSP in cases of corrupt company behavior (Hong, Kubik, Liskovich, and Scheinkman 2019) and during the 2007–08 financial crisis (Lins, Servaes, and Tamayo 2017). Recently, however, Liu, Cheong, and Zurbruegg (2020) found contrary evidence: Positive CSP does not protect shareholder wealth in environmental lawsuits. Moreover, only weak evidence exists that CSP systematically reduces credit risk (Stellner, Klein, and Zwergel 2015). In short, research is still far from conclusive as to whether positive CSP can protect against losses from legal disputes.

Anecdotal evidence for this potential insurance-like protection is displayed by two health care companies in our sample, Mallinckrodt Pharmaceuticals and TherapeuticsMD. Each faced a class action lawsuit as a result of neglecting their reporting duties regarding, respectively, a monopolistic position and a new drug application.[2] Both lawsuits were filed in early 2017, but they affected firm values substantially differently. Whereas TherapeuticsMD lost about 40% of its value in 21 days around the lawsuit filing, Mallinckrodt lost only about 9%. A potential reason for this discrepancy is the severity of the claims, which were possibly linked to ESG standards in the companies. At this point, CSP came into play. According to an external evaluation of Mallinckrodt's CSP, compared with its peers, this pharmaceutical company was among the top-performing companies; TherapeuticsMD was at the bottom of the CSP spectrum.

In our study, we based empirical evidence for CSP's risk management potential on a panel dataset containing 7,671 company-year observations of US companies from 2003 to 2017. We used scores from Thomson Reuters to proxy for company exposure to ESG controversies and ESG performance. Our measure for litigation risk is based on class action lawsuits from the Securities Class Action Clearinghouse (SCAC) of Stanford Law School. We explain litigation risk as a function of ESG controversies, ESG performance, and well-documented control variables in an extended multiple-panel regression model based on Kim and Skinner (2012). We found that a 1 standard deviation improvement in our measure of ESG controversies for an average company reduced the probability of a class action lawsuit filing by 22.6%—that is, from 3.1% to 2.4%.

We further applied an event study to investigate the insurance-like effects of ESG performance during litigation. Hawn, Chatterji, and Mitchell (2018) considered event study methodology a powerful tool for investigating the link between CSP and stock market reactions. We used abnormal returns to measure the market reaction to a company's distress originating from litigation. We calculated abnormal returns in two ways. First, we based abnormal returns on actual returns from CRSP and on the expected returns from Fama and French's (1993) three-factor model. Second, we applied a propensity score–matching approach that used actual returns of the treated companies (i.e., companies facing a class action lawsuit) and of matched control companies. We found evidence of an insurance-like effect of positive CSP for companies facing class action lawsuits. In particular, an average sample company (market capitalization of US$22.1 billion) with low ESG performance had

an abnormal loss in market value of US$1.14 billion around the filing of the lawsuit compared with a company with high ESG performance.

Our study contributes to the discussion of CSP and risk management in a litigation risk context. First, we quantify the direct effect of a company's ESG controversies on the risk of litigation. We show that running a business responsibly can reduce the number of litigation cases and thus prevent reputational damage and a rising cost of capital. Accordingly, socially and environmentally responsible businesses become of interest to investors as the tail event risk of litigation becomes lower.

Second, we add to the research on CSP, firm value, and risk. In particular, we provide evidence for a moderating effect of positive CSP on firm value during class action lawsuits.

Third, our findings are especially relevant to investors because of the potential asset pricing implications. We implemented a long-only trading strategy that focused on those companies with the lowest litigation risk and the highest ESG performance. Following this trading strategy not only decreased an investor's exposure to idiosyncratic risk but also provided an outperformance compared with asset pricing models. Specifically, the trading strategy yielded positive alphas up to 0.73% (before transaction costs). The breakeven transaction cost of 0.48% is clearly above the transaction cost that institutional investors usually pay. Thus, our alphas remained positive even after considering transaction costs, indicating that our proposed trading strategy is feasible.

Our contribution to related studies on the relationships among CSP, risk, and company performance (e.g., Hong et al. 2019; Koh et al. 2014; Aouadi and Marsat 2018) is fourfold: First and foremost, none of these studies investigated the prediction of litigation risk as a function of positive and negative CSP. Second, as proxies, we used actual litigation events (i.e., class action lawsuits, although not specifically ESG-related ones) instead of using companies from low- and high-litigation industries (as in Koh et al.). Our study also differs from Hong et al. by focusing on a more comprehensive indicator of corporate misconduct rather than only corruption-related corporate misconduct. Whereas Aouadi and Marsat focused on ESG controversies and firm value, we investigated the insurance-like protection of firm value through positive CSP in a litigation context. Third, we derived the actual market impact on firm value around class action lawsuit filings. In contrast,

Koh et al. adopted financial and accounting performance metrics in a residual income model. Moreover, we used a homogeneous US sample of class action lawsuits rather than a cross-country sample (e.g., Aouadi and Marsat). Fourth, none of these cited studies developed a trading strategy for implementing their findings in a profitable way.

Corporate Social Performance and the Probability of Litigation

Supported by the growing evidence of CSP's investment relevance, investors are increasingly considering CSP when assessing a company's financial performance and risk. Numerous empirical studies have examined the direct relationship between CSP and financial performance (e.g., Ferrell, Liang, and Renneboog 2016; Aouadi and Marsat 2018), and others have focused on the risk dimension and the potential risk-reducing role of CSP (e.g., Harjoto and Laksmana 2018; Bouslah et al. 2013).

The risk-reducing effect of CSP is based on two arguments from risk management theory: First, increased disclosure about CSP decreases information asymmetries (Cui, Jo, and Na 2018). Reduced information asymmetries resulting from ESG engagement translate into lower risk (Cai et al. 2016). Second, engaging in CSP might itself be perceived as a risk management initiative by providing the necessary tools for dealing with risks. For example, CSP is considered to mitigate the risk-taking behavior of managers by working as a control mechanism (Harjoto and Laksmana 2018). In fact, the majority of evidence suggests that CSP decreases idiosyncratic risk and total company risk (see, e.g., Bouslah et al. 2013; Utz 2018).

Research on the relationship between CSP and litigation risk is scarce, however, despite the potential implications of such a relationship for investment portfolios. To the best of our knowledge, no previous study has investigated whether involvement in ESG controversies informs investors about a company's probability of facing litigation. ESG controversies may, however, inform outsiders about misconduct related to, among other aspects, a company's products, customer health and safety, and shareholder rights. Such misconduct may be a sign of bad risk-taking behavior and weak ESG risk management. It is thus potentially an early indicator of higher-than-expected litigation risk. Hence, and in accordance with Chen (2016), we argue that the occurrence of ESG controversies indicates negative CSP and,

therefore, higher-than-expected litigation risk. From an investor's perspective, ESG controversies might help explain litigation risk—a part of idiosyncratic portfolio risk.

The Impact of Litigation on Firm Value

Litigation is likely to have significant negative effects on firm value because lawsuits usually incur costs related to large settlement payments and damages to reputation, creditworthiness, and general trust. Specifically, litigation significantly increases loan and bond yield spreads and decreases credit ratings (Arena 2018). It also raises the likelihood of financial covenants and collateral requirements in bank loan contracts, which accords with the reputational loss resulting from litigation (Deng, Willis, and Xu 2014). Litigation reduces the future availability of external financing, investments in capital expenditures, and research and development expenses (Arena and Julio 2015; Autore, Hutton, Peterson, and Smith 2014). Additionally, litigation directly affects firm value. For instance, litigation triggered by underpricing in initial public offerings (IPOs) is often settled with payments in the two-digit percentage range of the total proceeds raised by the IPOs (Lowry and Shu 2002). These amounts are often significant and potentially diminish company success.

Previous research has supported this evidence by arguing that a lack of litigation positively affects firm value. Smith and Stulz (1985) found that perfect market assumptions often do not hold and that shareholder value thus benefits from reduced risk. From a long-term investor's perspective, minimal litigation positively influences financial performance by stabilizing cash flow and allowing effective allocation of resources to strategic initiatives and investments (Sharfman and Fernando 2008). Overall, litigation seems to have significant negative effects on firm value and financial performance, while its absence enables companies to use their resources both more efficiently and more productively.

The Insurance-Like Effect of Corporate Social Performance during Litigation

In this section, we discuss how positive CSP might mitigate the negative effects of litigation on firm value. Companies can build up moral capital (i.e., a reservoir of goodwill) through CSP, which acts as insurance against negative effects on firm value during a corporate crisis (Godfrey 2005; Koh et al. 2014). This notion of an insurance-like effect of CSP is grounded in stakeholder theory, which considers the interests of all internal and external stakeholders (Freeman 2010). Positive CSP is a strategic investment to develop company integrity and to build up moral capital among stakeholders (McWilliams, Siegel, and Wright 2006). Therefore, genuine investments in CSP are likely to pay off in a corporate crisis.

This insurance-like effect has already been shown in other contexts. For instance, Lins et al. (2017) found an insurance-like effect of positive CSP during the financial crisis of 2007–2008. Furthermore, high CSP has been shown to mitigate risk in corruption-related lawsuits (Hong et al. 2019) and for companies in industries with high litigation rates (Koh et al. 2014). Aouadi and Marsat (2018) found that companies facing controversies but having high CSP display higher firm values than companies without high CSP. Research is still far from conclusive, however, as to whether CSP protects companies against losses from legal disputes. Liu et al. (2020) found that CSP does not offer insurance-like effects to protect market value in environmental lawsuits.

We considered a class action lawsuit a potential corporate crisis (hence, similar to a financial crisis, ESG controversy, or corruption-related lawsuit). To the best of our knowledge, no previous study has investigated whether the insurance-like effect of CSP also holds during actual class action lawsuits. Based on the notion of a reservoir of goodwill and on the resulting insurance-like effect of CSP that has been found (Godfrey 2005; Godfrey, Merrill, and Hansen 2009; Koh et al. 2014), we argue that companies with strong positive CSP experience significantly smaller declines in firm value caused by actual class action lawsuits than companies with weak positive CSP. From an investor's perspective, these significantly smaller declines in firm value help to explain the impact of tail events (i.e., unlikely but highly negative return environments), such as class action lawsuits.

Testing the Relationship between Corporate Social Performance and the Probability of Litigation

We report here tests of whether higher positive CSP and lower negative CSP are linked to a lower probability of facing litigation.

Measuring Corporate Social Performance.

To estimate positive and negative CSP, we used two distinct measures for ESG performance and ESG controversies. *ESG performance* measures positive corporate activities along all three ESG dimensions (environmental, social, and governance). This measure is designed to capture how a company performs according to ESG themes, such as emissions, product innovation and responsibility, human rights, and shareholder rights. We refer to ESG performance as the ESG_P score in our model—that is, the score capturing the upside potential of positive CSP. *ESG controversies* measures the degree to which a company violates ESG norms. ESG controversies, which we refer to as the ESG_N score in our model, differ fundamentally from ESG performance because ESG_N captures the downside risk of negative CSP. In the study, the ESG_N score is mainly designed to report the number of controversies a company was involved in during the past year and is corrected for an industry effect. Thus, it is a simple and parsimonious measure of negative CSP.

Controversies are more common in some industries than in others (Francis, Philbrick, and Schipper 1994), so the ESG_N score is more beneficial for a study than a simple count of a company's controversies because the score benchmarks that total against industry peers. Merely using the number of controversies as a proxy would introduce industry bias into the analysis.

Proxies for Litigation Risk.

We used three distinct binary variables to proxy for litigation risk; each variable measures litigation risk from a slightly different angle.

The first variable is the occurrence of a "class period." The class period in class action lawsuits is the period in which the defendant committed the alleged injury or infringement against the class. The variable ClassPeriod measures whether the defendant was involved in potentially punishable endeavors at the time. In the panel data, if a class period spanned several years, the variable ClassPeriod took the value of 1 in each of those years.

The second variable is the occurrence of a lawsuit filing (CaseFiled). It is the most definite proxy for litigation and measures whether the defendant was charged in a court of law. If a company was charged in a given year, the variable took a value of 1; it was 0 otherwise.

The third variable is the start of a class period (ClassPeriodStart), which simply indicates whether the potentially punishable endeavor started in that year. Several years are often needed for plaintiffs to file a case.

We included all three variables in our model for additional robustness of results.

Estimating the Impact of CSP on Litigation Risk.

Since 1995, research on litigation risk has widely followed Francis et al. (1994) in using membership in the biotechnology, retail, and information technology industries (henceforth, FPS industries) to proxy for litigation risk. The reason is that, historically, these industries have had the highest litigation rates (Francis et al.). One stream of research has focused on what constitutes litigation risk and how it affects company performance. Most of this research either used an FPS industry dummy or included only companies from FPS industries in the sample to proxy for litigation risk (see, e.g., Matsumoto 2002).

Recent research has pointed out, however, that the crude measure of industry membership is not the best way to capture litigation risk. Researchers have begun to include additional company and stock return characteristics in models of litigation risk (e.g., Rogers and Stocken 2005). Kim and Skinner (2012) built on these findings and showed that company and return characteristics substantially increase the model's predictive power. We used the "best" model identified by Kim and Skinner, which is their Model 3b on p. 304. We adjusted it with our ESG_P and ESG_N scores and, henceforth, refer to it as "the adjusted KS model."[3]

We adopted the adjusted KS model by using the ESG_P score and ESG_N score for two basic reasons: First, applying the most efficient litigation risk model available enabled us to minimize the "omitted variables" bias while ensuring a large sample. Including those variables that best capture litigation risk (Kim and Skinner 2012) ensured that our model was likely to predict the "true" value of ESG performance and ESG controversies in explaining litigation risk. Second, including ESG performance and ESG controversies in the adjusted KS model was a simple and parsimonious approach to examining the explanatory power of positive and negative CSP.

In addition to the Francis et al. (1994) industry measure (*FPS*), we included control variables for company size, sales growth, return, return skewness, return standard deviation, and stock turnover—comprehensively discussed in Kim and

Skinner (2012). We lagged all variables, except *FPS*, by one year because we were interested in the *ex ante* predictive ability of the ESG_P and ESG_N scores. (Measuring the variables in the year of the lawsuit would have included stock price movements that could have triggered the litigation rather than measuring *ex ante* litigation risk; see Kim and Skinner 2012. Lagging the variables accounted for potential reverse causality concerns.) Therefore, our empirical model was as follows:

$$\begin{aligned}
\text{Prob}(Litigation = 1) \\
= \gamma_0 + \gamma_1 ESG_P \text{ score}_{t-1} + \gamma_2 ESG_N \text{ score}_{t-1} \\
+ \gamma_3 FPS_t + \gamma_4 Size_{t-1} + \gamma_5 SalesGrowth_{t-1} \\
+ \gamma_6 Ret_{t-1} + \gamma_7 RetSkew_{t-1} \\
+ \gamma_8 RetStdDev_{t-1} + \gamma_9 Turnover_{t-1} + \varepsilon,
\end{aligned} \quad (1)$$

where[4]

prob(*Litigation* = 1) = a binary variable that measures litigation risk

$ESG_P \text{ score}_{t-1}$ = a continuous variable that measures ESG performance

$ESG_N \text{ score}_{t-1}$ = a continuous variable that measures ESG controversies

FPS_t = a binary variable that measures membership in one of the FPS industries

$Size_{t-1}$ = a continuous variable that measures company size

$SalesGrowth_{t-1}$ = a continuous variable that measures growth in sales

Ret_{t-1} = a continuous variable that measures stock returns

$RetSkew_{t-1}$ = a continuous variable that measures skewness of stock returns

$RetStdDev_{t-1}$ = a continuous variable that measures standard deviation of stock returns

$Turnover_{t-1}$ = a continuous variable that measures stock turnover

We obtained control variable data from Compustat/CRSP and winsorized the accounting and return-related continuous variables at the 1% level. We checked for multicollinearity by calculating variance inflation factors (VIFs) for the full model. No VIF exceeded 2.75, indicating no serious multicollinearity issues.

ESG Data. We used data from Thomson Reuters to measure positive and negative CSP. Thomson Reuters rates companies according to 178 carefully selected ESG factors, so the data reflect a company's performance on a broad variety of ESG issues. The underlying measures are assessed according to criteria such as comparability, data availability, and industry relevance. The Thomson Reuters database is continuously updated, and scores are recalculated weekly. However, scores are mostly updated once a year, depending on firms' ESG disclosure.[5] Unlike ESG scores, ESG controversy scores are updated more frequently, based on the occurrence of controversies and media reports. Thomson Reuters also calculates ESG controversy scores, which are based on the occurrence of controversies and media reports. Thomson Reuters deems the ESG controversy score to be a viable standalone measure of a company's involvement in controversies and updates these scores more frequently than it updates ESG scores.[6] Using Thomson Reuters scores ensures comparability, data availability, and industry relevance with a reasonable level of variability, thus facilitating statistical inference. Hence, these scores were appropriate for our analysis, which aimed to understand the potential of the scores for explaining the probabilities of future litigation.

We used the Thomson Reuters scores for ESG performance and ESG controversies for all US companies for the period 2003–2017. The scores for ESG performance and ESG controversies range from 0 to 1. For instance, a score of 0.95 on ESG performance indicates that the company belongs to the top 5% of companies regarding ESG performance; a score of 0.95 for ESG controversies indicates membership in the 5% of companies that faced the fewest ESG controversies in the past. In other words, the higher the score, the better the company performed. For our panel dataset, we retrieved 9,683 company-year observations.

Data on Class Action Lawsuits. We obtained data for US securities class actions from the SCAC, which maintains an open-access database and may be reached at http://securities.stanford.edu. These data come directly from US court records (Liu et al. 2020) rather than newspaper sources (e.g., Flammer 2013) or measures derived from industry membership (e.g., Koh et al. 2014). Following Kim and Skinner (2012), we collected data only for lawsuit filings against listed companies in the United States (companies were listed primarily on the NYSE, American

Stock Exchange, or NASDAQ), and we excluded filings that were related to IPO allocations, mutual funds, and analysts.

According to Kim and Skinner (2012), roughly 89% of the lawsuit filings contained in the SCAC database pertain to misstated or omitted material information (i.e., violations of SEC Rule 10b-5). Most class action plaintiffs have accused defendant companies of material misstatements about the business, of failing to inform in time, or of inadequate internal controls (Kim and Skinner). Because of this homogeneity in the types of lawsuits, we refrained from differentiating in this study among the allegation types.

The SCAC data on lawsuit filings contain such information as case filing date, industry sector, market status, and class period. The filing date, class period, and start of the class period constituted our three proxies for litigation risk. Although case filing dates are more definite than class periods, class period years are also a valid measure of litigation risk because they are an early sign of future case filings.

After obtaining the data on class action lawsuits, we merged these data with our ESG dataset. The result was 734 company-year observations with a class period (ClassPeriod), 303 with a lawsuit filing (CaseFiled), and 276 with a start of a class period (ClassPeriodStart) from a total of 9,683 company-year observations. After removing observations with missing control variable data and after lagging variables, the sample size was reduced to 7,671 company-year observations.

Descriptive Statistics.
Table 1 provides summary statistics for all variables from our model. An average sample company had a per year probability of 7.6% of being involved in a class action lawsuit. The average probability of a case being filed, however, is only 3.1% per year. This discrepancy suggests that class periods usually start two to three years before the filing date. The FPS variable indicates that roughly 25% of sample companies belonged to one of the FPS industries (biotechnology, information technology, and retail). This conclusion was confirmed when company frequencies per sector were reviewed. All three FPS industries are well represented in our sample. Consistent with Francis et al. (1994), subsample descriptive statistics show that companies from FPS industries have 27% more class period years, 37% more case filings, and 35% more class period starts than non-FPS companies.

The mean ESG_N score shown in Table 1, 0.465, indicates that our sample companies faced slightly more ESG controversies than all companies in the Thomson Reuters universe (with a mean of 0.5). The median ESG_N score of 0.573 indicates, however, a slightly left-skewed distribution. In fact, looking at the empirical cumulative distribution function of the ESG_N scores reveals a wrinkle between about 0.3 and 0.5. This finding suggests that our sample companies tended to be located either on the lower (i.e., < 0.3) or on the upper (i.e., > 0.5) part of the ESG_N score continuum, indicating adequate variation in our data. This variation is also supported by a relatively large difference between minimum value (0.001) and maximum value (0.864) for the ESG_N score.

In absolute terms, class action lawsuits seem to have occurred more frequently during the last years of our sample period. Relative to the number of observations in our sample, however, class action

Table 1. Summary Statistics

	Mean	Std. Dev.	Minimum	Median	Maximum
ClassPeriod	0.076	0.266	0.000	0.000	1.000
CaseFiled	0.031	0.173	0.000	0.000	1.000
ClassPeriodStart	0.028	0.164	0.000	0.000	1.000
ESG_P score	0.470	0.170	0.089	0.436	0.980
ESG_N score	0.465	0.219	0.001	0.573	0.864
FPS	0.248	0.432	0.000	0.000	1.000

Notes: Reported are time-series averages of cross-sectional means and standard deviations; the minimum, 50th percentile (median), and maximum result for all dependent and independent variables; and *FPS*. The number of observations, *N*, is 7,671.

lawsuits did not increase considerably during the last years of the period. Therefore, the larger absolute numbers of class action lawsuits in the later years can be attributed mainly to a larger sample size in those years. Ultimately, however, we cannot rule out the possibility that a strong concentration of class action lawsuits in certain years drives our results. Publicly available data from the SCAC even point to an increasing trend of class action lawsuits if all class action lawsuits in the database are considered. Therefore, we included year fixed effects in our panel probit regression models to account for a possible increasing trend and spikes in class action lawsuits.

Estimation of Litigation Risk in Multiple Panel Regressions.
We estimated one model for each of the three dependent variables (ClassPeriod, CaseFiled, and ClassPeriodStart), including all independent and control variables. Similar to Rogers and Stocken (2005), we used a probit model to estimate the probability of class action lawsuits. (Using a logit model did not, however, qualitatively change our results.) **Table 2** provides the results.

We found that, as shown in Table 2, the ESG_P score does not explain the probability of class action lawsuits. Litigation risk usually stems from single issues, such as a company's reporting misconduct. The aggregated ESG_P score consisting of numerous indicators is thus probably inappropriate for explaining the variation in litigation risk.

The ESG_N score, however, does significantly ($p < 0.01$) explain the probability of class action lawsuits. The ESG_N score is negatively correlated with litigation risk, with coefficients ranging from −0.45 to −0.57. Because the ESG_N score counts controversies, single specific cases of company misconduct do not get lost in an aggregate of broad strategies when ESG_N

Table 2.   Estimation of Litigation Risk in Multiple Panel Regressions

	ClassPeriod	CaseFiled	ClassPeriodStart
ESG_P score$_{t-1}$	−0.15	−0.18	−0.38
ESG_N score$_{t-1}$	−0.45**	−0.57**	−0.47**
FPS	0.31**	0.30**	0.25**
Ret_{t-1}	0.51	−0.59	2.33
$RetSkew_{t-1}$	2.34	−3.00	3.83
$RetStdDev_{t-1}$	30.65**	28.69**	15.19*
$SalesGrowth_{t-1}$	0.74**	0.81**	0.56*
$Size_{t-1}$	0.18**	0.15**	0.09**
$Turnover_{t-1}$	−13.53**	−5.39	−8.64
Intercept	−2.88**	−3.02**	−2.66**
Year fixed effects	Yes	Yes	Yes
ESG_N score marginal effects	−0.057	−0.032	−0.026
FPS marginal effects	0.039	0.017	0.014
N	7,671	7,671	7,671
McFadden pseudo-R^2 (%)	6.47	7.56	4.03
Adj. McFadden pseudo-R^2 (%)	5.36	5.39	1.66
F-statistic	6.346	6.579	3.129
p-Value	0.000	0.000	0.000

Notes: For the probit panel regressions, we adjusted the standard errors used to calculate the *t*-statistics and significance levels by a two-dimensional cluster to account for possible correlation of residuals across company and time (Cameron, Gelbach, and Miller 2011).

*Statistically significant at the 5% level.

**Statistically significant at the 1% level.

is measured. Our model predicts that the companies with fewer prior-year ESG controversies are less likely to be sued in a US class action. From an investor's perspective, this finding shows the importance of ESG controversies in terms of achieving a risk-reducing effect to manage idiosyncratic portfolio risk.

Marginal effects for the ESG_N score and the FPS industry variable are displayed at the bottom of Table 2. By calculating marginal effects, we can show how strongly the ESG_N score affects the predicted probability of a class action lawsuit. The coefficient translates into marginal effects of, for example, −0.057 for ClassPeriod. Thus, the model predicts that an average company decreases the risk of a class period by 1.25% (−0.057 × 0.219) if it increases the ESG_N score by 1 standard deviation (i.e., 0.219). Considering that the probability of having a class period is 7.6% for an average company, a decrease of 1.25 percentage points is certainly notable—even more so when we consider that an increase in the ESG_N score of 1 standard deviation is still conservative. Companies in the lower portion of the ESG_N score spectrum have the potential to increase their ESG_N scores by more than 1 standard deviation (which is analogous to decreasing marginal utility). Moreover, the model predicts that the risk of a case filing drops by 0.70% (−0.032 × 0.219) if the ESG_N score is increased by 1 standard deviation. This drop is substantial. Since the total risk of a case filing is 3.1%, dropping this risk by 0.70 percentage point to 2.40% is a decrease of 22.6%.

Consistent with Kim and Skinner (2012), we further found (see Table 2) that being a member of an FPS industry translates into a higher litigation risk than being in other industries—between 1.4% (for ClassPeriodStart) and 3.9% (for ClassPeriod).[7] Being part of an FPS industry is not, however, at the discretion of managers. Hence, from management and investment perspectives, reducing this source of risk would have major implications. Managers would have to pull out of the industry and thus, most likely, completely undermine their business models. Investors would have to exclude highly litigious industries from their investment universe. Such an exclusion would most likely limit diversification potential. The decrease in litigation risk through an increased ESG_N score, however, has far more important implications. For instance, investors could consider data on ESG controversies in their investment decisions without excluding whole industries from their investment universe.

We also report in Table 2 the McFadden (1987) pseudo-R^2 and the adjusted McFadden (1974)

pseudo-R^2 as measures of the goodness of fit of the probit models. Comparing the McFadden pseudo-R^2 statistics in Table 2 with the results from the "baseline" model of Kim and Skinner (2012) shows that including the ESG variables increases the overall goodness of fit of the model (on an adjusted and non-adjusted basis).[8] In particular, the adjusted McFadden pseudo-R^2 in our setting improved by 0.32 (a relative increase of 6.4%), 0.53 (10.9%), and 0.37 (28.7%) for, respectively, the ClassPeriod, CaseFiled, and ClassPeriodStart specifications.

Although we estimated the probit models with time fixed effects and additional ESG variables, our results might not fully capture the influence of such a variable as ownership structure. We tried to address this limitation by using the most cost–benefit-efficient model of Kim and Skinner (2012) and testing only for the marginal effects of ESG controversies and ESG performance. We considered extensive previous research that has already examined a large set of potentially relevant explanatory variables for litigation risk (Kim and Skinner 2012; Johnson, Kasznik, and Nelson 2000; Brown, Hillegeist, and Lo 2005; Rogers and Stocken 2005). Johnson et al., Brown et al., and Rogers and Stocken found strong evidence that market and return variables play a vital role in explaining litigation risk—beyond the FPS industry variable from Francis et al. (1994). Moreover, Kim and Skinner investigated additional variables, such as research and development; goodwill; property, plant, and equipment; insider trading; and institutional ownership (see Model 5 in Kim and Skinner, p. 304). Although these variables slightly increased the explanatory power of their Model 5, the authors stressed that this increase came at great "cost" for the researcher (e.g., in terms of a smaller sample size and larger amounts of data to collect). As far as institutional ownership is concerned, Kim and Skinner indeed showed a positive correlation with litigation risk. To avoid any concerns about the arbitrariness of our model, however, we ultimately decided to adhere to the most cost–benefit-efficient model of Kim and Skinner (Model 3b on p. 304).

Testing the Insurance-Like Effect of CSP

In this section, we present our tests of whether positive CSP builds moral capital that provides insurance-like effects for a company in corporate crises by mitigating the negative market effects of class action lawsuits on firm value. We estimated the market

impact of class filings on firm value by considering the daily abnormal company performance around a filing date in an event study. We measured abnormal performance as the difference between actual company return and a benchmark return. To test for statistical inference, we calculated cumulative abnormal returns (CARs) from the daily abnormal returns around the event date (filing date).

A lawsuit filing may have severe financial and reputational consequences for a company; thus, it can be viewed as a negative event with unexpected outcomes. Based on the notion of an insurance-like effect of CSP, we asserted that companies with high positive CSP should benefit from their moral capital in the crisis of a lawsuit filing. For example, companies with higher positive CSP should exhibit lower negative CAR than companies with lower positive CSP around class action filings. We considered, however, that the various dimensions of positive CSP (ESG aspects) might have distinct effects on a company's CAR (see Humphrey, Lee, and Shen 2012 and references therein). Therefore, we separately tested these effects in a cross-sectional regression in which we controlled for various company characteristics.

Market-Based Estimation of the Insurance-Like Effect. We first applied a market-based event study to analyze the relationship between CSP and the market returns of companies affected by class action lawsuits. We set the event day on the filing date and calculated abnormal returns for a 21-day event window surrounding the day [–10, +10] (see, e.g., Krüger 2015). We used a pre-event period of 10 days to prevent underestimating the loss in firm value because of anticipation effects prior to a lawsuit filing (Gande and Lewis 2009).

Using a market-based estimation, we first calculated expected returns, $ER_{j,t}$, for company j and day t by using Fama and French's (1993) three-factor model:

$$ER_{j,t} = \alpha + R_f + \beta \times (R_m - R_f) + \beta_s \times SMB + \beta_v \times HML, \quad (2)$$

where

R_f = the risk-free return rate

R_m = the return on a value-weighted market portfolio

SMB = the excess return of small-capitalization stocks over big-capitalization stocks

HML = the excess return of stocks with high book-to-market ratios over stocks with low book-to-market ratios

subscript s = the size factor

subscript v = the value factor, and

α is unexplained by the model.

By applying the Fama–French (1993) multifactor risk model, we captured possible effects on abnormal returns stemming from differences in company fundamentals (e.g., company size and book-to-market value).

From actual returns $R_{j,t}$ for each company j and day t, we subtracted the expected returns, $ER_{j,t}$, to calculate abnormal returns, $AR_{j,t}$, for each day in the event window:

$$AR_{j,t} = R_{j,t} - ER_{j,t}. \quad (3)$$

To calculate the cumulative abnormal return of company j at time τ, $CAR_{j,\tau}$, we simply summed each company's abnormal returns for the period [–10, τ]:

$$CAR_{j,\tau} = \sum_{t=-10}^{\tau} AR_{j,t}. \quad (4)$$

Subsample of Class Action Lawsuit Filings. In our base sample of 9,683 company-year observations, 303 observations included a class action lawsuit (i.e., 303 is the number of total lawsuit filings in the sample, represented by the variable CaseFiled). We followed previous research by constituting each lawsuit filing as a company-specific event (Gande and Lewis 2009; Liu et al. 2020) and assigned each company's respective ESG_P score. We split the sample of 303 class action lawsuits into tertiles and ranked class action lawsuits by the companies' ESG_P scores. The top tertile contained only lawsuits involving companies whose ESG_P scores ranked in the top tertile. The bottom tertile contained lawsuits involving companies with ESG_P scores in the bottom tertile. And the middle tertile contained those with ESG_P scores in between. This approach ensured adequate within-sample variability.

Evidence of the Insurance-Like Effect of Corporate Social Performance. Figure 1 shows the mean CARs for the subsamples and the event window. Most noticeably, top-tertile ESG_P

Figure 1. Mean Cumulative Abnormal Returns
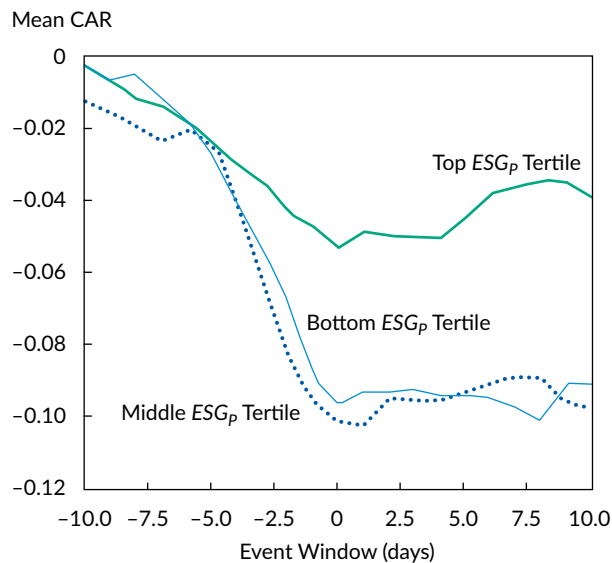
Mean CAR

Notes: Mean CARs are for all 303 litigation cases in the event window from –10 days to +10 days relative to the respective event date. We split the sample into tertiles by event-year ESG_P score.

companies experienced considerably less negative CARs than did middle- and bottom-tertile ESG_P companies. Whereas CARs of top ESG_P companies reach their lowest point at about –5% on the event day, middle and bottom ESG_P companies exhibit their lowest CARs at, respectively, about –11% and –10%. Note that mean CARs at the end of the event window are –3.91% for top ESG_P companies but –10.18% for middle ESG_P companies and –9.05% for bottom ESG_P companies. We applied two-sample *t*-tests to compare CARs of the middle and bottom ESG_P companies with those of the top ESG_P companies. The two differences, –6.27% for comparison with the middle tertile and –5.14% for comparison with the bottom tertile, are both significantly smaller than zero at a 5% significance level.[9] Figure 1 also indicates that the market reaction accrues prior to the event date. This pattern is consistent with the anticipation effect documented in Gande and Lewis (2009). Hence, higher positive CSP does lead to smaller negative abnormal returns during litigation, which supports the notion that CSP has an insurance-like effect that provides a reservoir of goodwill to companies facing a corporate crisis.

We can explain the finding that companies in the middle and bottom tertiles show no substantial difference in CARs by noting the nonlinear relationship

between CSP and financial performance (see, e.g., Barnett and Salomon 2006; Khan, Serafeim, and Yoon 2016; Hong and Kacperczyk 2009). In particular, companies with mediocre ESG_P scores fail to implement high-level and genuine ESG solutions but still incur expenses for their ESG investments. Thus, their partial ESG commitment does not lead to insurance-like protection and their ESG investments are inefficient in terms of Friedman (1970) and Goss and Roberts (2011).

Robustness Checks. The robustness checks confirmed our main result: that CSP during litigation has an insurance-like effect.[10] First, in addition to Fama and French's (1993) three-factor model, we used a market-adjusted model from CRSP that defines abnormal returns in excess of a value-weighted market return. We also used Carhart's (1997) four-factor model to calculate the expected and abnormal returns. None of these alternative models qualitatively changed our main result.

Second, we varied the estimation window to calculate the expected returns from 250 days to 500 days and increased the gap between the estimation and the event window from 50 days to 250 days. The increased gap prevented a bias in our expected returns that could be caused by anticipation effects prior to the lawsuit filing. We also shortened the event window to 11 days, [–5, +5]. None of these alternative specifications qualitatively changed our main result.

Third, we used alternative cutoff points to sort the companies into four instead of three groups based on their ESG_P scores (i.e., we used quartiles instead of tertiles). Our main result also held for these subsamples.

Fourth, we ran a "placebo" event study by shifting the event date one year into the future. On this artificial event day, no significant abnormal returns should exist and the returns of companies with different ESG_P scores should not differ substantially. Daily abnormal returns turned out to be fairly low (between 0.5% and 1%) and mostly statistically insignificant. CARs ranged from 1.4% to 3.1% and were also statistically insignificant. The results of this "placebo" event study, which alleviated concerns about company selection bias, corroborated our main result: Companies with high CSP achieve less negative abnormal returns and CARs on the days surrounding a class action lawsuit filing than do other companies.

Finally, we winsorized the CARs from our market-based assessment at 2.5% to mitigate the effects of outliers on the results. Winsorization did not substantially change our main result.

Cross-Sectional Analysis after Applying Propensity Score Matching. Although our market-based event study revealed a clear pattern of an insurance-like effect of high CSP during litigation, we considered that unobserved variables and factors other than CSP could be influencing the relationship. For instance, companies from the communication services sector report the most negative CARs by far around class action lawsuit filings. In contrast, the consumer staples sector reports slightly positive CARs during litigation. Overall, differences between sectors can be substantial.

Therefore, we adopted a propensity score–matching (PSM) approach to rule out other factors (e.g., size and profitability) as drivers of the less negative CARs for top ESG companies. Our PSM approach controlled for the industry effect by matching control companies in the same industry group with the treated companies. Propensity scores were calculated for the control companies by using various company characteristics—namely, industry group, ESG_P score, book-to-market ratio, leverage, return on equity (ROE), and size. We derived the control sample of 6,097 company-year observations from our main sample. Companies in the control sample faced no class action lawsuit filings during the whole sample period. Nevertheless, an ESG_P score was available. Thus, we excluded from the control sample prior, contemporary, and later confounding class actions that could have influenced the returns of control companies.

The sample of treated companies contained company-years with a class action lawsuit filing. Our original subsample of 303 filings was reduced to 229 because of missing data on company characteristics and the fact that we matched companies in the year previous to the filing.

Finally, for each of the 229 company-year observations for treated companies, we obtained a company-year observation for a control company with characteristics as close as possible to those of the treated company (i.e., one with the highest possible propensity score). This procedure yielded 229 pairs of treated companies and control companies that shared the same company characteristics one year prior to litigation. Only a treated company, however,

experienced a class action lawsuit filing in the year after matching.

To calculate abnormal returns of treated companies, $AR_{j,t}$, we replaced the expected return of treated companies, $ER_{j,t}$, in Equation 3 with the matched control company's actual return, $R_{m,t}$. Hence, Equation 3 was updated as follows:

$$AR_{j,t} = R_{j,t} - R_{m,t}. \tag{5}$$

The cumulative abnormal return of a treated company, $CAR_{j,\tau}$, was calculated the same way as in the market-based estimation (see Equation 4). We matched the ESG_P score of a treated company to the cross-section of $CAR_{j,\tau}$. We winsorized CAR at 2.5% to control for the possible outlier effects of extreme observations.

Our results for CARs of the treated companies accord with our previous findings from the market-based assessment of CARs. **Figure 2** shows that the losses of top-tertile ESG_P companies are only approximately half as large as those of bottom- or middle-tertile ESG_P companies. Thus, applying PSM confirmed our market-based result that top ESG_P

Figure 2. Mean Cumulative Abnormal Returns: Propensity Score Matching
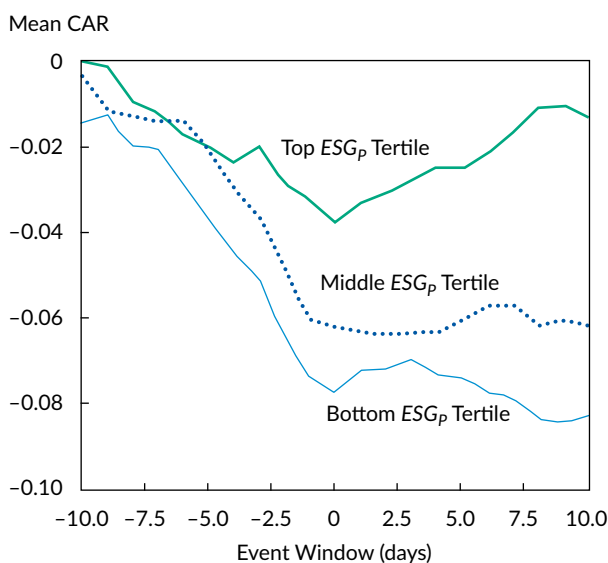
Notes: The mean CAR of the 229 treated companies in relation to their matched control companies comes from the PSM approach. Mean CARs were calculated for the event window, −10 days to +10 days relative to the event date of the company of interest.

companies experience significantly less negative CAR around class action lawsuit filings. In absolute terms, however, negative CARs are slightly lower for all companies. Interestingly, however, top ESG_P companies' CARs also recovered better after the filing date ([0, +10]).

We also conducted a cross-sectional analysis to test whether the level of the ESG_P score affected $CAR_{j,\tau}$. We attempted to find out whether variation in $CAR_{j,10}$ was explained by the ESG_P score and additional company characteristics, such as leverage (Bhandari 1988), profitability as measured by ROE (Fama and French 2015), and size (Schwert 1983) in a cross-sectional regression. All independent variables were lagged by one year to alleviate concerns about reverse causality. We applied a percentile ranking to the ESG_P score, environmental dimension (ENV_P) score, social dimension (SOC_P) score, and governance dimension (GOV_P) score to account for a possible measurement bias in the ESG data (following Utz 2018). Thus, we captured the impact on the results of potential erroneous differences in measuring these variables. Using percentile ranking for the ESG_P score enabled us to maintain the same order between the variable observations. We used bootstrapped sampling to calculate the t-statistics because of our small sample size ($N = 229$).

As shown in **Table 3**, we found the ESG_P score to be positively related to a company's CAR around class action lawsuit filings. We additionally considered the standalone insurance-like effect of the environmental, social, and governance dimensions of CSP. On the one hand, the social pillar of ESG seems to drive the positive relationship between CSP and CAR. On the other hand, the governance and environmental pillars are insignificant. This lack of significance is supported by the idea that the individual dimensions of ESG differ too strongly (Humphrey et al. 2012 and references therein). After all, our finding that higher positive CSP is linked to less negative CAR around class action lawsuits is corroborated—at least as far as the social pillar of ESG is concerned.

Implementation of the Findings in a Trading Strategy

In this section, we report our synthesis of the findings for litigation risk in relation to ESG controversies and insurance-like protection through CSP during litigation. We tested whether implementing our findings in a trading strategy would have yielded positive alpha. Our results show that portfolios comprising stocks with low predicted litigation risk provide significantly higher alphas than portfolios of

Table 3. Cross-Sectional Regression of CAR_{10}

	ESG_P score	ENV_P score	SOC_P score	GOV_P score
Variable				
Positive CSP	5.766*	4.454	6.537*	1.587
Leverage	−0.357	−0.345	−0.343	−0.372
ROE	0.826	0.841	0.776	0.866
Size	0.744	0.890*	0.696	1.099*
Intercept	−14.323**	−15.067**	−14.277**	−15.540**
N	229	229	229	229
Adj. R^2	0.06	0.05	0.06	0.05
F-statistic	18.48	19.24	20.59	10.36
p-Value	0.001	0.001	0.000	0.035

Notes: Shown are the results from cross-sectional ordinary least-squares regressions of CAR_{10} from the PSM on ESG_P score (including subscores) and control variables. Robust and bootstrapped standard errors were used. The data for CAR_{10} are in percentages. ESG_P scores and subscores were recalculated as within-sample percentile ranks to account for possible measurement bias.

*Statistically significant at the 5% level.

**Statistically significant at the 1% level.

stocks with high exposure to litigation. Moreover, if an investment manager must select stocks with high litigation risk (for instance, as a result of investment style or restrictions), our results suggest that high CSP mitigates negative alpha performance.

Factor Portfolios and Abnormal Risk-Adjusted Returns.

As a first step, we predicted probabilities of class action lawsuits (which we considered to be equal to litigation risk) for each sample company-year between 2014 and 2017. To calculate the probabilities for 2014, we used sample data from the years 2003–2012 to estimate the γ parameters of our probit model (based on Equation 1 and using the specification with CaseFiled as the dependent variable). Subsequently, we used these parameters and data from 2013 to calculate the out-of-sample probabilities for 2014. This calculation was repeated for each year as the time frame to estimate the model parameters was extended by one year with each iteration (e.g., 2003 to 2013 for the probabilities of 2015).

We checked the out-of-sample accuracy of our predictions by applying correlation tests and t-tests. For the correlation tests, we calculated the Pearson correlation between the predicted probability of litigation and the actual class action lawsuits in each year for each company. We found the correlations to be positive and significant (at the 1% level) for all three measures of litigation. Thus, companies with higher predicted probabilities of litigation also experienced more actual litigation in our sample. This result was confirmed when we conducted two-sample t-tests on the predicted probabilities of litigation for company-year observations with and without actual litigation. Our probit prediction model estimated significantly higher probabilities for companies that had experienced an actual out-of-sample litigation case than for companies that had not faced litigation (4.7% vs. 3.3%). The difference is significant at the 1% level.

In a second step, we created four single-sorted long-only factor portfolios—one containing the 20% of companies with the lowest litigation risk (Low Lit), one containing the 20% of companies with the highest litigation risk (High Lit), one containing companies with the 33% lowest prior-year ESG_P scores (Low ESG_P), and one containing the 33% of companies with the highest prior-year ESG_P scores (High ESG_P). In accordance with our previous results on the insurance-like effect of CSP, we also built

four double-sorted long-only factor portfolios—the intersection of the 20% Low Lit companies and the 33% High ESG_P companies (a Low Lit/High ESG_P portfolio) and, in a similar process, a Low Lit/Low ESG_P portfolio, a High Lit/High ESG_P portfolio, and a High Lit/Low ESG_P portfolio. The holding period for the portfolios was one year.

In a third step, we retrieved the returns of the portfolio constituents from Compustat/CRSP and calculated equal-weighted and value-weighted monthly portfolio returns. Based on these portfolio returns, we estimated monthly portfolio alphas by using the Fama–French five-factor plus momentum (FF5+MOM) model. Moreover, we swapped market returns with the returns from the STOXX North America Industry Neutral ESG Index as our proxy for ESG marketwide returns. Monthly portfolio alphas are *before* transaction costs. The first set of columns of **Table 4** show that, among the "Single-Sorted Portfolios," the equal-weighted Low Lit and value-weighted Low Lit portfolios gained significant monthly alphas—respectively, 0.75% and 0.99%. The alpha for the equal-weighted High Lit is negative at −0.44% and significant, whereas that for the value-weighted High Lit is positive at 0.44% and significant. This result indicates that small companies with high litigation risk exhibit negative abnormal returns; their weight in an equal-weighted portfolio is higher than in a value-weighted portfolio. The equal-weighted and value-weighted High ESG_P portfolios provided positive monthly alphas—respectively, 0.25% and 0.53%. Moreover, finding alphas of 0.25% and 0.73% for Low ESG_P is consistent with the idea that investors require higher compensation for the increased idiosyncratic risk inherent in a low-ESG_P company (e.g., Utz 2018).

In the "Double-Sorted Portfolios" columns of Table 4, both low-litigation portfolios (Low Lit/High ESG_P and Low Lit/Low ESG_P) yielded positive and significant monthly alphas—0.73% and 0.85% for the equal-weighted portfolios and 0.71% and 1.27% for the value-weighted portfolios. The value-weighted High Lit/High ESG_P portfolio generated a significant positive alpha of 0.44%, whereas the alpha is insignificantly different from zero in the equal-weighted setting. The alpha of the equal-weighted High Lit/Low ESG_P is negative and significant.

These empirical findings reveal practical implications for investment managers. A portfolio of stocks with low estimated litigation risk is expected to perform

Table 4. Long-Only Trading Strategies: Monthly FF5+MOM Alphas

	Single-Sorted Portfolios				Double-Sorted Portfolios			
	Low Lit	High Lit	High ESG$_P$	Low ESG$_P$	Low Lit/ High ESG$_P$	Low Lit/ Low ESG$_P$	High Lit/ High ESG$_P$	High Lit/ Low ESG$_P$
Avg. # stocks	170	170	282	282	33	75	96	34
A. Equal-weighted portfolio								
Alpha	0.0075**	−0.0044*	0.0022*	0.0030*	0.0073*	0.0085**	−0.0013	−0.0106**
Adj. R^2	0.8989	0.879	0.9493	0.9273	0.8593	0.8777	0.8642	0.8165
Avg. expected returns	0.0131	0.0018	0.0089	0.0090	0.0128	0.0138	0.0054	−0.0047
Turnover	130%	108%	65%	104%	151%	151%	86%	158%
Breakeven costs	0.58%	−0.41%	0.34%	0.29%	0.48%	0.56%	−0.15%	−0.67%
B. Value-weighted portfolio								
Alpha	0.0099**	0.0044**	0.0053**	0.0071**	0.0071**	0.0127**	0.0044**	0.0031
Adj. R^2	0.8786	0.9282	0.9632	0.8684	0.89	0.7905	0.9318	0.5056
Avg. expected returns	0.0151	0.0123	0.0131	0.0133	0.0124	0.0175	0.0126	0.0929
Turnover	133%	45%	23%	81%	160%	149%	43%	111%
Breakeven costs	0.75%	0.98%	2.31%	0.88%	0.45%	0.85%	1.03%	0.28%

Notes: We used 20% cutoffs for the litigation probability and 33% cutoffs for the ESG_P score to build the portfolios. The backtesting time frame was 2014–2017 (N = 48). The single-sorted portfolios contained 170 stocks (Lit) and 282 stocks (ESG_P), on average, in each year. The double-sorted portfolios contained, respectively, 33, 75, 96, and 34 stocks, on average, in each year. To put the alphas into perspective, average monthly expected portfolio returns are displayed.

*Statistically significant at the 5% level.

**Statistically significant at the 1% level.

significantly better than a portfolio composed of stocks with high litigation risk. In the equal-weighted (value-weighted) setting, the alpha of a long–short zero-investment portfolio calculated as the difference between Low Lit and High Lit would be 1.17% (0.53%) and is significant at the 1% (5%) level.

For the low-litigation environment, we detected no insurance-like effect of high ESG_P. If an investment manager is unable to focus on low-litigation stocks, however, high CSP provides an insurance-like benefit. To test the insurance-like effect in our investment strategy, we calculated a long–short zero-investment portfolio as the difference between High Lit/High ESG_P and High Lit/Low ESG_P. This portfolio yielded a positive and significant alpha of 0.91% in the equal-weighted setting. In the value-weighted setting, the alpha was also positive but insignificant (unreported results). To gauge the robustness of these results, we used the Fama–French three-factor model and the capital asset pricing model and varied the cutoffs for the single- and double-sorted portfolios. The generated results are similar to the ones reported here for our main analysis.

Transaction Costs of Factor Portfolios.
The results reported in the preceding section show that allocating to low-litigation and high-ESG_P portfolios leads to positive abnormal risk-adjusted returns. Because these returns neglect transaction costs, however, we calculated turnover and breakeven transaction costs for the single- and double-sorted portfolios. Following Houweling and van Zundert (2017), we defined breakeven transaction cost as the cost that would lower a portfolio's abnormal risk-adjusted return to zero. Our measure for the abnormal risk-adjusted return is the FF5+MOM alpha—that is, the values labeled "alpha" in Table 4. To assess the amount of trading required for each strategy, we calculated the turnover for each portfolio as the percentage of the value of the whole portfolio that would be traded from month t to month $t + 1$. Thus, turnover was the sum of all weight increments across the portfolio constituents.

As Table 4 reports, the annualized turnover rates of the single-sorted portfolios ranged from 23% to 133% and those for the double-sorted portfolios ranged from 43% to 160%. These substantial turnover rates indicate that investing in the suggested portfolios comes at a high cost. The turnover rates stem from new stocks entering or old stocks leaving the top or bottom portfolios because of changes in predicted litigation risk and ESG_P scores. The constituents of the High ESG_P portfolio appear to be comparably stable in the equal-weighted and value-weighted settings (turnover rates of 65% and 23%), whereas the constituents of the Low Lit portfolio differ strongly across years (turnover rates of 130% and 133%).[11]

The double-sorted portfolios reveal even higher turnover rates than the single-sorted portfolios in Table 4, which is a result of the substantially lower number of stocks in these portfolios. The single-sorted portfolios had, on average, 170 stocks in the Lit portfolios and 282 stocks in the ESG_P portfolios; the double-sorted portfolios contained, on average in each year, 33 stocks in Low Lit/High ESG_P, 75 stocks in Low Lit/Low ESG_P, 96 stocks in High Lit/High ESG_P, and 34 stocks in High Lit/Low ESG_P.

We calculated the breakeven transaction costs of each portfolio as its alpha divided by its turnover as given in Table 4. The breakeven transaction costs shown in Table 4 for single-sorted portfolios range from 0.29% to 2.31%, except for the High Lit portfolio, which generated a negative FF5+MOM alpha. The breakeven transaction costs for the value-weighted portfolios are slightly higher than those for the equal-weighted portfolios because the value-weighted portfolios have higher FF5+MOM alphas and lower turnover rates. The double-sorted portfolios show a broader range of breakeven transaction costs than do the single-sorted portfolios. For instance, the Low Lit/High ESG_P portfolio had breakeven transaction costs of 0.48%. To put these figures into perspective, we can compare them with transaction cost estimates in the literature. Frazzini, Israel, and Moskowitz (2014) estimated that between 1998 and 2013, the average trading cost for a large institutional investor managing quantitative strategies in the large-cap developed-markets universe was less than 0.2% of the trading value of the stocks. These estimated transaction costs are well below the breakeven transaction costs that we report for our portfolios in Table 4—at least for the majority of the

portfolios. Consequently, our portfolios can sustain actual transaction costs and still generate positive FF5+MOM alphas.

Concluding Remarks and Practical Implications

We investigated whether ESG controversies explain future litigation risk and whether high ESG performance moderates the negative effects of litigation on firm value. Unlike previous studies, we focused solely on the number of past ESG controversies to account for a company's negative CSP. We found that fewer ESG controversies (i.e., better ESG_N scores) are linked to lower litigation risk. In particular, improving the ESG_N score of an average company by 1 standard deviation reduced the predicted probability of a class action lawsuit by 22.6%. Moreover, we showed that high ESG performance (i.e., a better ESG_P score) helps shield a company against negative events by effectively reducing the negative effects of litigation on firm value. We found that an average sample company with a low ESG_P score facing a class action lawsuit suffered an excess loss in market value of about US$1.14 billion (5.14% of US$22.1 billion) compared with a company with a high ESG_P score.

From a portfolio management perspective, litigation risk is a component of a company's risk exposure. The rationale behind our empirical finding might be as follows. Although, in theory, diversification eliminates idiosyncratic risk, empirical results show that idiosyncratic risk and expected return are positively correlated (Fu 2009; Merton 1987). In particular, lower litigation risk exposure results in a lower required return, leading to a lower cost of capital, which allows companies to invest financial resources more efficiently than if they had high litigation risk. A lower cost of capital also implies, all else being the same, a higher firm value.

The insurance-like effect of CSP also has implications for portfolio management. Investors might include aspects of CSP in their decision making to mitigate the financial constraints during class action lawsuits. Khan (2019) found evidence for a signaling value of ESG metrics by showing that they explain stock returns. Our research suggests that ESG metrics convey information, in particular, about a company's risk exposure, which influences stock returns. Moreover, high CSP might be a tool for retaining firm value during a corporate crisis and preventing companies from suffering financial distress. In crises, distressed companies tend to wind up selling assets at fire sale prices (Ang and Mauck 2011), so their long-term prospects are in jeopardy. Hence, high CSP could be considered a defense against being acquired or losing assets to fire sales.

A synthesis of our findings on lower litigation risk and the insurance-like effects of CSP has implications for investment practice. Scores indicating the involvement of companies in ESG controversies provide useful signals to shareholders about litigation risk. The parsimonious and simple driver of litigation risk—the mere number of ESG controversies—is easily adoptable by shareholders and managers in investment processes. Accordingly, we included such a measure of ESG controversies to predict litigation risk and to build portfolios of companies with the lowest litigation risk. These portfolios achieved positive alphas. We also built portfolios of the companies with the highest ESG performance to capitalize on its insurance-like effect during potential class action lawsuits. Combining the two criteria of low litigation risk and high ESG performance in long-only factor portfolios yielded monthly alphas of 0.71%–0.73%. These alphas are before transaction costs, but we showed that even after accounting for trading costs, the alphas remained positive. The scale of the breakeven transaction costs indicates that generating these positive alphas with our trading strategy is feasible. Moreover, the required data are readily available for integration into the investment management process.

Appendix A. Lawsuit Examples and Variable Definitions

Exhibit A1. Examples of Class Action Lawsuits

Company	Year	Market	Case Status	Class Period Days	Summary
Apple	2006	NASDAQ	Settled	576	The action alleges that defendants made false and misleading statements and omissions concerning Apple's improper and undisclosed practice of backdating options conferred on certain executives, which made it appear that such options were issued on dates when the market price of Apple stock was higher than the actual market price on the actual grant dates. This improper backdating masked the virtually instant profits the option recipients obtained. On 12 November 2010, the settlement amount was amended to US$16.5 million. In addition, Apple agreed to implement certain corporate governance measures.
Caterpillar	2017	NYSE	Ongoing	1,471	According to the law company press release, Caterpillar designs, manufactures, and markets construction, mining, and forestry machinery. Caterpillar distributes its products through a worldwide organization of dealers. The complaint alleges that throughout the class period, defendants made materially false and/or misleading statements as well as failed to disclose material adverse facts about the company's business, operations, and prospects. Specifically, defendants made false and/or misleading statements and/or failed to disclose that (1) Caterpillar unlawfully used foreign subsidiaries to avoid paying billions of dollars in US taxes, (2) discovery of the foregoing conduct would subject the company to heightened regulatory scrutiny and potential criminal sanctions, and (3) as a result of the foregoing, Caterpillar's public statements were materially false and misleading at all relevant times.
FleetCor Technologies	2017	NYSE	Ongoing	365	The complaint alleges that FleetCor falsely stated that the company discloses its fees to customers clearly and that it focuses its business on helping employers control spending and save money. In truth, the company owes its ostensible success to overcharging customers, disseminating misleading marketing materials, and engaging in predatory sales practices. In addition, FleetCor's contracts did not clearly disclose the company's fees and FleetCor's improper business practices did not help customers control spending or save money.

Company	Year	Exchange	Status		Description
General Motors	2014	NYSE	Settled	1,209	The complaint alleges that defendants engaged in a scheme to hide from consumers and investors that GM's cars were plagued with a number of dangerous defects, which resulted in a multitude of adverse events, including fatal car crashes and devastating injuries to GM automobiles, drivers, passengers, and others. On 11 March 2014, GM sent a letter to the National Highway Traffic Safety Administration detailing the alleged issues with GM's ignition switches and submitted a chronology of the company's discovery of such problems and failure to properly advise consumers and regulators, leading to various injuries and deaths. In a span of less than seven weeks, the company announced recalls of more than 3.1 million vehicles. The company also announced a US$300 million charge in the first quarter of 2014 to deal with the recall campaigns.
Pfizer	2010	NYSE	Settled	1,283	During the class period, defendants misled investors by failing to disclose that they were engaged in an ongoing course of conduct designed to illegally promote the sale of Pfizer drugs, including Bextra, Geodon, Zyvox, and Lyrica. By such conduct, Pfizer caused hundreds of millions of dollars in false or fraudulent claims to be submitted to several federal health care programs, thus exposing the company to untold legal liability. On 26 January 2009, Pfizer announced that it was paying US$2.3 billion to resolve several ongoing investigations.
Walmart	2012	NYSE	Settled	252	The complaint alleges that defendants engaged in unlawful and unethical conduct. During the class period, defendants issued materially false and misleading statements regarding Walmart's practices with respect to unlawful or unethical conduct. Specifically, the company failed to disclose that its executives had been involved in a multi-million-dollar bribery scheme at Walmart's Mexican subsidiary, Wal-Mart de Mexico. On 24 September 2018, the litigation was resolved. The parties agreed to settle and release all claims that were asserted or could have been asserted in the litigation in return for a cash payment of US$160 million, to be paid by Walmart.

Notes: These class action lawsuits exemplify the actions included in our sample. The information was obtained from the SCAC, and case status was last updated on the day of data retrieval, 6 February 2019.

Exhibit A2. Variable Definitions

Variable	Type	Description
CaseFiled	{0; 1}	A class action lawsuit has been or has not been effectively filed against the company. Takes the value of 1 if the company is affected by a case filing and 0 otherwise.
ClassPeriod	{0; 1}	Time period the alleged injury was committed against the class. Takes the value of 1 if the company has been affected by a class period (i.e., the company has been potentially involved in punishable endeavors in the period) and 0 otherwise.
ClassPeriodStart	{0; 1}	Beginning of the class period. Takes the value of 1 if the company has been affected by the start of a class period (i.e., the company has started to be potentially involved in punishable endeavors in the period) and 0 otherwise.
ESG_N score	[0; 1]	ESG controversy score. The Thomson Reuters methodology uses a percentile score formula that benchmarks each company against its industry group on the basis of 23 ESG controversy topics. This procedure yields one ESG controversy score, reflecting how strongly a company has been involved in ESG controversies compared with its industry group.
ESG_P score	[0; 1]	Overall ESG performance score. The Thomson Reuters methodology uses a percentile score formula that benchmarks each company against its industry group for 10 ESG categories. Aggregating the score for each category results in an overall ESG score. Higher values of this score indicate higher ESG performance of a company compared with its industry peers.
ENV_P score	[0; 1]	Score that considers only environmental issues.
FPS	{0; 1}	Variable that considers membership in industries at risk. Takes the value of 1 if the company is a member of the biotechnology, information technology, or retail industries; these industries have historically had the highest litigation rates.
GOV_P score	[0; 1]	Score that considers only governance issues.
Leverage	[−∞; ∞]	End-of-fiscal-year long-term debt divided by shareholders' equity.
Ret	[−1; ∞]	Market-adjusted 12-month stock return.
RetSkew	[−∞; ∞]	Skewness of the 12-month stock return.
RetStdDev	[0; ∞]	Standard deviation of the 12-month stock return.
ROE	[−∞; ∞]	Net income divided by shareholders' equity.
Size	[0; ∞]	Natural logarithm of total assets.
SalesGrowth	[−1; ∞]	Change in sales compared with previous year.
SOC_P score	[0; 1]	Score that considers only social issues.
Turnover	[0; ∞]	Total 12-month stock turnover scaled by average shares outstanding.

Notes

1. In the theoretical part of this article, the term "CSP" refers to a company's positive and negative activities in all dimensions of sustainability and social responsibility (i.e., environmental, social, and governance, or ESG). In our models, we used two measures for positive and negative CSP: (1) ESG performance to proxy for positive CSP and (2) ESG controversies to proxy for negative CSP.

2. More examples of class action lawsuits included in our sample can be found in Exhibit A1 in Appendix A.

3. Kim and Skinner (2012) tested various models with various sets of variables. In terms of model selection, we adopted their cost–benefit perspective. They found that including more variables marginally increases goodness of fit and predictive ability. Collecting data for more and more variables is costly for the researcher, however, in that it takes time and reduces the sample size. Therefore, we decided to adhere to the most cost–benefit-efficient model, as suggested by Kim and Skinner.

4. For detailed variable descriptions, please refer to Exhibit A2 in Appendix A.

5. We explicitly did not use ASSET4 ratings, the predecessor to Thomson Reuters ESG scores. Instead, we used the more recent Thomson Reuters ESG scores. Thomson Reuters ESG scores were spun off into a new entity called "Refinitiv" during the conceptualization of this study.

However, the methodology has not significantly changed with this spin-off. More information about the methodology can be retrieved from: https://www.esade.edu/itemsweb/biblioteca/bbdd/inbbdd/archivos/Thomson_Reuters_ESG_Scores.pdf.

6. Thomson Reuters also provides a combined ESG score, which merges the overall ESG score with the ESG controversy score. We did not use this combined ESG score in our study.

7. The coefficients of the other control variables (*Ret, RetSkew, RetStdDev, SalesGrowth, Size*, and *Turnover*) are in line with the findings of Kim and Skinner (2012).

8. This comparison is not tabulated here; it is available from the authors upon request.

9. The mean difference between either comparison was calculated as the mean CAR at the end of the event window. For the middle-minus-top portfolio, we calculated −10.18% + 3.91% = −6.27%; for the bottom-minus-top portfolio, we calculated −9.05% + 3.91% = −5.14%.

10. For brevity, we do not report here the robustness results, but they are available upon request.

11. This result does not stem from the different cutoffs; it remained when we chose the same cutoffs for Lit and ESG_P.

References

Amel-Zadeh, A., and G. Serafeim. 2018. "Why and How Investors Use ESG Information: Evidence from a Global Survey." *Financial Analysts Journal* 74 (3): 87–103.

Ang, J., and N. Mauck. 2011. "Fire Sale Acquisitions: Myth vs. Reality." *Journal of Banking & Finance* 35 (3): 532–43.

Aouadi, A., and S. Marsat. 2018. "Do ESG Controversies Matter for Firm Value? Evidence from International Data." *Journal of Business Ethics* 151 (4): 1027–47.

Arena, M. P. 2018. "Corporate Litigation and Debt." *Journal of Banking & Finance* 87: 202–15.

Arena, M., and B. Julio. 2015. "The Effects of Securities Class Action Litigation on Corporate Liquidity and Investment Policy." *Journal of Financial and Quantitative Analysis* 50 (1–2): 251–75.

Autore, D. M., I. Hutton, D. R. Peterson, and A. H. Smith. 2014. "The Effect of Securities Litigation on External Financing." *Journal of Corporate Finance* 27: 231–50.

Barnett, M. L., and R. M. Salomon. 2006. "Beyond Dichotomy: The Curvilinear Relationship between Social Responsibility and Financial Performance." *Strategic Management Journal* 27 (11): 1101–22.

Bauer, R., and R. Braun. 2010. "Misdeeds Matter: Long-Term Stock Price Performance after the Filing of Class-Action Lawsuits." *Financial Analysts Journal* 66 (6): 74–92.

Bhandari, L. C. 1988. "Debt/Equity Ratios and Expected Common Stock Returns: Empirical Evidence." *Journal of Finance* 43 (2): 507–28.

Bouslah, K., L. Kryzanowski, and B. M'Zali. 2013. "The Impact of the Dimensions of Social Performance on Firm Risk." *Journal of Banking & Finance* 37 (4): 1258–73.

Brown, S., S. A. Hillegeist, and K. Lo. 2005. "Management Forecasts and Litigation Risk." Sauder School of Business Working Paper.

Cai, L., J. Cui, and H. Jo. 2016. "Corporate Environmental Responsibility and Firm Risk." *Journal of Business Ethics* 139 (3): 563–94.

Cameron, A. C., J. B. Gelbach, and D. L. Miller. 2011. "Robust Inference with Multiway Clustering." *Journal of Business & Economic Statistics* 29 (2): 238–49.

Carhart, M. M. 1997. "On Persistence in Mutual Fund Performance." *Journal of Finance* 52 (1): 57–82.

Chen, L. 2016. "Local Institutions, Audit Quality, and Corporate Scandals of US-Listed Foreign Firms." *Journal of Business Ethics* 133 (2): 351–73.

Cui, J., H. Jo, and H. Na. 2018. "Does Corporate Social Responsibility Affect Information Asymmetry?" *Journal of Business Ethics* 148 (3): 549–72.

Deng, S., R. H. Willis, and L. Xu. 2014. "Shareholder Litigation, Reputational Loss, and Bank Loan Contracting." *Journal of Financial and Quantitative Analysis* 49 (4): 1101–32.

Fama, E. F., and K. R. French. 1993. "Common Risk Factors in the Returns on Stocks and Bonds." *Journal of Financial Economics* 33 (1): 3–56.

——. 2015. "A Five-Factor Asset Pricing Model." *Journal of Financial Economics* 116 (1): 1–22.

Ferrell, A., H. Liang, and L. Renneboog. 2016. "Socially Responsible Firms." *Journal of Financial Economics* 122 (3): 585–606.

Flammer, C. 2013. "Corporate Social Responsibility and Shareholder Reaction: The Environmental Awareness of Investors." *Academy of Management Journal* 56 (3): 758–81.

Fombrun, C. J., and M. Shanley. 1990. "What's in a Name? Reputation Building and Corporate Strategy." *Academy of Management Journal* 33 (2): 233–58.

Francis, J., D. Philbrick, and K. Schipper. 1994. "Shareholder Litigation and Corporate Disclosures." *Journal of Accounting Research* 32 (2): 137–64.

Frazzini, A., R. Israel, and T. J. Moskowitz. 2014. "Trading Costs of Asset Pricing Anomalies." Chicago Booth Research Paper No. 14-05. Available at https://ssrn.com/abstract=2294498.

Freeman, R. E. 2010. *Strategic Management: A Stakeholder Approach*. Cambridge, UK: Cambridge University Press.

Friedman, M. 1970. "The Social Responsibility of Business Is to Increase Its Profits." *New York Times Magazine* (13 September): 122–26.

Fu, F. 2009. "Idiosyncratic Risk and the Cross-Section of Expected Stock Returns." *Journal of Financial Economics* 91 (1): 24–37.

Gande, A., and C. M. Lewis. 2009. "Shareholder-Initiated Class Action Lawsuits: Shareholder Wealth Effects and Industry Spillovers." *Journal of Financial and Quantitative Analysis* 44 (4): 823–50.

Godfrey, P. C. 2005. "The Relationship between Corporate Philanthropy and Shareholder Wealth: A Risk Management Perspective." *Academy of Management Review* 30 (4): 777–98.

Godfrey, P. C., C. B. Merrill, and J. M. Hansen. 2009. "The Relationship between Corporate Social Responsibility and Shareholder Value: An Empirical Test of the Risk Management Hypothesis." *Strategic Management Journal* 30 (4): 425–45.

Goss, A., and G. S. Roberts. 2011. "The Impact of Corporate Social Performance on the Cost of Bank Loans." *Journal of Banking & Finance* 35 (7): 1794–810.

Harjoto, M., and I. Laksmana. 2018. "The Impact of Corporate Social Responsibility on Risk Taking and Firm Value." *Journal of Business Ethics* 151 (2): 353–73.

Hawn, O., A. K. Chatterji, and W. Mitchell. 2018. "Do Investors Actually Value Sustainability? New Evidence from Investor Reactions to the Dow Jones Sustainability Index (DJSI)." *Strategic Management Journal* 39 (4): 949–76.

Hong, H., and M. Kacperczyk. 2009. "The Price of Sin: The Effects of Social Norms on Markets." *Journal of Financial Economics* 93 (1): 15–36.

Hong, H. G., J. Kubik, I. Liskovich, and J. Scheinkman. 2019. "Crime, Punishment and the Value of Corporate Social Responsibility." Working paper. Available at https://ssrn.com/abstract=2492202.

Houweling, P., and J. van Zundert. 2017. "Factor Investing in the Corporate Bond Market." *Financial Analysts Journal* 73 (2): 100–15.

Humphrey, J. E., D. D. Lee, and Y. Shen. 2012. "Does It Cost to Be Sustainable?" *Journal of Corporate Finance* 18 (3): 626–39.

Johnson, M. F., R. Kasznik, and K. K. Nelson. 2000. "Shareholder Wealth Effects of the Private Securities Litigation Reform Act of 1995." *Review of Accounting Studies* 5 (3): 217–33.

Kennett, D. A. 1980. "Altruism and Economic Behavior II: Private Charity and Public Policy." *American Journal of Economics and Sociology* 39 (4): 337–52.

Khan, M. 2019. "Corporate Governance, ESG, and Stock Returns around the World." *Financial Analysts Journal* 75 (4): 103–23.

Khan, M., G. Serafeim, and A. Yoon. 2016. "Corporate Sustainability: First Evidence on Materiality." *Accounting Review* 91 (6): 1697–724.

Kim, I., and D. J. Skinner. 2012. "Measuring Securities Litigation Risk." *Journal of Accounting and Economics* 53 (1–2): 290–310.

Koh, P. S., C. Qian, and H. Wang. 2014. "Firm Litigation Risk and the Insurance Value of Corporate Social Performance." *Strategic Management Journal* 35 (10): 1464–82.

Krüger, P. 2015. "Corporate Goodness and Shareholder Wealth." *Journal of Financial Economics* 115 (2): 304–29.

Lins, K. V., H. Servaes, and A. Tamayo. 2017. "Social Capital, Trust, and Firm Performance: The Value of Corporate Social Responsibility during the Financial Crisis." *Journal of Finance* 72 (4): 1785–824.

Liu, C., C. S. Cheong, and R. Zurbruegg. 2020. "Rhetoric, Reality, and Reputation: Do CSR and Political Lobbying Protect Shareholder Wealth against Environmental Lawsuits?" *Journal of Financial and Quantitative Analysis* 55 (2): 679–706.

Lowry, M., and S. Shu. 2002. "Litigation Risk and IPO Underpricing." *Journal of Financial Economics* 65 (3): 309–35.

Matsumoto, D. A. 2002. "Management's Incentives to Avoid Negative Earnings Surprises." *Accounting Review* 77 (3): 483–514.

McFadden, D. 1974. "Conditional Logit Analysis of Qualitative Choice Behavior." In *Frontiers in Econometrics*. Edited by P. Zarembka. Cambridge, MA: Academic Press: 105–42.

——. 1987. "Regression-Based Specification Tests for the Multinomial Logit Model." *Journal of Econometrics* 34 (1–2): 63–82.

McWilliams, A., D. S. Siegel, and P. M. Wright. 2006. "Corporate Social Responsibility: Strategic Implications." *Journal of Management Studies* 43 (1): 1–18.

Merton, R. C. 1987. "A Simple Model of Capital Market Equilibrium with Incomplete Information." *Journal of Finance* 42 (3): 483–510.

Rogers, J. L., and P. C. Stocken. 2005. "Credibility of Management Forecasts." *Accounting Review* 80 (4): 1233–60.

Schwert, G. W. 1983. "Size and Stock Returns, and Other Empirical Regularities." *Journal of Financial Economics* 12 (1): 3–12.

Sharfman, M. P., and C. S. Fernando. 2008. "Environmental Risk Management and the Cost of Capital." *Strategic Management Journal* 29 (6): 569–92.

Smith, C. W., and R. M. Stulz. 1985. "The Determinants of Firms' Hedging Policies." *Journal of Financial and Quantitative Analysis* 20 (4): 391–405.

Stellner, C., C. Klein, and B. Zwergel. 2015. "Corporate Social Responsibility and Eurozone Corporate Bonds: The Moderating Role of Country Sustainability." *Journal of Banking & Finance* 59: 538–49.

Utz, S. 2018. "Over-Investment or Risk Mitigation? Corporate Social Responsibility in Asia-Pacific, Europe, Japan, and the United States." *Review of Financial Economics* 36 (2): 167–93.

Waddock, S. A., and S. B. Graves. 1997. "The Corporate Social Performance–Financial Performance Link." *Strategic Management Journal* 18 (4): 303–19.