Advances in Accounting xxx (xxxx) xxx–xxx

Contents lists available at ScienceDirect

Advances in Accounting

journal homepage: www.elsevier.com/locate/adiac

Corporate social responsibility engagement of financially distressed firms and their bankruptcy likelihood

K.C. Lin[a,*], Xiaobo Dong[b]

[a] School of Accounting, Central Michigan University, Grawn Hall 326. 150 E. Bellows, Mount Pleasant, MI 48859, USA
[b] University of Houston-Victoria, 3007 N. Ben Wilson, Victoria, TX 77901, USA

ARTICLE INFO

Keywords:
Corporate social responsibility
Corporate social performance
Bankruptcy likelihood
Financial distress
Distress recovery
Risk management
Exchange capital
Moral capital
Relationship-based intangible assets
Litigation
KLD
MSCI
MSCI environment social government
ESG

JEL classifications:
G32
G33
G34
M14

ABSTRACT

Extant literature suggests that corporate social responsibility (CSR) accrues *social capitals* that buffers business risk. We extend this literature by documenting that firms with higher prior history of positive CSR engagement are less likely to file for bankruptcy when they are in deep financial distress and are more likely to experience accelerated recovery from distress. Furthermore, we decompose *social capitals* accrued from prior CSR engagement into *moral capital* and *exchange capital*. The results show that *moral capital* reduces bankruptcy likelihood when the firm grows larger. On the other hand, *exchange capital* mitigates bankruptcy likelihood when the firm relies on intangible assets to operate and when firms operates in more litigious business environment.

1. Introduction

This study aims to evaluate the value of corporate social responsibility (CSR, henceforth) in the context of corporate financial distress. At the crux of the study is a simple question: whether and how the bankruptcy likelihood of financially distressed firms can be reduced by their CSR engagement? CSR engagement is increasingly perceived as a risk management instrument that not only reduces cash flow volatility but also helps avoid costly lower-tail outcomes (Earnst & Young, 2017; Minor & Morgan, 2011; Peloza, 2006; Perez-Batres, Doh, Miller, & Pisani, 2012). Godfrey (2005) theorize that a firm's prior CSR engagement provides an *insurance-like protection* when the firm is in crisis. For instance, firms with proactive CSR engagement in managerial practices like environmental assessment and stakeholder management (Wood, 1991) tend to anticipate and reduce potential sources of business risk, such as potential governmental regulation, labor unrest, or environmental damage (Orlitzky & Benjamin, 2001).[1]

We extend Godfrey (2005) by looking for evidence on the relationship between prior CSR engagement and bankruptcy likelihood. The empirical investigation is conducted based on a sample of financially distressed firms. Our research question is partly motivated by Smith and Stulz (1985), who postulate that value-maximizing

* Corresponding author.
E-mail address: lin3k@cmich.edu (K.C. Lin).

[1] Although the theoretical underpinnings of our paper are based on the work of Godfrey (2005), stakeholder theory (Freeman, 1984; Hart, 1995; Jones, 1995; Russo & Fouts, 1997) offers an alternative explanation to the mitigating effect of CSR on bankruptcy likelihood. Stakeholder theory posits that firms that effectively satisfy the social demand from stakeholders, such as internal, external, environmental, and societal constituents, will survive longer and perform better than firms that do not satisfy such demands. Accordingly, higher level of CSR engagement increases long-term competitiveness and profitability and, thus, predicts lower bankruptcy likelihood. We leave this aspect to future research.

https://doi.org/10.1016/j.adiac.2018.08.001
Received 21 April 2018; Received in revised form 30 July 2018; Accepted 5 August 2018

corporations rationally acquire risk management instruments when the corporations expect future financial distress. This is because risk management instruments are most valuable to the corporations when the expected financial distress cost becomes so onerous that bankruptcy becomes imminent. As CSR engagement can be used as a form of risk management instrument, we expect that the prior CSR engagement can mitigate the expected distress cost and, consequently, lowers the bankruptcy likelihood.

To the extent that prior CSR engagement has an effect on bankruptcy likelihood, we posit that this effect varies with the types of *social capitals* that are accrued through prior CSR initiatives. We follow prior literature to separately examine two types of *social capitals*: *exchange capital* vs. *moral capital*.[2] *Exchange capital* refers to the relational-based intangible assets (e.g., brand name and loyalty, etc.) that arise from the prevalence of trust between the firm and its primary stakeholders, consisting of employees, customers, investors, suppliers, and shareholders. *Moral capital* refers another type of relational-based intangible assets (e.g., legitimacy, leniency, and social consent, etc.) that develop from the interactions between the firm and its secondary stakeholders, including the general public, media, activists, non-governmental organizations, along with other interest groups. According to Godfrey, Merrill, and Hansen (2009) and Mattingly and Berman (2006), in the context of a negative event, the risk reduction property of CSR engagement mainly works through *moral capital* instead of *exchange capital*. This is because unlike *exchange* capital, *moral capital* represents the outcome of benevolent or philanthropic activities, rather than self-serving activities designed to maximize profitability while ingratiate the firm with impacted community. Accordingly, we hypothesize that the negative association between prior CSR engagement and bankruptcy likelihood is greater for firms with higher degree of *moral capital* than for firms with higher degree of *exchange capital*.

To investigate, we first construct a sample of firms with Altman Z scores lower than 1.80 (i.e., the firms in deep financial distress).[3] We rely on *MSC*I Environment, Social, Government STATS research database to construct an aggregate score to capture prior CSR engagement (denoted as $CSR_{(t-2,t)}$), which encompasses five qualitative assessments of the interaction between the firm and its stakeholders, including employees, customers, suppliers, communities, and environment.[4] As expected, we find that firms with prior history of high (low) $CSR_{(t-2,t)}$ are less (more) likely to file for either Chapter 7 or Chapter 11 bankruptcy within the subsequent three years. The CSR mitigation effect remains strong after controlling for firm-specific and macro-economic factors that have been shown in prior literature to affect bankruptcy likelihood. In terms of economic significance, our results show that, ceteris paribus, an increase of one standard deviation in the aggregate CSR engagement score reduces the odds of bankruptcy by 57%.[5,6]

As regards the effect of *social capitals*, we decompose $CSR_{(t-2,t)}$ into the CSR engagement that generates exchange capital ($CSR_{(t-2,t)}^{Exchange}$) and the engagement that accrues moral capital ($CSR_{(t-2,t)}^{Moral}$). Pearson correlation coefficient between the two relational capital measurements is 0.2418, suggesting that firms in our sample display varying degree of strategic preference between *exchange capital* and *moral capital*. The results show a negative and statistically significant relationship between $CSR_{(t-2,t)}^{Exchange}$ and bankruptcy likelihood, and a negative but statistically insignificant relationship between $CSR_{(t-2,t)}^{Moral}$ and bankruptcy likelihood. Consequently, inconsistent with our expectation, the effect of CSR engagement on bankruptcy likelihood primarily stems from the *exchange capital*, rather than *moral capital*.

We perform additional cross-sectional analyses to examine whether the above finding is attributable to firm-specific characteristics. We focus on three firm-specific characteristics: (1) firm size, (2) level of intangible assets, and (3) litigation risk. Prior studies suggest that larger firm size usually translates into more publicly available information which, in turn, inflates secondary stakeholders' attribution of blame when there is a negative event (Klein & Dawar, 2004; Lange & Washburn, 2012; Rindova, Pollock, & Hayward, 2006). Furthermore, Godfrey (2005) postulates that *moral capital*, relative to *exchange capital*, is more relevant in protecting relational-based intangible assets (e.g., legitimacy, leniency, and social consent, etc.) against sanctions from secondary stakeholders. Consequently, we expect that *moral capital*, relative to *exchange capital*, primarily accounts for the negative association between prior CSR engagement and bankruptcy likelihood in larger firms.

Unlike firm size, the level of intangible assets and litigation risk predominately affect the interaction between the firm and its primary stakeholders. For instance, firms that utilize higher level of intangible assets in their operations often rely more on collaborations with primary stakeholders. This is because investments in intangible assets (such as R&D) can only create value to a firm when there is transfer of knowledge and information sharing between a firm and its primary stakeholders (suppliers, customers, employees, etc.). Therefore, we expect that in firms with high levels of intangible assets, prior CSR engagement reduces bankruptcy likelihood mainly through the development of exchange capital. Similarly, the level of litigation risk also affects a firm's reliance on collaborations with primary stakeholders. Firms that operate in more litigious environments can increase their chance of survival by taking actions that appeal to primary stakeholders which reduces the likelihood of litigations. Therefore, we expect that it is also the development in exchange capital that underpins the relationship between prior CSR engagement and reduced bankruptcy likelihood.

Tests on the above expectation paint the following picture: (1) As firms grow larger, both CSR engagement that generates *exchange* capital ($CSR_{(t-2,t)}^{Exchange}$) and the engagement that promotes moral capital ($CSR_{(t-2,t)}^{Moral}$) are negatively and significantly associated with bankruptcy likelihood. Specifically, the effect of $CSR_{(t-2,t)}^{Moral}$ in reducing bankruptcy likelihood is two time as much as the effect of $CSR_{(t-2,t)}^{Exchange}$. (2) For firms that utilize higher levels of intangible assets and operate in more litigious business environment, $CSR_{(t-2,t)}^{Exchange}$ is negatively and significantly associated with bankruptcy likelihood while$CSR_{(t-2,t)}^{Moral}$ is negatively but insignificantly associated with bankruptcy likelihood. Overall, these results support our expectations on how the relative relevance of *exchange* and *moral capitals* varies with firm-specific characteristics.

[2] Please see Burt (1997), Freeman, Harrison, and Wicks (2007), Fukuyama (1995), and Putnam (1993) for detailed discussion and elaboration.

[3] Used in the main analysis. For the robustness test, this criterion is relaxed to include firms not in immediate danger of bankruptcy. We also used alternative measures, including expected default risk, to capture financial distress.

[4] *Msc*I Environment, Social, Government STATS research database also provides qualitative assessments on the firm's corporate governance, human right development, and controversial industry involvement. Our CSR measurement does not incorporate these qualitative assessments because: (1) corporate governance construct is distinctly different from corporate social responsibility, (2) human right development assessment is not available until later sample period, (3) controversial industry involvement is less related to firm's discretionary actions.

[5] To further support our main conclusion, we use a hazard model to examine the duration of financial distress during a three-year observation window after the firms are identified as distressed firms. Our results suggest that firms with greater CSR engagement emerge from distress earlier than those without. See Section 4 Robustness Checks.

[6] A series of robustness tests are conducted to ensure that the interpretations of empirical results are not sensitive to the model's specifications or the

(*footnote continued*)

variables' measurements. These tests include a test of reverse-causality, tests using alternative financial distress identification criteria, and separate tests for each type of bankruptcy arrangement (Chapter 7 and Chapter 11). Tests under alternative specifications mostly confirm our main results. Please see Section 4 Robustness Checks.

Our study contributes to two streams of CSR literature. The first stream of literature relates CSR engagement to insurance of reputation, safety nets, or reservoir of goodwill. This literature posits that CSR engagement mitigates the propensity of stakeholders to take punitive sanctions against a firm when negative events occur. It has been shown that prior history of CSR engagement is negatively associated with several risk measurements, such as cost of equity capital (Sharfman & Fernando, 2008), default probability (Attig, El Ghoul, Guedhami, & Suh, 2013; Chang, Yan, & Chou, 2013; Sun & Cui, 2014), and stock price crash likelihood (Kim, Li, & Li, 2014). We add to the literature by documenting that financially distressed firms with a prior history of CSR engagement are more capable of resisting bankruptcy and are more likely to experience accelerated recovery from distress.

Second, our study contributes to the literature that links the risk reduction property of CSR engagement to stakeholder relationship management. This literature parsimoniously classifies stakeholders into primary stakeholders - those who are directly related to the operation of the business - and secondary stakeholders - those who are indirectly related to the operation of the business but can influence the firm's primary stakeholders. Godfrey et al. (2009) state that CSR engagement directed towards primary stakeholders generates *moral capital* and the engagement directed towards second stakeholders promotes *exchange capital*. They hypothesize and conclude that *moral capital* is more relevant in dissuading punitive sanction from stakeholders when negative event occurs. However, they did not provide a method to separately measure moral capital and exchange capital. Gupta and Krishnamurti (2016) separately measure CSR engagement that generate *moral* and *exchange capital*. They document that exchange capital is positively related to the probability of procuring debtor-in-possession financing by a distressed firm whilst in bankruptcy. Closely related to Gupta and Krishnamurti, we investigate the relationship between prior CSR engagement and bankruptcy likelihood of the distressed firms. We find that risk reduction property of CSR engagement is influenced by *moral* and *exchange capitals*. More importantly, we find that firm-specific characteristics and their interactions the types of social capital also influence the risk-reduction property of CSR engagement.

The remainder of this paper is organized as follows: Section 2 provides detailed descriptions of our measurement of CSR, research methods and data used to test the association between CSR and bankruptcy likelihood among financially distressed firms. Sections 3 and 4 present the results of the main analyses and robustness checks, respectively. Section 5 concludes.

2. Research design

2.1. Measuring corporate social responsibility

Our CSR measurement is based on information provided in *MSC*I Environment, Social, Government STATS research database (*MSC*I ESG STATS, henceforth).[7,8] The *MSC*I ESG STATS presents an annual snapshot of a firm's social responsibility across 13 ESG qualitative dimensions: (1) employee relations, (2) diversity, (3) product, (4) community, (5) environment, (6) corporate governance, (7) human rights, (8) alcohol, (9) gambling, (10) firearms, (11) military, (12) tobacco, and (13) nuclear power.

For the first seven ESG qualitative dimensions, the database provides total counts of *MSC*I ESG positives (*'strengths'*) and negatives (*'concerns'*) based on a predetermined set of criteria. For instance, with respect to the employee relations dimension, a firm is awarded one *MSC*I ESG strength count when it takes exceptional steps to treat its unionized workforce fairly. Along with the same dimension, a firm could also receive two *MSC*I ESG concern counts when it has a history of notably poor union relations and its defined benefit pension plan is substantially underfunded. The last six ESG qualitative dimensions are purely exclusionary screens and therefore companies can only register concerns in those dimensions.[9]

We follow Manescu (2009) and construct an adjusted *MSC*I ESG strength count as total strength count across each ESG dimension scaled by the maximum of strength count of each dimension. We use the same approach to construct adjusted *MSC*I ESG concern count.[10] To ensure that we capture relevant CSR information, we follow Choi and Wang (2009) and Hillman and Keim (2001) by focusing on five ESG qualitative dimensions: employee relations, diversity, product, community, and environment.[11] We do not consider the human right dimension in constructing CSR scores because it is only available on *MSC*I ESG Research in the later sample period. We do not include the corporate governance dimension because corporate governance is perceived as a distinct construct from corporate social responsibility (Fabrizi, Mallin, & Michelon, 2014; Kim, Park, & Wier, 2012; Klein, 2002) and the effect of corporate governance on bankruptcy likelihood has been widely examined.[12] We further exclude exclusionary screens, as these screens do not pertain to firms' discretionary actions.

To arrive at our CSR measurement, we use the sum of the five adjusted *MSC*I ESG strength counts minus the sum of the five adjusted *MSC*I ESG concern counts (firm-specific subscript suppressed for brevity):

$$CSR_t = \sum_{j=1}^{5}\left(\frac{Strength_\tau^j}{u_\tau^j} - \frac{Concern_\tau^j}{v_\tau^j}\right) \quad (1a)$$

where j represents one of the five ESG qualitative dimensions. $Strength_\tau^j$ is the sum of strength count with respect to ESG qualitative dimension j in fiscal year τ. $Concern_\tau^j$ is the sum of concern count with respect to ESG qualitative dimension j in year τ. u_τ^j (v_τ^j) is the maximum of strength (concern) count with respect to ESG qualitative dimension j in fiscal year τ.

Gray and Balmer (1998) assert that corporate reputation develops over time as a result of persistent performance reinforced by effective communication. Branco and Rodrigues (2006) and Roberts and Dowling (2002) argue that successful CSR development requires considerable time and depends on a firm making stable and consistent investments. Vanhamme and Grobben (2009) find that as compared to firms with a short history of CSR, those with long histories were better able to use CSR to counter negative publicity. Therefore, we refine our CSR measurement with a three-year moving average of corporate social reputation derived from Eq. (1a), i.e.

[7] The database is formerly known as Kinder, Lydenberg & Domini social performance ratings data (KLD). KLD was acquired by RiskMetrics in 2009, which, later was purchased by *MSC*I in 2010. Since *MSC*I acquisition, KLD was renamed *MSC*I Environment, Social, Government STATS research database.

[8] The *MSC*I ESG STATS has been extensively used in corporate social responsibility research (Jiao, 2010; Lev, Petrovits, & Radhakrishnan, 2010; Waddock & Graves, 1997).

[9] See Appendix I for a full description of *MSC*I ESG STATS criteria.

[10] Deng, Kang, and Low (2013) note that one of the popular methods to measure CSR is summing all the *MSC*I ESG strength counts and deducting total *MSC*I ESG concern counts. However, the criteria used in *MSC*I ESG STATS are not consistent over the last two decades, making ESG strength and concern counts incomparable (Manescu, 2009; Mattingly & Berman, 2006).

[11] Prior works assert that CSR has a positive effect on shareholder value creation when CSR is developed by catering to demands from primary stakeholders like employees, customers, communities, and suppliers (Chakravarthy, 1986; Clarkson, 1995; Pfeffer, 1998; Prahalad, 1997). On the other hand, CSR activities such as participating in social issues or avoiding investments in controversial industries are not related to the primary stakeholders' demands and do not influence shareholder value.

[12] For robustness consideration, we also conduct our analyses by incorporating corporate governance and/or human right dimensions. We set missing value in human right dimension to zero. We find that the alternative CSRs yield results (not shown) qualitatively similar our main findings.

$$CSR_{(t-2,t)} = \sum_{\tau=t-2}^{t} \sum_{j=1}^{5} \left(\frac{Strength_{\tau}^{j}}{u_{\tau}^{j}} - \frac{Concern_{\tau}^{j}}{v_{\tau}^{j}} \right) / 3 \quad (1b)$$

2.2. Regression model

To examine the effect of CSR ($CSR_{(t-2,t)}$) on the bankruptcy likelihood among financially distressed firms, we estimate the following logistic regression model (firm-specific subscript suppressed for brevity)[13]:

$$\begin{aligned} Prob(BANKRTUPT_{(t+1,t+3)} = 1) = {} & a_0 + a_1 CSR_{(t-2,t)} + a_2 PM_t \\ & + a_3 SALTURN_t + a_4 INTAN_t \\ & + a_5 CURNRATIO_t + a_6 OCFCOV_t + a_7 LEV_t \\ & + a_8 BTM_t + a_9 SIZE_t + a_{10} STKRET_t \\ & + a_{11} STKVOL_t + a_{12} GDP_t + a_{13} IP_t + a_{14} INT_t \\ & + \varepsilon \end{aligned} \quad (2)$$

$BANKRTUPT_{(t+1,t+3)}$ is an indicator variable coded 1 if the firm files for Chapter 7 or Chapter 11 bankruptcy during the three-year period from the second quarter of fiscal year *t + 1* to the first quarter of fiscal year t + *4* and coded 0 if otherwise. We employ this forward shift in time for our dependent variable to align its measurement with the approximate timing of the publication of the annual financial statements (i.e., when financial statement information becomes fully available).

Our main independent variable of interest is $CSR_{(t-2,t)}$. As discussed earlier, positive CSR can be viewed as a risk management instrument that reduces firms' exposure to undesirable risk, i.e., bankruptcy. Thus, we expect that distressed firms with higher CSR engagement are less likely to file for bankruptcy and predict a negative coefficient on $CSR_{(t-2,t)}$ (i.e. $a_1 < 0$).

In our main model, we include a set of firm-level and macroeconomic variables designed to control for other factors identified in prior literature as determinants of bankruptcy likelihood. Specifically, we employ profit margin (PM_t), sales revenue turnover ($SALTURN_t$), and intangible assets ($INTAN_t$) to control for financial performance and expect the coefficients on these three variables to be negative (i.e. $a_2 < 0$; $a_3 < 0$; $a_4 < 0$). Current ratio ($CURNRATIO_t$) and operating cash flow coverage ratio ($OCFCOV_t$) are meant to capture a firm's liquidity and are expected to be negatively associated with bankruptcy likelihood (i.e. $a_5 < 0$; $a_6 < 0$ Leverage is expected to be positively associated with bankruptcy likelihood ($a_7 > 0$). Fama and French (1992) conjecture that the book-to-market can proxy for solvency risk. Accordingly, we include book-to-market ratio (BTM_t) and expect it to be positively associated with bankruptcy likelihood (i.e., $a_8 > 0$).

Prior works provide mixed evidence on the relationship between firm size and bankruptcy likelihood. For example, larger firms, as characterized by their greater credibility in the financial markets and long-term contract, can delay the onset of formal bankruptcy filing well beyond the point for smaller firms (Moulton & Thomas, 1993). On the other hand, large firms are more susceptible to recessionary risk, which has been shown to be linked to bankruptcy likelihood (Denis & Denis, 1995; Lang & Stulz, 1992). With this in mind, we control for firm size ($SIZE_t$) and do not predict the sign of the coefficient on the variable. Following Shumway (1996), we include two market performance measures—stock return ($STKRET_t$) and stock return volatility ($STKVOL_t$)—and expect that the coefficients on the two variables are negative and positive, respectively (i.e., $a_9 < 0$; $a_{10} > 0$).

Recent works suggest an association between prevailing macroeconomic condition and bankruptcy likelihood (Nam, Kim, Park, & Lee, 2008; Oz & Yelkenci, 2017; Tinoco & Wilson, 2013). Thus, we include the quarterly change in real gross domestic product (GDP_t), the average of the monthly industrial production growth rate (IP_t), and the average of 10-year treasury constant maturity rate (INT_t) during the fourth quarter of fiscal year t. We include GDP_t and IP_t to control for the market spillover effects and expect negative coefficients on both variables (i.e. $a_{11} < 0$; $a_{12} < 0$). As long-term interest rates may have mixed effects on the costs of short-term and long-term borrowing, we do not make a prediction about INT_t.

2.3. Sample and summary statistics

The empirical test described above requires data primarily on CSR and financial performance. Table 1 Panel A outlines the sample selection process, which begins with all firm-year observations common to the *MSCI* ESG STATS and Compustat North America databases from 2000 to 2014. Our sample period starts from 2000 because there is only sporadic coverage by *MSCI* ESG STATS in prior years.[14,15] We exclude firm-years with less than two years of *MSCI* ESG information to calculate CSR measurement. To limit our sample to financially distressed firms, we drop firm-years with an Altman Z score greater than or equal to 1.80 (i.e., the non-distressed firms) and firm-years without sufficient financial accounting information to calculate an Altman Z score.[16,17] To prevent prior bankruptcy events confounding our empirical analyses, we eliminate firm-years with the filing of Chapter 7 or Chapter 11 of the U.S. Bankruptcy Code over the past three years. Finally, we remove firm-years without sufficient financial accounting information to calculate control variables. The final sample consists of 4163 firm-year observations for 1117 distinct firms.

Panels B and C of Table 1 display the sample distribution by year and by industry group, respectively. Panel B reveals that sample observations are distributed evenly over the sample period, although the number of observations increases consistently from 2000 to 2008 and decreases thereafter. This pattern is not surprising given the recessionary period over the last few sample years. The industry groups in Panel C are determined based on the Global Industry Sector Classification®. The industry groups most heavily represented in the sample are consumer discretionary (19.10%), health care (14.87%), energy (14.77%), information technology (13.88%), and industrials (13.64%). These five industry sectors, constitute almost four-fifth (76.26%) of the sample. All other individual industry sectors contain < 10% of sample observations. Overall, Panel C suggests that the sample is reasonably spread out across industry groups.

[13] Please see Appendix II for detailed variable definitions.

[14] According to *MSCI* ESG STAT user manual, beginning with 1991, *MSCI* provides a table of data with a collection of approximately 650 companies that comprise the Domini 400 Social SM Index and S&P 500®. Beginning in 2001, *MSCI* expanded its coverage universe to include all companies on the Russell 1000®. After 2003, *MSCI* added full coverage of the Russell 3000®.

[15] Statistical inferences are similar by including firm-year observations prior to 2000.

[16] Altman *Z*-score is calculated as (firm subscripts suppressed for brevity): $ZSCORE_t = 3.3 \times A + 0.99 \times B + 0.6 \times C + 1.2 \times D + 1.4 \times E$. A = EBIT/Total Assets (COMPUSTAT Annual data item: *EBIT/AT*); B = Net Sales/Total Assets (Compustat Annual data item: *SALE/AT*); C = Market Value of Common Equity/Total Liabilities (Compustat Annual data item: *CSHO* × *PRCC_F/LT*); D = Working Capital/Total Assets (Compustat Annual data item: *WCAP/AT*); E = Retained Earnings/Total Assets (Compustat Annual data item: *RE/AT*). Once Altman *Z*-score is determined, the score is then compared to Altman's predetermined cutoffs. Altman (1968) postulated that firms with a *Z*-score < 1.8 were likely to experience bankruptcy, firms with a Z-score 1.8 to 2.99 were in a zone of ignorance, or a gray zone in which distress may or may not be impending. Finally, firms with a *Z*-score of > 2.99 were likely to be financially sound.

[17] As a robustness check, we identify financially distressed firms with two alternative methods: modified Altman *Z*-score (Altman, 2000; Altman, Hatzell, and Peck, 1995) and estimated default probability (Merton, 1974). Our statistical inference is insensitive to either alternative methods. Please see Section 4 Robustness Check for more detail.

Table 1
Sample selection and sample distribution.

Sample selection procedure	Firm-year observations	Distinct firms
Panel A. Sample selection		
Initial sample: All firm-year observations common to the MSCI Environment, Social, Government STATS research and Compustat North America databases over the period 2000 to 2014.	33,385	5134
Exclude: Firm-years with less than two-years of MSCI ESG information to calculate corporate social responsibility measurement.	(2151)	(593)
Exclude: Firm-years with Altman Z score greater than or equal to 1.80 (i.e., firm-years not in financial distress).	(18,883)	(2120)
Exclude: Firm-years without sufficient financial accounting information to calculate Altman Z score.	(6584)	(968)
Exclude: Firm-years declare liquidation under Chapter 7 or reorganization under Chapter 11 of the U.S. Bankruptcy Code when it cannot service its debt obligations over the past three years.	(59)	(8)
Exclude: Firm-years without sufficient financial accounting information to calculate control variables.	(1545)	(328)
Final sample	4163	1117

Panel B. Sample distribution by year		
Year	Firm-year observations	Percentage
2000	64	1.54
2001	72	1.73
2002	144	3.46
2003	147	3.53
2004	258	6.20
2005	290	6.97
2006	275	6.61
2007	317	7.61
2008	461	11.07
2009	396	9.51
2010	359	8.62
2011	412	9.90
2012	385	9.25
2013	311	7.47
2014	268	6.44
All years	4163	100.00

Panel C. Sample distribution by industry sector		
Global industry sector	Firm-year observations	Percentage
Consumer Discretionary	795	19.10
Industrials	568	13.64
Information Technology	578	13.88
Health Care	619	14.87
Energy	615	14.77
Materials	319	7.66
Telecommunication Services	259	6.22
Utilities	115	2.76
Consumer Staples	109	2.62
Real Estate	101	2.43
Financials	85	2.04
All industries	4163	100.00

Table 1, Panel A summarizes the sample selection process. Panels B and C report the sample distribution by year and by industry group based on the Global Industry Sector Classification®, respectively.

Table 2 presents summary statistics for the variables in equations [2].[18] The average and median values of $CSR_{(t-2,t)}$ are −0.3110 and − 0.3333, suggesting that our sample firms are either less likely to engage in positive social activities or engage insufficient positive social activities to offset negative ones. The average (median) values of $CURNRATIO_t$, $OCFCOV_t$, and LEV_t are 1.8002, 0.5639, and 1.2847 (1.4134, 0.1454, and 0.9103), respectively. These statistics are lower than corresponding conventional solvency benchmarks, confirming that our sample primarily consists of firms in financial distress. The average (median) values of $STKRET_t$ and $STKVOL_t$ are 0.0242 and 0.1410 (−0.0494 and 0.1249), respectively. In an un-tabulated comparison to the generic intersection of MSCI ESG STATS and Compustat North America databases during the same sample period, we find that our sample firms experience lower stock returns and more severe stock return volatility, as expected.

Table 3 presents Pearson correlation coefficients for the variables in Table 2. The primary concern is the potential collinearity that undermines statistical inferences of our regression results. Overall, we do not find any pair of variables in the same regression model with a correlation coefficient exceeding 0.50. Thus, multicollinearity does not appear to be an issue in our data.

3. Empirical results

3.1. Relationship between CSR and bankruptcy likelihood

In Table 4, we sort our sample firms into four groups based on CSR performance (1 = low to 4 = high). Column (3) summarizes the

[18] We winsorize each of the continuous variables at the 1st and 99th percentiles to minimize the effects of outliers.

Table 2
Summary of statistics.

Variable name	MEAN	PCTL. 25th	PCTL. 50th	PCTL. 75th	STD. DEV.
$BANKUPT_{t+1,\ t+3}$	0.0524	0.0000	0.0000	0.0000	0.2228
$CSR_{(t-2,t)}$	−0.3110	−0.6250	−0.3333	0.0000	0.5068
PM_t	0.2674	0.2125	0.3633	0.5618	0.6185
$SALTURN_t$	0.5895	0.2966	0.4803	0.7676	0.4301
$INTAN_t$	0.2246	0.0167	0.1411	0.3874	0.2361
$CURNRATIO_t$	1.8002	0.9797	1.4134	2.0507	1.4256
$OCFCOV_t$	0.5639	0.0494	0.1454	0.2590	8.9810
LEV_t	1.2847	0.3558	0.9103	1.9707	3.8716
BTM_t	0.5377	0.1970	0.4858	0.8296	0.5773
$SIZE_t$	7.5828	6.3718	7.5916	8.7938	1.6731
$STKRET_t$	0.0242	−0.3488	−0.0494	0.2775	0.5538
$STKVOL_t$	0.1410	0.0865	0.1249	0.1776	0.0742
GDP_t	1.7879	0.8000	2.3000	3.9000	2.8959
IP_t	99.2228	95.4138	100.9761	103.3878	4.3101
INT_t	3.1820	2.3425	3.0415	4.2258	0.9446

Table 2 summary statistics for the variables used in the regression analyses. Variables are defined as follows: $BANKRUPT_{t+1,\ t+3}$ = Bankruptcy indicator. $CSR_{(t-2,t)}$ = Net corporate social responsibility. PM_t = Profit margin. $SALTURN_t$ = Sales turnover. $INTAN_t$ = Intangible assets. $CURNRATIO_t$ = Current ratio. $OCFCOV_t$ = Operating cash flow coverage. LEV_t = Financial leverage. BTM_t = Book-to-market ratio. $SIZE_t$ = Firm size. $STKRET_t$ = Stock return. $STKVOL_t$ = Stock return volatility. GDP_t = Seasonal adjusted real gross domestic product. IP_t = Industrial production index. INT_t = 10-year constant maturity rate. See Appendix for detailed variable definitions. All continuous variables are winsorized at the 1st and 99th percentiles.

Table 3
Pearson correlation coefficient analysis.

	$BANKUPT_{t+1,\ t+3}$	$CSR_{(t-2,t)}$	PM_t	$SALTURN_t$	$INTAN_t$	$CURNRATIO_t$	$OCFCOV_t$	LEV_t	BTM_t	$SIZE_t$
$BANKUPT_{t+1,\ t+3}$	1.00									
$CSR_{(t-2,t)}$	−0.09***	1.00								
PM_t	−0.03**	0.02	1.00							
$SALTURN_t$	0.02	0.00	0.12***	1.00						
$INTAN_t$	−0.10***	0.08***	0.23***	−0.06***	1.00					
$CURNRATIO_t$	−0.03**	−0.00	−0.39***	−0.18***	−0.12***	1.00				
$OCFCOV_t$	−0.01	−0.05***	0.03*	0.03**	−0.02	−0.00	1.00			
LEV_t	0.00	0.02	0.06***	−0.07***	0.07***	−0.01	−0.02	1.00		
$SIZE_t$	0.07***	0.00	0.10***	−0.14***	0.03*	0.01	−0.03**	0.12***	1.00	
BTM_t	−0.03*	0.13***	0.27***	−0.14***	0.19***	−0.33***	0.02	0.11***	0.16***	1.00
$STKRET_t$	−0.11***	0.01	0.06***	−0.02	0.02	−0.04***	0.05***	0.05***	−0.26***	0.11***
$STKVOL_t$	0.12***	−0.07***	−0.16***	0.18***	−0.18***	0.12***	−0.00	−0.04***	0.04**	−0.31***
GDP_t	−0.05***	0.02	0.03*	0.02	−0.02	−0.04***	0.00	0.02	0.08***	0.04***
IP_t	0.05***	0.01	0.01	−0.05***	0.01	0.06***	−0.01	0.02	−0.16***	−0.03*
INT_t	−0.04***	0.04***	−0.07***	−0.03*	−0.01	0.03*	0.02	−0.04***	−0.04***	0.05***
	$STKRET_t$	$STKVOL_t$	GDP_t	IP_t	INT_t					
$STKRET_t$	1.00									
$STKVOL_t$	−0.01	1.00								
GDP_t	−0.02	0.16***	1.00							
IP_t	0.20***	−0.33***	−0.35***	1.00						
INT_t	−0.02	−0.00	−0.20***	−0.22***	1.00					

Table 3 presents Pearson correlations for the variables used in the regression analyses. Variables are defined as follows: $BANKRUPT_{t+1,\ t+3}$ = Bankruptcy indicator. $CSR_{(t-2,t)}$ = Net corporate social responsibility. PM_t = Profit margin. $SALTURN_t$ = Sales turnover. $INTAN_t$ = Intangible assets. $CURNRATIO_t$ = Current ratio. $OCFCOV_t$ = Operating cash flow coverage. LEV_t = Financial leverage. BTM_t = Book-to-market ratio. $SIZE_t$ = Firm size. $STKRET_t$ = Stock return. $STKVOL_t$ = Stock return volatility. GDP_t = Seasonal adjusted real gross domestic product. IP_t = Industrial production index. INT_t = 10-year constant maturity rate. See Appendix II for detailed variable definitions. All continuous variables are winsorized at the 1st and 99th percentiles.

* $p < 0.10$.
** $p < 0.05$.
*** $p < 0.01$.

Table 4
Corporate social responsibility and likelihood bankruptcy declarations by financial distressed firms.

Portfolio sorted by corporate social responsibility (CSR_t)	Firm-year observations	Average of corporate social responsibility ($CSR_{(t-2,t)}$)	Bankruptcy likelihood ($BANKRUPT_{t+1,\ t+3}$)
(1)	(2)	(3)	(4)
1 (Low)	1061	−0.8836	0.0716
2	1082	−0.4623	0.0684
3	1165	−0.1424	0.0438
4 (High)	855	0.3614	0.0199
4–1 (High – Low)		1.245*** (71.62)	−0.0517*** (−5.59)

t statistics in parentheses.
Table 4 presents bankruptcy likelihood in groups sorted by net corporate social responsibility. Specifically, we sort the sample into four corporate social responsibility quartiles (1 = Low; 4 = High). Columns (3) and (4) summarizes the average of corporate social responsibility ($CSR_{(t-2,t)}$) and bankruptcy likelihood declaration ($BANKRUPT_{t+1,\ t+3}$) in each group. Columns (3) and (4) also provides a test of the hypothesis that the average of corporate social responsibility and bankruptcy likelihood declaration equal in the lowest versus highest level of corporate social responsibility groups. Variables are defined as follows: $BANKRUPT_{t+1,\ t+3}$ = Bankruptcy declaration indicator. $CSR_{(t-2,t)}$ = Net corporate social responsibility. See Appendix II for detailed variable definitions. All continuous variables are winsorized at the 1st and 99th percentiles.
* $p < 0.10$.
** $p < 0.05$.
*** $p < 0.01$.

averages of CSR ($CSR_{(t-2,t)}$). The average $CSR_{(t-2,t)}$ for CSR group 1 and CSR group 4 are −0.8836 and 0.3614, respectively. Moving across groups, it is apparent that the sample exhibits considerable variability in corporate social engagement.

Column (4) summarizes the bankruptcy likelihood ($BANKRTUPT_{(t+1,t+3)}$) within each CSR group. As we move vertically from CSR group 1 to CSR group 4, the bankruptcy likelihood decreases monotonically. In addition, the bankruptcy likelihood reduces from 0.0716 for the firms with the lowest CSR engagement to 0.0199 for the firms with highest CSR engagement. The reduction in bankruptcy likelihood due to increased social engagement is significant at any conventional statistical level.[19,20]

Table 5 presents the results for variant models of Eq. (2). The significance levels reported are based on standard errors adjusted for firm clustering effects. In every column, the overall model F-statistic exceeds 400 (i.e., is highly significant) and the area under the ROC curve is above 0.70.

In column (1), we test our prediction by estimating the relationship between $BANKRTUPT_{(t+1,t+3)}$ and $CSR_{(t-2,t)}$, controlling for industry and year fixed effect. We find a negative and highly significant coefficient on $CSR_{(t-2,t)}$ (coefficient estimate = −0.8910; t-statistic = −2.91), supporting that on average distressed firms with greater CSR engagement are less likely to file bankruptcy. In terms of economic significance, an increase of one standard deviation in

[19] Un-Tabulated results show that the bankruptcy likelihood for CSR group 1 is not statistically different from the likelihood for CSR group 2 (p = .8253). However, the bankruptcy likelihood for CSR group 2 is significantly greater than that for CSR group 3 (p = .0116), which is significantly greater than that for CSR group 4 (p = .0019).

[20] We assess the robustness of our results by: (1) grouping the sample into terciles or quintiles based on the value of CSR performance, and (2) including firm-year observations with Altman Z score falling between 1.8 and 2.7 (i.e., no immediate financial distress, but good chances of going bankrupt within 2 years). Results (not shown) suggest that our statistical inference is insensitive to either specification.

Table 5
Effect of corporate social responsibility on the bankruptcy likelihood declaration by distressed firms.

	Dependent Variable = $BANKRUPT_{t+1,\ t+3}$		
Explanatory variables	(1)	(2)	(3)
$CSR_{(t-2,t)}$	−0.8910*** (−2.91)	−0.7456** (−2.31)	−0.7296** (−2.27)
PM_t		−0.3010*	−0.3149*
$SALTURN_t$		−0.0125	0.0073
$INTAN_t$		−1.2968**	−1.2452*
$CURNRATIO_t$		−0.1546	−0.1484
$OCFCOV_t$		−0.0121	−0.0111
LEV_t		0.0171	0.0173
BTM_t		0.1835	0.2081
$SIZE_t$		0.1245*	0.1265*
$STKRET_t$		−1.5249***	−1.5714***
$STKVOL_t$		10.9312***	11.1484***
GDP_t			−0.0633
IP_t			0.2288
INT_t			−3.4455*
Intercept	Yes	Yes	Yes
Industry and Year Fixed Effect	Yes	Yes	Yes
N	4163	4163	4163
No. declare bankruptcy	217	217	217
Pseudo R^2	0.0876	0.2149	0.2190
Wald-Statistics	436.7895	573.3679	541.7735
Area under the ROC curve	0.7253	0.8394	0.8430

t statistics in parentheses.
Table 5 reports the results for variants of the following regression model: Eq. (2).
We estimate the above model using logistic least squares regression. Standard errors are adjusted for firm clustering effects. Variables are defined as follows: $BANKRUPT_{t+1,\ t+3}$ = Bankruptcy indicator. $CSR_{(t-2,t)}$ = Net corporate social responsibility. PM_t = Profit margin. $SALTURN_t$ = Sales turnover. $INTAN_t$ = Intangible assets. $CURNRATIO_t$ = Current ratio. $OCFCOV_t$ = Operating cash flow coverage. LEV_t = Financial leverage. BTM_t = Book-to-market ratio. $SIZE_t$ = Firm size. $STKRET_t$ = Stock return. $STKVOL_t$ = Stock return volatility. GDP_t = Seasonal adjusted real gross domestic product. IP_t = Industrial production index. INT_t = 10-year constant maturity rate. Industry fixed effect is based on Global Industry Sector Classification®. See Appendix II for detailed variable definitions. All continuous variables are winsorized at the 1st and 99th percentiles.
* $p < 0.10$.
** $p < 0.05$.
*** $p < 0.01$.

$CSR_{(t-2,t)}$, ceteris paribus, reduces the odds of bankruptcy by 57% ($=e^{-0.8910\times0.5068}-1$). Columns (2) and (3) show that the coefficient of $CSR_{(t-2,t)}$ remains negative and significant, albeit slightly attenuated, after including variables meant to control for firm-specific characteristics and macroeconomic conditions.

The results for the control variables are generally significant in the predicted directions. The coefficients on PM_t and $INTAN_t$ are negative and significant. Perhaps surprisingly, we do not find any significant coefficients on debt capacity and solvency-related variables (viz. $CURNRATIO_t$, $OCFCOV_t$, LEV_t, and BTM_t). The coefficient on $STKRET_t$ is positive and significant, whereas the coefficient on $STKVOL_t$ is negative and significant, as expected. In terms of macroeconomic variables, INT_t is negatively and significantly associated with bankruptcy likelihood, and GDP_t and IP_t do not have a significant association with bankruptcy likelihood.

3.2. Effect of exchange capital vs. moral capital

Theory suggests that the risk reduction property of CSR engagement can be attributable to the two types of *social capitals* accrued by prior engagement: *exchange capital* and *moral capital*. *Exchange capital* refers to the relational-based intangible assets (e.g., brand name and loyalty,

Table 6
Bankruptcy likelihood and corporate social responsibility: Exchange capital vs. moral capital.

	Dependent variable = $BANKRUPT_{t+1,\ t+3}$		
	(1)	(2)	(3)
$CSR_{(t-2,t)}^{Exchange}$	−0.7316**	−0.6789**	−0.6563**
	(−2.39)	(−2.14)	(−2.07)
$CSR_{(t-2,t)}^{Moral}$	−0.3435	−0.3156	−0.3173
	(−1.06)	(−0.96)	(−0.96)
PM_t		−0.3080*	−0.3211*
$SALTURN_t$		0.0138	0.0328
$INTAN_t$		−1.3421**	−1.2875**
$CURNRATIO_t$		−0.1499	−0.1431
$OCFCOV_t$		−0.0135	−0.0124
LEV_t		0.0171	0.0173
BTM_t		0.1773	0.2011
$SIZE_t$		0.1412*	0.1431*
$STKRET_t$		−1.5431***	−1.5887***
$STKVOL_t$		10.9377***	11.1494***
GDP_t			−0.0624
IP_t			0.2209
INT_t			−3.4494*
Intercept	Yes	Yes	Yes
Industry and Year Fixed Effect	Yes	Yes	Yes
N	4163	4163	4163
No. declare bankruptcy	217	217	217
Pseudo R^2	0.0874	0.2156	0.2197
Wald-Statistics	439.1877	557.3952	576.0424
Area under the ROC curve	0.7243	0.8392	0.8428

t statistics in parentheses.
Table 6 reports the results for variants of the following regression model: Eq. (3).
We estimate the above model using logistic least squares regression. Standard errors are adjusted for firm clustering effects. Variables are defined as follows: $BANKRUPT_{t+1,\ t+3}$ = Bankruptcy indicator. $CSR_{(t-2,t)}^{Exchange}$ = Net exchange corporate social capital. $CSR_{(t-2,t)}^{Moral}$ = Net moral corporate social capital. PM_t = Profit margin. $SALTURN_t$ = Sales turnover. $INTAN_t$ = Intangible assets. $CURNRATIO_t$ = Current ratio. $OCFCOV_t$ = Operating cash flow coverage. LEV_t = Financial leverage. BTM_t = Book-to-market ratio. $SIZE_t$ = Firm size. $STKRET_t$ = Stock return. $STKVOL_t$ = Stock return volatility. GDP_t = Seasonal adjusted real gross domestic product. IP_t = Industrial production index. INT_t = 10-year constant maturity rate. Industry fixed effect is based on Global Industry Sector Classification®. See Appendix II for detailed variable definitions. All continuous variables are winsorized at the 1st and 99th percentiles.
* $p < 0.10$.
** $p < 0.05$.
*** $p < 0.01$.

etc.) that arise from the prevalence of trust between the firm and its primary stakeholders. On the other hand, *moral capital* refers another type of relational-based intangible assets (e.g., legitimacy, leniency, and social consent, etc.) that develop from the interactions between the firm and its secondary stakeholders. In this section, we evaluate the relative relevance of *exchange capital* and *moral capital* that underlies the negative association between prior CSR engagement and bankruptcy likelihood.

We follow prior literature to measure to decompose $CSR_{(t-2,t)}$ into the CSR engagement that generates exchange capital ($CSR_{(t-2,t)}^{Exchange}$) and the engagement that accrues moral capital ($CSR_{(t-2,t)}^{Moral}$). Specifically, we calculate $CSR_{(t-2,t)}^{Exchange}$ based on ESG qualitative dimensions: employee relations, diversity, and product, and measure $CSR_{(t-2,t)}^{Moral}$ with the other two ESG qualitative dimensions: community and environment. We then re-estimate Eq. (2) and replace $CSR_{(t-2,t)}$ with $CSR_{(t-2,t)}^{Exchange}$ and $CSR_{(t-2,t)}^{Moral}$. The revised regression model is stated as follows:

$$\begin{aligned}\text{Prob}(BANKRTUPT_{(t+1,t+3)} = 1) = {} & a_0 + a_{1a}CSR_{(t-2,t)}^{Exchange} + a_{1b}CSR_{(t-2,t)}^{Moral} \\ & + a_2PM_t + a_3SALTURN_t + a_4INTAN_t \\ & + a_5CURNRATIO_t + a_6OCFCOV_t + a_7LEV_t \\ & + a_8BTM_t + a_9SIZE_t + a_{10}STKRET_t \\ & + a_{11}STKVOL_t + a_{12}GDP_t + a_{13}IP_t + a_{14}INT_t \\ & + \varepsilon \qquad (3)\end{aligned}$$

Table 6 presents the results of different versions of Eq. (3). Regardless of model specifications, we find that the coefficient on $CSR_{(t-2,t)}^{Exchange}$ is negative and significant and the coefficient on $CSR_{(t-2,t)}^{Moral}$ is negative but insignificant. The results suggested that distressed firms with greater *exchange capital*, not *moral capital*, are more relevant to mitigate the bankruptcy likelihood.

3.3. Firm characteristics and the relative relevance of exchange capital and moral capital

We further examine whether the relative relevance of *exchange capital* and *moral capital* varies with firm-specific characteristics. We focus on three firm-specific characteristics: (1) firm size, (2) level of intangible assets, and (3) litigation risk. Prior studies link firm size to firms' wrongdoing attribution by secondary stakeholders. Consequently, we expect that for larger firms, *moral capital* primarily accounts for the negative association between prior CSR engagement and bankruptcy likelihood. In addition, firms that utilize higher level of intangible assets and face more litigious business environment tend to escalate conflict against primary stakeholders. Accordingly, we expect that for those firms, *exchange capital* underlies the negative association between prior CSR engagement and bankruptcy likelihood.

We test the above predictions by re-estimating Eqs. (2) and (3) separately for large firms vs. small-size firms, high-intangible-assets firms vs. low- intangible -assets firms, and high-litigation-risk firms vs. low-litigation risk firms. Firm size is measured by book value of total assets. Consistent with Chan, Lakonishok, and Sougiannis (2001) and Lev and Sougiannis (1996), we capture the intangible assets with the research and development and advertisement expenditures over the past five years and assume that each dollar of spending declines linearly by 20% a year. Following Kim and Skinner (2012), we evaluate litigation risk based on the monthly stock return volatility over the one-year period from the second quarter of fiscal year *t* to the first quarter of fiscal year t + 1.

Panel A of Table 7 reports the results for the analysis pertaining to firm size. Columns (1) and (2) shows that for large sample firms, the coefficient on $CSR_{(t-2,t)}$ is significantly negative ($p < 0.01$) and the coefficient on $CSR_{(t-2,t)}^{Exchange}$ and $CSR_{(t-2,t)}^{Moral}$ are both significantly negative ($p < 0.10$). The coefficient on $CSR_{(t-2,t)}^{Moral}$ is 2.0028 (=1.2820/0.6401) times as much as the coefficient on $CSR_{(t-2,t)}^{Exchange}$. Conversely, columns (3) and (4) shows that for small sample firms, the coefficients on $CSR_{(t-2,t)}$ and on $CSR_{(t-2,t)}^{Exchange}$ and $CSR_{(t-2,t)}^{Moral}$ are insignificant at any conventional statistical level. Thus, as expected, CSR, as risk-management tool, is more effective in large firms. Furthermore, its risk reduction property stems more from *moral capital* than from *exchange capital*.

Panel B reports the results of analysis pertaining to the level of intangible assets, and Panel C reports the results of analysis pertaining to litigation risk. In both panels, the coefficient on $CSR_{(t-2,t)}$ is significantly negative (column (1)), suggesting that CSR is only effective in reducing bankruptcy risk in firms with greater intangible assets and in higher litigious firms. When we further examine which component of CSR mainly contributes to the risk-mitigation property, Column (2) and (3) in both panels shows that it is the *exchange capital*, not *moral capital*,

Table 7
Relation between bankruptcy likelihood, corporate social responsibility, and firm characteristics.

Panel A. large vs. small size.

	Dependent variable = $BANKRUPT_{t+1,\ t+3}$			
	Large size subsample		Small size subsample	
Explanatory variables:	(1)	(2)	(3)	(4)
$CSR_{(t-2,t)}$	−1.2852***		−0.2316	
	(−2.86)		(−0.53)	
$CSR_{(t-2,t)}^{Exchange}$		−0.6401*		−0.4788
		(−1.67)		(−0.94)
$CSR_{(t-2,t)}^{Moral}$		−1.2820**		0.5180
		(−2.08)		(1.28)
Intercept	Yes	Yes	Yes	Yes
Control Variables	Yes	Yes	Yes	Yes
Industry and Year Fixed Effect	Yes	Yes	Yes	Yes
N	2078	2078	2085	2085
No. declare bankruptcy	118	118	99	99
Pseudo R^2	0.3022	0.2118	0.2427	0.2724
Wald-Statistics χ^2	324.75	246.26	238.30	223.93
Area under the ROC curve	0.8894	0.7396	0.8684	0.8833

Panel B. high vs. low intangible assets

	High intangible assets subsample		Low intangible assets subsample	
Explanatory variables:	(1)	(2)	(3)	(4)
$CSR_{(t-2,t)}$	−1.1377***		−0.5277	
	(−2.77)		(−1.12)	
$CSR_{(t-2,t)}^{Exchange}$		−1.2347***		−0.1825
		(−2.74)		(−0.42)
$CSR_{(t-2,t)}^{Moral}$		−0.0412		−0.7927
		(−0.09)		(−1.62)
Intercept	Yes	Yes	Yes	Yes
Control Variables	Yes	Yes	Yes	Yes
Industry and Year Fixed Effect	Yes	Yes	Yes	Yes
N	2078	2078	2085	2085
No. declare bankruptcy	143	143	74	74
Pseudo R^2	0.2427	0.2381	0.2462	0.2631
Wald-Statistics χ^2	238.30	313.87	92.68	507.90
Area under the ROC curve	0.8684	0.8647	0.8449	0.8580

Panel C. high vs. low litigation risk

	High litigation risk subsample		Low litigation risk assets subsample	
Explanatory variables:	(1)	(2)	(3)	(4)
$CSR_{(t-2,t)}$	−0.8080**		−0.1152	
	(−2.19)		(−0.18)	
$CSR_{(t-2,t)}^{Exchange}$		−0.9088**		0.2025
		(−2.43)		(0.38)
$CSR_{(t-2,t)}^{Moral}$		−0.1170		−0.9367
		(−0.32)		(−1.61)
Intercept	Yes	Yes	Yes	Yes
Control Variables	Yes	Yes	Yes	Yes
Industry and Year Fixed Effect	Yes	Yes	Yes	Yes
N	2078	2078	2085	2085
No. declare bankruptcy	41	41	176	176
Pseudo R^2	0.1959	0.1959	0.2579	0.2579
Wald-Statistics χ^2	452.7570	452.7570	248.4275	248.4275

Table 7 (*continued*)

Panel C. high vs. low litigation risk

	High litigation risk subsample		Low litigation risk assets subsample	
Explanatory variables:	(1)	(2)	(3)	(4)
Area under the ROC curve	0.8182	0.8182	0.8734	0.8734

t statistics in parentheses.
Table 7 reports the results for following regression models: Eqs. (2)(3)
We estimate Eqs. (2) and (3) using logistic least squares regression. Coefficient estimates on control variables are omitted for brevity. Standard errors are adjusted for firm clustering effects. Panel A reports the regression results based on the sub-sample with firm size ($SIZE_t$) above and below the sample median by year, respectively. Panel B reports the regression results based on the sub-sample with intangible assets ($INTAN_t$) above and below the sample median by year, respectively. Panel C reports the regression results based on the sub-sample with litigation risk ($STKVOL_t$) above and below the sample median by year, respectively. Variables are defined as follows: $BANKRUPT_{t+1,\ t+3}$ = Bankruptcy indicator. $CSR_{(t-2,t)}$ = Net corporate social responsibility. PM_t = Profit margin. $SALTURN_t$ = Sales turnover. $INTAN_t$ = Intangible assets. $CURNRATIO_t$ = Current ratio. $OCFCOV_t$ = Operating cash flow coverage. LEV_t = Financial leverage. BTM_t = Book-to-market ratio. $SIZE_t$ = Firm size. $STKRET_t$ = Stock return. $STKVOL_t$ = Stock return volatility. GDP_t = Seasonal adjusted real gross domestic product. IP_t = Industrial production index. INT_t = 10-year constant maturity rate. Industry fixed effect is based on Global Industry Sector Classification®. See Appendix II for detailed variable definitions. All continuous variables are winsorized at the 1st and 99th percentiles.

* $p < 0.10$.
** $p < 0.05$.
*** $p < 0.01$.

that causes the negative relationship between CSR and bankruptcy risk. These results confirm that the reason that firms with a prior history of positive CSR have reduced bankruptcy risk is mainly a result of their investments in relationship with primary stakeholders. Investing in secondary relationships and in building a high publicly-perceived moral standard plays only a minor role in reducing a firm's bankruptcy risk.

4. Robustness checks

4.1. Effect of CSI on the duration of financial distress

To further investigate the hypothesized relationship between CSR and bankruptcy likelihood among distressed firms, we employ a hazard model to examine how CSR impacts the duration of financial distress during a three-year observation window after the firm was identified as a distressed firm. To implement the hazard model, we define the duration of distress as the period starting with year *t* and end with the earlier of recovery and the end of the 3-year observation window.[21] The general form of the hazard model is:

$$\ln h(t) = \alpha(t) + \underline{B}\underline{X}(t) \quad (4)$$

where lnh(t) is the hazard, or chance of recovery, at time *t*, continual on survival to *t*. α(t) is the baseline hazard, B is a vector of coefficients, and X(t) is a matrix of observations on explanatory variables, including $CSR_{(t-2,t)}$ and the control variables in Eq. (2).

[21] The estimation process that prevent observation at some time t, called censoring and truncation, are important consideration in employing hazard models. Our design has right censoring because we fix the end of our observation window at three years. Thus, we do not observe recovery that could occur beyond the close of the window. The likelihood function, therefore, depends on only those recover that occurs within our observation window.

Table 8
Cox proportional hazards regression analysis of the duration of financial distress and corporate social responsibility.

	Coeff. Est.	Coeff. Est.	Coeff. Est.
$CSR_{(t-2,t)}$	0.2421**	0.2650**	0.2673**
	(2.30)	(2.48)	(2.51)
PM_t		−0.0022	−0.0022
$SALTURN_t$		0.4938***	0.4875***
$INTAN_t$		0.3623	0.3544
$CURNRATIO_t$		0.0796**	0.0761**
$OCFCOV_t$		0.0027	0.0019
LEV_t		−0.0155	−0.0154
BTM_t		0.1893**	0.1849**
$SIZE_t$		−0.0702*	−0.0714*
$STKRET_t$		0.3961***	0.4261***
$STKVOL_t$		−2.8795***	−3.0299***
GDP_t			−0.0213
IP_t			−0.1454*
INT_t			1.2784*
Intercept	Yes	Yes	Yes
Industry and Year Fixed Effect	Yes	Yes	Yes
N	4163	4163	4163
No. recover from financial distress	971	971	971
Pseudo R^2	0.0167	0.0227	0.0231
Likelihood Ratio χ^2	209.3461	300.2571	311.8734

t statistics in parentheses.
Table 8 reports the results for a variant of the following hazard model: Eq. (4). where lnh(t) is the hazard, or instantaneous risk of recovery, at time t, continual on survival to t. α(t) is the baseline hazard, B is a vector of coefficients, and X(t) is a matrix of observations on explanatory variables. We estimate the above model using Cox proportional hazard model. Standard errors are adjusted for firm clustering effects. We employ Breslow method to handle tied failures. Variables are defined as follows: $BANKRUPT_{t+1,\ t+3}$ = Bankruptcy indicator. $CSR_{(t-2,t)}$ = Net corporate social responsibility. PM_t = Profit margin. $SALTURN_t$ = Sales turnover. $INTAN_t$ = Intangible assets. $CURNRATIO_t$ = Current ratio. $OCFCOV_t$ = Operating cash flow coverage. LEV_t = Financial leverage. BTM_t = Book-to-market ratio. $SIZE_t$ = Firm size. $STKRET_t$ = Stock return. $STKVOL_t$ = Stock return volatility. GDP_t = Seasonal adjusted real gross domestic product. IP_t = Industrial production index. INT_t = 10-year constant maturity rate. Industry fixed effect is based on Global Industry Sector Classification®. See Appendix II for detailed variable definitions. All continuous variables are winsorized at the 1st and 99th percentiles.

* $p < 0.10$.
** $p < 0.05$.
*** $p < 0.01$.

We estimate the hazard model with the method of partial likelihood developed by Cox (1972). The advantage of this method is that we obtain unbiased and asymptotically normal estimates of the coefficients B, without specifying the functional form of the baseline hazard α(t) (Greene, 2011).[22]

Our main variable of interest in Eq. (4) is $CSR_{(t-2,t)}$. If CSR can strengthen a firm's relationships with primary stakeholders, thereby enabling the firm to acquire the resources needed to recover, then firms with greater CSR engagement will emerge from distress earlier than those with low CSR engagement. We therefore predict a positive coefficient on $CSR_{(t-2,t)}$.

In Table 8, we report the results for different versions of our hazard models of time to recover from financial distress. Overall, 0.2332 (=971/4163) of our sample emerged from financial distress within a three-year observation window after the firm was identified as being in distress. In every column, the likelihood ratio Wald-statistics exceeds 200, rejecting the global null hypothesis that all the coefficient are zero.

As expected, column (1) shows that the coefficient on $CSR_{(t-2,t)}$ is positive and significant (Coefficient estimate = 0.2421; t-statistics = 2.30). In terms of economic significance, the result suggests that conditional on arriving at any time t without a recovery, firms that score higher in $CSR_{(t-2,t)}$ by one standard deviation are 1.13 ($=e^{0.2421\times0.5068}$) times more likely to emerge from distress in year t + 1. Columns (2) and (3) show that the coefficient of $CSR_{(t-2,t)}$ remain significant and even more positive after including variables meant to control for firm-specific characteristics and macroeconomic conditions.

In the results not shown here, we shift our observation window lengths to two years and four years to assess the sensitivity of our results to our design choice. The empirical findings and statistical inferences remain similar. In addition, we find stronger results when we do not right-censor the data. However, readers should be cautioned that the longer the observation window extends, the less reliable the estimated relationship between the duration of financial distress and CSR.

4.2. Reverse causal relationship

The results in Table 5 support our main hypothesis that, when firms are financially distressed, CSR engagement helps reduce subsequent bankruptcy likelihood. However, the empirical findings may be influenced by the reverse causality – the closer (the farther away) a distressed firm is to bankruptcy, the less (more) it can spend on CSR.

To address this issue, we conduct a two-stage regression approach to explore whether the hypothesized relationship between CSR engagement and subsequent bankruptcy likelihood of distressed firms is robust to the reverse causality. In the first stage, we follow prior literature to select two exogenous (instrument) variables: $CSR_{(t-2,t)}^{Industry}$, calculated as average $CSR_{(t-2,t)}$ in the 3-digit SIC code industry where the distressed firm operates (Baucus & Near, 1991; Beliveau, Cottrill, & O'Neill, 1994), and $CSR_{(t-2,t)}^{Geography}$, calculated as average $CSR_{(t-2,t)}$ in the 3-digit zip code area where the distressed firm's headquarter resides (Jiraporn, Jiraporn, Boeprasert, & Chang, 2014). We then rely on an ordinary least square approach to predict $CSR_{(t-2,t)}$ with $CSR_{(t-2,t)}^{Industry}$ and $CSR_{(t-2,t)}^{Geography}$, along with other control variables in the Eq. (2). The predicted value is denoted as $\widehat{CSR}_{(t-2,t)}$. In the second stage, we re-estimate Eq. (2) by using $\widehat{CSR}_{(t-2,t)}$ from the first stage regression in place of $CSR_{(t-2,t)}$.

The un-tabulated results show that $\widehat{CSR}_{(t-2,t)}$ is negative and significant (p-value < 0.05), supporting the view that our main findings are unlikely to be driven by reverse causality and other endogeneity issues.

4.3. Alternative financial distress identification

As a bankruptcy predictor, the Altman *Z*-score has been criticized for its lack of flexibility when applied to different industries and its lack of theoretical support. As our robustness tests, we utilize two alternative methods to identify financially distressed firms. In the first test, we follow Altman (2000) and Altman, Hartzell, and Peck (1998) and modify our Altman Z-score formula and predetermined cutoff points for firms in non-manufacturing industries. In the second test, we rely on Merton's (1974) option-based structural model to estimate default probability and identify firms in distress if the estimated default probability is > 0.75. Our statistical inference is insensitive to either alternative method.

4.4. Chapter 7 bankruptcy vs. chapter 11 bankruptcy

Under Chapter 7, the firm stops all operations and goes completely out of business. A trustee is appointed to liquidate the firm's assets and the money is used to pay off the debt. On the other hand, under Chapter 11 the firm negotiates with creditors to alter the terms of the loan without having to liquidate assets. The firm continues to run the day-to-

[22] The partial likelihood estimates are not fully efficient, relative to estimates that employ correct baseline hazard model. However, since the true baseline hazard model is unknown, the fully efficiency is not achievable.

day business operations, but all significant business decisions must be approved by a bankruptcy court.

To test whether the specific economic arrangement under different bankruptcy codes affects our main results, we investigate the effects of $CSR_{(t-2,t)}$ on likelihood to file for Chapter 7 bankruptcy and for Chapter 11 bankruptcy, separately. The un-tabulated results show statistically significant effect of $CSR_{(t-2,t)}$ on bankruptcy likelihood under Chapter 11, but not under Chapter 7. Considering that only a small percentage of all filers filed for Chapter 7 and these filers are typically smaller firms. We believe this result reflects the effects of firm size on mediating the relationship between CSR and bankruptcy.

5. Concluding remarks

Extant literature suggests that corporate social responsibility (CSR) accrues *social capitals* that buffers business risk. We extend this literature by investigating the risk-mitigation property of CSR in the context of corporate financial distress. Our study is important because (1) majority of financial distress and bankruptcy cost is attributed to relationship-based intangible assets loss and (2) such losses can be effectively palliated by prior CSR engagement. We add to the literature by documenting that firms with higher prior history of positive CSR engagement are less likely to file for bankruptcy when they are in deep financial distress and are more likely to experience accelerated recovery from distress.

Drawing from existing theoretical framework, we decompose *social capitals* accrued from prior CSR engagement into *exchange capital* and *moral capital*. We then evaluate the relative relevance of the two capitals in explaining how prior CSR engagement reduces bankruptcy likelihood. We also show how the relative relevance of the two capital varies with firm-specific characteristics. We view our study as pointing out the complex web of interactions between the firm and its stakeholders in determining the effectiveness of CSR engagement, which has been long overlooked by prior studies that employ vague and monolithic definitions of CSR.

Although this study focuses on how prior CSR engagement affects the occurrence of two main consequences of financial distress: bankruptcy and financial recovery, it should be noted that a distressed firm has other exit options. For example, a firm may opt for being acquired or merged by another firm. How prior CSR engagement affects the possibility of or the manner in which a firm is acquired or merged is an interesting topic itself. We leave this topic to future research.

Appendix I

MSCI Environment, Social, Government Stats Research Database Structure

Table below presents the *MSC*I ESG qualitative dimensions, including *employee relations*, *diversity*, *product*, *community*, *environment*, *corporate governance*, *human rights*, *alcohol*, *gambling*, *firearms*, *military*, *tobacco*, and *nuclear power*, and the corresponding strength and concern social indicators. These ESG qualitative dimensions are categorized into primary and secondary corporate social responsibilities. ESG qualitative dimensions within the primary corporate social responsibility are designated as either the responsibility that promotes exchange capital or the responsibility that accrues moral capital.

Appendix A. Primary corporate social responsibility

A.1. Social responsibility that promotes exchange capital

ESG qualitative dimensions	Strength social indicator	Concern social indicator
Employee relations	• Union Relations • No-Layoff Policy • Cash Profit Sharing • Employee Involvement • Retirement Benefits Strength • Health and Safety Strength • Other Strength	• Union Relations • Health and Safety Concern • Workforce Reductions • Retirement Benefits Concern • Other Concern
Diversity	• CEO • Promotion • Board of Directors • Work/Life Benefits • Women & Minority Contracting • Employment of the Disabled • Gay & Lesbian Policies • Other Strength	• Controversies • Non-Representation • Other Concern
Product	• Quality • R&D/Innovation • Benefits to Economically Disadvantage • Other Strength	• Product Safety • Marketing/Contracting Concern • Antitrust • Other Concern

A.2. Social responsibility that promotes moral capital

ESG qualitative dimensions	Strength social indicator	Concern social indicator
Community	• Charitable Giving • Innovative Giving • Non-US Charitable Giving	• Investment Controversies • Negative Economic Impact • Indigenous Peoples Relations

	• Support for Housing • Support for Education • Indigenous Peoples Relations • Volunteer Programs (added 2005) • Other Strength	• Tax Disputes (removed 2005) • Other Concern
Environment	• Beneficial Products and Services • Pollution Prevention • Recycling • Clean Energy • Communications • Property, Plant, and Equipment • Management System Strength (added 2006) • Other Strength	• Hazardous Waste • Regulatory Problems • Ozone Depleting Chemicals • Substantial Emissions • Agricultural Chemicals • Climate Change • Other Concern

Appendix B. Secondary corporate social responsibility

ESG qualitative dimensions	Strength social indicator	Concern social indicator
Corporate Governance	• Limited Compensation • Ownership Strength • Transparency Strength (removed 2005) • Political Accountability Strength (added 2005) • Public Policy Strength (added 2007) • Other Strength	• High Compensation • Ownership Concern • Accounting Concern (added 2005) • Transparency Concern (added 2005) • Political Accountability Concern (added 2005) • Public Policy Concern (added 2007) • Other Concern
Human Rights	• Positive Record in South Africa • Indigenous Peoples Relations Strength • Labor Rights Strength • Other Strength	• South Africa • Northern Ireland • Burma Concern • Mexico • Labor Rights Concern • Indigenous Peoples Relations Concern • Other Concern
Alcohol Gambling Firearms Military Tobacco Nuclear Power	• Purely exclusionary screens and therefore companies can only register concerns in those dimensions	

Appendix II

Variable Definition

Variable	Definition
$BANKUPT_{t+1,\ t+3}$	An indicator variable coded 1 if the firm declares liquidation under Chapter 7 or reorganization under Chapter 11 of the U.S. Bankruptcy Code when it cannot service its debt obligations over the one-year period from the second quarter of fiscal year *t + 1* to the first quarter of fiscal year *t + 3*, and coded 0 otherwise. Bankruptcy information is obtained from Audit Analytics Corporate + Legal Modules.
BTM_t	Book-to-Market ratio, defined as book value of common equity divided by market value of common equity (Compustat Annual items: *CSHO* × *PRCC_F/CEQ*) at the end of fiscal year *t*.
$CSR_{(t-2,t)}$	Average of net corporate social responsibility from fiscal year t-2 to t, calculated as: $\sum_{\tau=t-2}^{t}\sum_{j=1}^{5}\left(\frac{Strength_\tau^j}{u_\tau^j}-\frac{Concern_\tau^j}{v_\tau^j}\right)/3$ where j represents one of the five ESG qualitative dimensions: employee relations, diversity, product, community, and environment. $Strength_\tau^j$ is the sum of strength indicator with respect to ESG qualitative dimension j in fiscal year τ. $Concern_\tau^j$ is the sum of concern indicator with respect to ESG qualitative dimension j in year τ. u_τ^j (v_τ^j) is the number of strength (concern) indicators with respect to ESG qualitative dimension j in fiscal year τ.
$CSR_{(t-2,t)}^{Exchange}$	Average of net corporate exchange capital from fiscal year t-2 to t, calculated as: $\sum_{\tau=t-2}^{t}\sum_{j=1}^{3}\left(\frac{Strength_\tau^j}{u_\tau^j}-\frac{Concern_\tau^j}{v_\tau^j}\right)/3$ where j represent one of the three ESG qualitative dimensions: employee relations, diversity, and product.

	$Strength_\tau^j$ is the sum of strength indicator with respect to ESG qualitative dimension j in fiscal year τ. $Concern_\tau^j$ is the sum of concern indicator with respect to ESG qualitative dimension j in fiscal year τ. u_τ^j (v_τ^j) is the number of strength (concern) indicators with respect to ESG qualitative dimension j in year τ.
$CSR_{(t-2,t)}^{Moral}$	Average of net corporate moral capital from fiscal year t-2 to t, calculated as: $\sum_{\tau=t-2}^{t}\sum_{j=1}^{3}\left(\frac{Strength_\tau^j}{u_\tau^j}-\frac{Concern_\tau^j}{v_\tau^j}\right)/3$ where j represents one of the two ESG qualitative dimensions: community and environment. $Strength_\tau^j$ is the sum of strength indicator with respect to ESG qualitative dimension j in fiscal year τ. $Concern_\tau^j$ is the sum of concern indicator with respect to ESG qualitative dimension j in year τ. u_τ^j (v_τ^j) is the number of strength (concern) indicators with respect to ESG qualitative dimension j in fiscal year τ.
$CURNRATIO_t$	Current ratio, calculated as current assets divided by current liability (Compustat Annual Items: *ACT/LCT*) at the end of fiscal year *t*.
GDP_t	Percent change from preceding period in real gross domestic product during the fourth quarter of fiscal year *t*. Real gross domestic product information is obtained from U.S. Bureau of Economic Analysis (http://www.bea.gov/).
INT_t	The average of 10-year treasury constant maturity rate during the fourth quarter of fiscal year *t*. Treasury constant maturity rate is obtained from Board of Governors of the Federal Reserve System (http://www.federalreserve.gov/).
$INTAN_t$	Intangible assets at the end of fiscal year *t*, defined as: $(XRD_t + XAD_t) + 0.8 \times (XRD_{t-1} + XAD_{t-1}) + 0.6 \times (XRD_{t-2} + XAD_{t-2}) + 0.4 \times (XRD_{t-3} + XAD_{t-3}) + 0.2 \times (XRD_{t-4} + XAD_{t-4})$ where XRD_t and XAD_t is research and development expenditure and advertisement expenditure (Compustat Annual Items: XRD and XAD) in fiscal year t. XRD_t and XAD_t are set to 0 if missing.
IP_t	The average of the industrial production index during the fourth quarter of fiscal year t. Industrial production index is obtained from Board of Governors of the Federal Reserve System (http://www.federalreserve.gov/).
LEV_t	Financial leverage, calculated as long-term debt obligations divided by book value of common equity (Compustat Annual Items: DLTT/CEQ) at the end of fiscal year t.
$OCFCOV_t$	Cash flow coverage, calculated as operating cash flow divided by total debt obligations (Compustat Annual Items: OANCF/DT) at the end of fiscal year t.
PM_t	Gross margin, calculated as the difference between sales revenue and cost of goods sold, scaled by sales revenue (Compustat Annual Items: (SALE − COGS)/SALE) in fiscal year t.
$SALTURN_t$	Sales turnover, calculated as sales revenue divided by total assets (Compustat Annual Items: SALE/AT) at the end of fiscal year t.
$SIZE_t$	Firm size, defined as natural logarithm of total assets (Compustat Annual Items: AT) at the end of fiscal year t.
$STKRET_t$	Cumulated stock return over the one-year period from the second quarter of fiscal year t to the first quarter of fiscal year t + 1. Stock return information is obtained from Center for Research in Security Prices.
$STKVOL_t$	Natural logarithm of monthly stock return volatility over the one-year period from the second quarter of fiscal year t to the first quarter of fiscal year t + 1. Stock return information is obtained from Center for Research in Security Prices.

References

Altman, E. I. (1968). Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. *The Journal of Finance, 23*(4), 589–609.

Altman, E. I. (2000). *Predicting financial distress of companies: Revisiting the Z-score and ZETA models.* New York University.

Altman, E. I., Hartzell, J., & Peck, M. (1998). Emerging market corporate bonds — a scoring system. *Emerging Market Capital Flows, 2*, 391–400.

Attig, N., El Ghoul, S., Guedhami, O., & Suh, J. (2013). Corporate social responsibility and credit ratings. *Journal of Business Ethics, 117*(4), 679–694.

Baucus, M. S., & Near, J. P. (1991). Can illegal corporate behavior be predicted? An event history analysis. *Academy of Management Journal, 34*(1), 9–36.

Beliveau, B., Cottrill, M., & O'Neill, H. M. (1994). Predicting corporate social responsiveness: A model drawn from three perspectives. *Journal of Business Ethics, 13*(9), 731–738.

Branco, M. C., & Rodrigues, L. L. (2006). Corporate social responsibility and resource-based perspectives. *Journal of Business Ethics, 69*(2), 111–132.

Burt, R. S. (1997). A note on social capital and network content. *Social Networks, 19*(4), 355–373.

Chakravarthy, B. S. (1986). Measuring strategic performance. *Strategic Management Journal, 7*(5), 437–458.

Chan, L. K., Lakonishok, J., & Sougiannis, T. (2001). The stock market valuation of research and development expenditures. *The Journal of Finance, 56*(6), 2431–2456.

Chang, T. C., Yan, Y. C., & Chou, L. C. (2013). Is default probability associated with corporate social responsibility? *Asia-Pacific Journal of Accounting & Economics, 20*(4), 457–472.

Choi, J., & Wang, H. (2009). Stakeholder relations and the persistence of corporate financial performance. *Strategic Management Journal, 30*(8), 895–907.

Clarkson, M. E. (1995). A stakeholder framework for analyzing and evaluating corporate social performance. *Academy of Management Review, 20*(1), 92–117.

Cox, D. R. (1972). Regression models and life-tables. *Journal of the Royal Statistical Society, Series B. 34*(2), 187–220.

Deng, X., Kang, J. K., & Low, B. S. (2013). Corporate social responsibility and stakeholder value maximization: Evidence from mergers. *Journal of Financial Economics, 110*(1), 87–109.

Denis, D. J., & Denis, D. K. (1995). Performance changes following top management dismissals. *The Journal of Finance, 50*(4), 1029–1057.

Ernst & Young (2017). Is your financial performance revealing the true value of your business to investors? Web access: *ey.com/investorsurvey2017*.

Fabrizi, M., Mallin, C., & Michelon, G. (2014). The role of CEO's personal incentives in driving corporate social responsibility. *Journal of Business Ethics, 124*(2), 311–326.

Fama, E. F., & French, K. R. (1992). The cross-section of expected stock returns. *The Journal of Finance, 47*(2), 427–465.

Freeman, R. E. (1984). *Strategic management: A stakeholder approach.* Boston, MA: Pitman.

Freeman, R. E., Harrison, J. S., & Wicks, A. C. (2007). *Managing for Stakeholders.* New Haven: Yale University Press.

Fukuyama, F. (1995). Social capital and the global economy. *Foreign Affairs, 74*, 89.

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

Godfrey, P. C., Merrill, C. B., & Hansen, J. M. (2009). The relationship between corporate social responsibility and shareholder value: An empirical test of the risk management hypothesis. *Strategic Management Journal, 30*(4), 425–445.

Gray, E. R., & Balmer, J. M. (1998). Managing corporate image and corporate reputation. *Long Range Planning, 31*(5), 695–702.

Greene, W. H. (2011). Econometric analysis. Pearson.
Gupta, K., & Krishnamurti, C. (2016). Does corporate social responsibility engagement benefit distressed firms? The role of moral and exchange capital. *Pacific-Basin Finance Journal*.
Hart, S. L. (1995). A natural-resource-based view of the firm. *Academy of Management Review, 20*(4), 986–1014.
Hillman, A. J., & Keim, G. D. (2001). Shareholder value, stakeholder management, and social issues: What's the bottom line? *Strategic Management Journal,* 125–139.
Jiao, Y. (2010). Stakeholder welfare and firm value. *Journal of Banking & Finance, 34*(10), 2549–2561.
Jiraporn, P., Jiraporn, N., Boeprasert, A., & Chang, K. (2014). Does corporate social responsibility (CSR) improve credit ratings? Evidence from geographic identification. *Financial Management, 43*(3), 505–531.
Jones, T. M. (1995). Instrumental stakeholder theory: A synthesis of ethics and economics. *Academy of Management Review, 20*(2), 404–437.
Kim, I., & Skinner, D. J. (2012). Measuring securities litigation risk. *Journal of Accounting and Economics, 53*(1–2), 290–310.
Kim, Y., Li, H., & Li, S. (2014). Corporate social responsibility and stock price crash risk. *Journal of Banking & Finance, 43*, 1–13.
Kim, Y., Park, M. S., & Wier, B. (2012). Is earnings quality associated with corporate social responsibility? *The Accounting Review, 87*(3), 761–796.
Klein, A. (2002). Audit committee, board of director characteristics, and earnings management. *Journal of Accounting and Economics, 33*(3), 375–400.
Klein, J., & Dawar, N. (2004). Corporate social responsibility and consumers' attributions and brand evaluations in a product–harm crisis. *International Journal of Research in Marketing, 21*(3), 203–217.
Lang, L. H., & Stulz, R. (1992). Contagion and competitive intra-industry effects of bankruptcy announcements: An empirical analysis. *Journal of Financial Economics, 32*(1), 45–60.
Lange, D., & Washburn, N. T. (2012). Understanding attributions of corporate social irresponsibility. *Academy of Management Review, 37*(2), 300–326.
Lev, B., Petrovits, C., & Radhakrishnan, S. (2010). Is doing good good for you? How corporate charitable contributions enhance revenue growth. *Strategic Management Journal, 31*(2), 182–200.
Lev, B., & Sougiannis, T. (1996). The capitalization, amortization, and value-relevance of R&D. *Journal of Accounting and Economics, 21*(1), 107–138.
Manescu, C. (2009). *Is corporate social responsibility viewed as a risk factor?: Evidence from an asset pricing analysis.* University of Gothenburg.
Mattingly, J. E., & Berman, S. L. (2006). Measurement of corporate social action: Discovering taxonomy in the kinder Lydenburg Domini ratings data. *Business & Society, 45*(1), 20–46.
Merton, R. C. (1974). On the pricing of corporate debt: The risk structure of interest rates. *The Journal of Finance, 29*(2), 449–470.
Minor, D., & Morgan, J. (2011). CSR as reputation insurance: Primum non nocere. *California Management Review, 53*(3), 40–59.
Moulton, W. N., & Thomas, H. (1993). Bankruptcy as a deliberate strategy: Theoretical considerations and empirical evidence. *Strategic Management Journal, 14*(2), 125–135.
Nam, C. W., Kim, T. S., Park, N. J., & Lee, H. K. (2008). Bankruptcy prediction using a discrete-time duration model incorporating temporal and macroeconomic dependencies. *Journal of Forecasting, 27*(6), 493–506.
Orlitzky, M., & Benjamin, J. D. (2001). Corporate social performance and firm risk: A meta-analytic review. *Business & Society, 40*(4), 369–396.
Oz, I. O., & Yelkenci, T. (2017). A theoretical approach to financial distress prediction. *Managerial Finance, 43*(2), 212–230.
Peloza, J. (2006). Using corporate social responsibility as insurance for financial performance. *California Management Review, 48*(2), 52–72.
Perez-Batres, L. A., Doh, J. P., Miller, V. V., & Pisani, M. J. (2012). Stakeholder pressures as determinants of CSR strategic choice: Why do firms choose symbolic versus substantive self-regulatory codes of conduct? *Journal of Business Ethics, 110*(2), 157–172.
Pfeffer, J. (1998). *The human equation: Building profits by putting people first.* Harvard Business Press.
Prahalad, C. K. (1997). Corporate governance or corporate value added? Rethinking the primacy of shareholder value. In D. Chew (Ed.). *Studies in international corporate finance and governance systems* (pp. 46–56). New York: Oxford University Press.
Putnam, R. D. (1993). The prosperous community. *The American Prospect, 4*(13), 35–42.
Rindova, V. P., Pollock, T. G., & Hayward, M. L. (2006). Celebrity firms: The social construction of market popularity. *Academy of Management Review, 31*(1), 50–71.
Roberts, P. W., & Dowling, G. R. (2002). Corporate reputation and sustained superior financial performance. *Strategic Management Journal, 23*(12), 1077–1093.
Russo, M. V., & Fouts, P. A. (1997). A resource-based perspective on corporate environmental performance and profitability. *Academy of Management Journal, 40*(3), 534–559.
Sharfman, M. P., & Fernando, C. S. (2008). Environmental risk management and the cost of capital. *Strategic Management Journal, 29*(6), 569–592.
Shumway, T. G. (1996). *The premium for default risk in stock returns.* Doctoral DissertationUniversity of Chicago Graduate School of Business.
Smith, C. W., & Stulz, R. M. (1985). The determinants of firms' hedging policies. *Journal of Financial and Quantitative Analysis, 20*(4), 391–405.
Sun, W., & Cui, K. (2014). Linking corporate social responsibility to firm default risk. *European Management Journal, 32*(2), 275–287.
Tinoco, M. H., & Wilson, N. (2013). Financial distress and bankruptcy prediction among listed companies using accounting, market and macroeconomic variables. *International Review of Financial Analysis, 30*, 394–419.
Vanhamme, J., & Grobben, B. (2009). "Too good to be true!". The effectiveness of CSR history in countering negative publicity. *Journal of Business Ethics, 85*(2), 273.
Waddock, S. A., & Graves, S. B. (1997). The corporate social performance-financial performance link. *Strategic Management Journal,* 303–319.
Wood, D. J. (1991). Corporate social performance revisited. *Academy of Management Review, 16*(4), 691–718.