Corporate Social Responsibility In A Panel Of Global Insurers

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ABSTRACT

In this paper, we propose a novel corporate social responsibility index (CSRI) that captures various aspects of an insurer's internal and external CSR activities. We first show that insurers worldwide significantly increased their CSR activities with the average index value almost doubling between 2006 and 2015. CSR activities are particularly pronounced at large firms, composite insurers, and insurance companies in Europe. We then show that the CSR activities of an insurer are driven by the insurer's firm size, market valuation, as well as its stock volatility in previous times. Our findings thus support the notion that experienced risk in the past cautions insurers into engaging more in CSR. Finally, we provide empirical evidence that an insurer's CSR significantly increases its market valuation while at the same time reducing its short- and medium-term tail risk.

Keywords: Corporate social responsibility, insurance companies, sustainable insurance.
JEL Classification Numbers: G22, G30.

"Why does AXA believe sustainability and Corporate Responsibility warrant strategic attention? [...] It is a risk/opportunity management imperative."
AXA SA Corporate Responsibility Strategy.

1 INTRODUCTION

Insurers, just like most other industrial and financial firms, generally aim at maximizing their shareholders' value. As such, managers should refrain from all measures that use a firm's resources solely for the benefit of other stakeholders, the environment, or society. At the same time, of course, such corporate behavior would completely neglect the externalities generated by the firms' business operations (see, e.g., Bénabou and Tirole, 2010). In reality, however, firms do care about their standing with stakeholders and engage frequently in various stakeholder-oriented activities that are aimed at underlining a firm's corporate social responsibility (CSR). While several explanations for such a behavior of firms come to mind when thinking of industrial companies (e.g., steel works and coal mines), the issue of why insurers (and financial institutions in general) engage in CSR activities is a more complex one. As insurers offer immaterial services whose production does not place direct burdens on stakeholders, one could hypothesize that insurers' CSR activities are limited to non-existent. This paper shows that quite the opposite is the case. Being the first comprehensive academic study on CSR in the insurance business, it shows that insurers around the globe engage heavily in CSR measures, with the vast majority of global insurers increasing their CSR engagement even more after the onset of the financial crisis. Starting from this, we then address the question why some insurers choose to be socially responsible rather than follow a pure shareholder-maximization policy. Finally, we address the question whether corporate social responsibility at insurance companies leads to any value-enhancing (or value-destroying) effects.

In this paper, we first propose a novel corporate social responsibility index (CSRI) that captures various aspects of an insurer's internal and external CSR activities. As insurers face very unique CSR issues that are usually not encountered in other industrial sectors (large-scale asset man-

agement and investment, handling sensible customer data, as well as newly designed sustainable insurance products), we expect common environment/social/governance (ESG) and CSR indexes offered by rating agencies to capture only a fraction of the industry-specific CSR activities by insurers. As a remedy, we design our CSRI in such a way so that it can capture both the classical dimensions environment (E), social (S), and corporate governance (G) also that insurance-specific CSR characteristics. We then hand-collect data for a comprehensive panel data sample of listed global insurance companies in the sample period between 2006 and 2015 and calculate the insurers' respective CSRI values. In both univariate and multivariate analyses, we then try a) to explain the variation in global insurers' CSRI ratings as well as b) the effects of more pronounced CSR activities on insurers' firm outcomes.

As our first main result, we show that insurers worldwide significantly increased their CSR activities with the average index value almost doubling between 2006 and 2015. CSR activities are particularly pronounced at large firms, composite insurers, and insurance companies from Europe. In contrast, the average US insurer only has an average CSRI value that is only one fifth of the CSRI value of an average insurer in Europe. In the following regression analyses, we then show that the CSR activities of an insurer are driven by the insurer's firm size, market valuation, as well as its stock volatility in previous times. Our findings thus support the notion that experienced risk in the past cautions insurers into engaging more in CSR. Anecdotal evidence supports this hypothesis: First, we find a clear upward trend after the onset of the financial crisis which shows that, on average, insurers reacted significantly to the exogenous increase in sector-wide risk. Second, a significant number of insurers state outright in their annual reports that more engagement in corporate social responsibility was necessary after the financial crisis to win back the trust of their customers. And finally, we provide empirical evidence that an insurer's CSR activities significantly increase its market valuation while at the same time reducing its short- and medium-term tail risk. Our findings thus confirm the success of insurers' intention behind driving up their CSR activities: a significant decrease in its exposure to extreme risks.

Our paper is related on the one hand to a growing body of research on the relation between

CSR and firm outcomes in general, and, on the other hand, to a small number of studies in the risk management and insurance (RMI) literature. In the former, the traditional take on CSR has been that supporting the interests of stakeholders will ultimately increase firm value and thus benefit shareholders as well. In this line of argumentation, firms use CSR to boost the firm's reputation with employees, business partners, and, most importantly, customers as part of a "do well by doing good" strategy (see, e.g., Dowell et al., 2000; Renneboog et al., 2008, 2011; Deng et al., 2013; Krüger, 2015; Ferrell et al., 2016; Liang and Renneboog, 2017). Alternatively, the causal relation between firm performance and CSR could also be running from the former to the latter with more successful firms being able to afford engaging in (otherwise value-destroying) CSR activities (see, e.g., Hong et al., 2012). However, as pointed out by Liang and Renneboog (2017), both hypotheses fail to explain the cross-firm or cross-country variation in firms' CSR activities. Instead, it seems as if the extent to which a firm spends its resources on CSR is driven by regulatory regimes, country characteristics, or managerial attributes (see, e.g., Liang and Renneboog, 2017; Cronqvist and Yu, 2017). In this paper, we add to this discussion by showing that firms also use CSR to counter adverse systematic factors. More precisely, we show that insurers used CSR as a marketing tool to regain lost trust with customers in reaction to the sector-wide damage to the image of financial firms after the 2007-2009 financial crisis.[1] Moreover, our results are also in line with Dyck et al. (2019) who show that investors increase firms' E&S performance following shocks that reveal financial benefits to E&S improvements. Extending their results, we find insurers to increase their CSR engagement following phases of high stock volatility, which, in turn, decreases average insurer tail risk in later years.

At the same time, our paper is also related to few but influential studies in the RMI literature.[2] Nogueira et al. (2018) investigate the CSR of Brazilian insurance companies by conducting a survey of 98 insurance professionals and find a positive relation between firm size and progress in

[1]This finding is in line with the result of Krüger (2015) who shows that investors often value firms engaging in "offsetting CSR", i.e., positive CSR news at firms with a poor CSR history.

[2]Note that while insurers have steadily increased their CSR activities, they have also identified CSR as a business opportunity: by offering insurance against "offsetting CSR" (cf. Krüger, 2015), e.g., in the form of reputation risk, see Gatzert et al. (2016).

ESG risk underwriting. In a related study, Scholtens (2011) proposes a framework to assess the CSR of insurers and applies it to different types of insurers for more than 150 institutions from 20 countries finding significant differences between insurers types and countries. His study, however only includes a cross-sectional snapshot of global insurers' CSR activities and does not include an analysis of the drivers and the effects of insurers' CSR. In contrast, we hand-collect a comprehensive panel data sample to study these drivers of CSR in the insurance sector both in the cross-section and in the time dimension. Finally, to the best of our knowledge, this study is the first to analyze the (ex-ante unknown) effects of CSR on firm outcomes in insurance.

Our results add to a discussion that has attracted considerable attention in recent years from policymakers at the highest levels. Most notably, the need for socially responsible and sustainable insurance has been identified by the United Nations Environment Programme as part of their Finance Initiative (UNEP FI). Together with the insurance industry, the UNEP FI in 2012 agreed on a set of "Principles for Sustainable Insurance (PSI)" that are meant as a guideline for insurers on how to "contribute to environmental, social and economic sustainability".[3] While most of the world's largest insurance and reinsurance companies have signed the PSI, however, the list of signatory companies is still far from ressembling a comprehensive list of global insurers. Our results support the notion that the majority of global insurers view CSR and sustainable insurance as a top priority - even though they might not all have signed UNEP's PSI declaration. At the same time, our results also show that insurers' motivation to engage in CSR is not founded in altruism, but rather in the need to regain policyholders' trust in the post-crisis period.

The paper proceeds as follows. Section 2 presents our corporate social responsibility index Section 3 describes our sample, explores which insurers engage in CSR, and provides empirical results. Section 4 concludes

[3]For a survey of the PSI guidelines, see Scordis et al. (2014).

2 THE INSURER SOCIAL RESPONSIBILITY INDEX

Researchers today can use raw data or ratings of numerous CSR rating providers such as *Thomson Reuters (ASSET4), MSCI (ESG Intangible Value Assessment)*[4], or *Sustainalytics (ESG Indicator)* to construct proxies for firms' CSR performance (CSRP). However, recent studies show a lack of agreement across providers' ratings (see, e.g., Dorfleitner et al. 2015 and Chatterji et. al 2016) and Bouten et al. (2017) demonstrate that empirical analyses are significantly sensitive to CSRP proxy selection. Additionally, most CSR ratings do not differentiate between industries despite sector specific CSR issues. Especially insurance company face very distinct CSR issues, because they are large-scale investors, handle sensible costumer data and their products' sustainability depends on different factors than for other industries. Hence, applying the same criteria for e.g. insurers and industrial firms most likely fails to capture either firms' CSR activities adequately. For that reason we create a CSR index that identifies CSR by its classical dimensions environment (E), social (S), and corporate governance (G), but also recognizes the heterogeneity of CSR dimensions for different industries (see, e.g., Chatterji et al., 2016) by including insurance specific variables.

We build on Scholtens (2011) for the construction of our index and considerably extend it. We measure CSR activities similarly (e.g., ISO certifications), but substituted binary measures with variables having scoring ranges between 0 and 3 if insurers either often report on activities concerning this issue or if those activities are in general very well comparable between insurers.[5] We are also reliant on self-reporting and assume that companies do not engage in CSR activities if this was not stated in any publicly available company report with sustainability related content. If available, we used stand-alone sustainability reports, sustainability reports integrated in the annual reports, or sustainability supplements. If these were not available, we checked the annual reports for any information related to sustainability. We developed a manual screening template with a list of sustainability related "buzz-words" which we used to screen annual reports without a separate chapter on sustainability.[6] Another difference stems from the data structure. Scholtens (2011)

[4] Formerly known as *KLD*

[5] The score range for each variable is stated in the online Appendix.

[6] A description of the screening procedure and the list of "buzz-words" is available on request

gives a very good snapshot of insurers' CSR activities by using cross sectional data. However, we decide to use panel data instead to construct our index since there is considerable time variation in CSRP, especially between the periods before and after the financial crisis of 2008. Furthermore, we use our index to perform multivariate analyses to capture possible effects of CSR activities on different firm variables such as leverage or market to book value and several risk measures (e.g., beta and expected shortfall).

We hand-collect information from annual reports and sustainability reports on various aspects of CSR for each insurance company and use this information to create a CSR index, denoted CSRI, to evaluate the companies' sustainability activities, their reporting quality, and the trustworthiness of disclosed information.[7][8]

Table II

– Insert Table II about here. –

is an overview of the 19 indicators used. Our first category of variables (*Reporting Availability and Structure*) captures if and how the insurer discloses information on sustainability. Specifically, we create the variables *Availability of a Sustainability Report* scoring from zero (no information on sustainability is reported) to three (a stand-alone report is available) and *Structure of the Reporting* also scoring from zero (no information on sustainability is reported) to three (all relevant areas of sustainability are considered).

The next category of variables (*Content*) intends to evaluate the content of disclosed information. These variables, among others, rank information about resource management, social commitment, and anti-corruption measures. Additionally, we create insurance specific variables: *Sustainable Investments*, a dummy variable that identifies whether the insurer uses environmental, social, or ethical criteria in its investment management; *Sustainable Insurance Solutions*, a dummy variable that identifies whether the insurer offers products with a sustainable component, e.g., micro

[7]Detailed information about all variables used to create the CSRI can be found in the online Appendix. II

[8]To cross validate our CSRI we calculate the correlation with *Thomson Reuters ASSET4* for all available companies. The correlation of 0.67 shows that both rank CSRP similarly.

insurance; and *Consumer Protection Measures*, a dummy variable that, among others, captures how companies handle customer's data.

The last category of variables (*Trustworthiness*) assesses the disclosed information's reliability regarding reporting standards, third-party audit, and compliance. For example, *Reporting Standard* scores from zero to three and identifies whether reporting standards are not used at all (zero), devised by the insurer (one), follow national standards (two), or are internationally accepted (three) such as the *Global Reporting Initiative*. Furthermore, they track the accuracy of the disclosed information, the companies' sustainability related goals, and difficulties in their attainment.

The score of every variable depends on how the issue was addressed in the analyzed report. For nine variables the scores range from zero to three, and from zero to one for the remaining ten. Hence, the total score for the index is between zero and 36. We chose the range for every variable depending on how well the companies' efforts are measurable and comparable. For example, we assign two (three) points for the variable *Sustainable Construction and Work Processes* if a company reported measures on two (all) of the three dimensions waste, energy, and water.

3 EMPIRICAL EVIDENCE

3.1 Data and variable selection

To select the sample, we start with all insurance companies in the *Orbis Insurance Focus* database marketed by *Bureau van Dijk*. Next, we exclude insurers with no listed stock or for which stock data is not available in *Thomson Reuters Financial Datastream*. This results in an initial sample of 523 insurance companies. For the sake of relevance, we exclude small insurers with total assets of less than US$ 50 million in 2006.[9] Furthermore, we excluded firms for which publicly available company data necessary for the construction of our CSRI was missing during the whole sample period. This reduced our sample to its final size of 260 firms.

[9] Although some studies (see, e.g., Beltratti and Stulz, 2012; Magee et al., forthcoming) use a threshold of US$5 billion due to a focus on systemically relevant firms, we opted to exclude only the smallest insurers from the sample as an insurer's CSR activities should not necessarily be driven solely by its size.

The final sample used in our analysis consists of 260 publicly listed insurance firms from 50 countries, including 63 life insurance firms, 98 non-life insurers, and 99 composite insurers.[10] Life insurance companies predominantly offer life insurance products whereas non-life insurers predominantly offer health and casualty insurance products. Composite insurance companies offer both life and non-life products. The sample period we analyze (20062015) includes both crisis and non-crisis years. Our sample explicitly includes firms that delisted or merged during the sample period resulting in an unbalanced panel consisting of 2,266 firm-year observations for our corporate social responsibility variable.

3.2 Summary statistics

Significant variation exists in firms CSRP performance across countries, industries, and time. Table I and II provide basic summary statistics. We control for most of these sources of variation with dummy variables, time fixed effects, and clustering standard errors at the country level.

– Insert Table I about here. –

Table I average scores for our CSRI, its composing variables[11] as well as important firm characteristics for our entire sample. The mean (median) CSRI score is 10.04 (7) with a perfect score being 36. The 25% and 75% percentile values indicate a huge discrepancy between the lowest and highest performing insurers. While firms score very high on some areas, e.g., ”Social Commitment” and ”Well-being of Employees”, CSR issues measured by more than half of the components are not even addressed by the most active insurers.

– Insert Table II about here. –

Our sample includes small, medium and large insurance companies with assets of less than $US 2 billion (more than $US 55 billion) for the smallest 25% (largest 25%) of firms. The relatively large (low) values for the firm risk measures volatility and expected shortfall (revenue growth)

[10] A full list of firms is available from the authors upon request.

[11] The composing variables have either a score range between 0 and 1 or 0 and 3 and are descriped in the Appendix II

stem from the financial crisis of 2008 and the subsequent years. In II, average CSRI scores show significant variation across different regions. Countries where firms' CSRI scores are the highest are in Europe. Firm size might explain the difference between European insurers and those from other countries, which are on average smaller. On the other hand, firms from North America are on average considerably larger. Life and composite insurers have similar firm characteristics as well as CSRI scores while firms of the non-life sector are on average smaller and have lower index scores. Furthermore, larger firms' CSRI mean levels are almost twice as large as smaller firms'.

– Insert Figure 1 about here. –

Fig. 1 and Table V provide additional summary statistics for the CSRI and its sub-categories "Availability", "Content" and "Trustworthiness", which compromise of 2, 10 and 7 variables, with perfect scores being 36 for CSRI, and 6, 17, and 13 for the sub-categories, respectively. [12] Fig. 1 shows CSR performance over time. There is a clear positive trend with firms on average increasing their levels of CSRI by almost 77% from 2006 to 2015. There is significant variation for the three sub-categories in the mean level of scores as well as their growth during the sample period. The firms increase their performance on average the most in the sub-category "Content" both in absolute and relative terms (as share of the sub-categories maximum score). The variable "Availability" increases on a similar scale, but contributes considerably less to the index increase due to its smaller score range. On the other hand, despite an increase of 56% in "Trustworthiness" scores on average remain well below the categories maximum of 13 (less than 20% of perfect score). Those results indicate a significant increase in sustainability related reporting.

– Insert Table V about here. –

Table V gives more detailed information about the CSRI and all of its components. Every variable increases during the sample period with the largest gains of 244% and 144% in "Anti-corruption" and "Certification", respectively. On the other hand, the variables "Formulation" and

[12] A detailed description of each variable can be found in the Appendix II

"Social Commitment" increase below average with by only 43% and 44%, respectively. This underscores the significant variety in measured CSR activities as shown in Fig. 1.

3.3 Which insurers engage in corporate social responsibility?

In our first analysis we want to explain why some insurers engage more in CSR than others. The sub sample statistics show significant differences between insurers of different regions, types, size, and risk. Additionally, Table 1 shows a clear positive trend for more CSR activity during the sample period. However, those statistics do not take cross correlations between region, type, size, risk as well as other firm characteristics into account. Therefore, we begin by estimating the following multivariate regressions:

$$CSRI_{j,t} = \alpha + \sum_{i=1}^{n} \beta^i \cdot X^i_{j,t-1} + Type\,Dummy \tag{1}$$

The subscript j denotes the insurance company and t denotes the year. X^i with $i = 1, ..., n$ is a set of firm control variables in year $t - 1$. In all of our regressions, we include insurer type and year fixed effects. For firmlevel control variables, we use (lagged) leverage, market to book value, profitability (return on assets), firm size (total assets), revenue growth, and risk measures (volatility and expected shortfall). G. Hong et al. (2012) suggest that financial slack also predicts CSR adoption. Following them, we include leverage to measure credit constraints and profitability to capture the impact of performance. Composite insurance companies are the baseline for our type dummy variable. In the second regression we also cluster standard errors by country.

– Insert Table VI about here. –

We report the results of these regressions for the entire sample in VI. The positive and significant coefficient on market to book value (total assets) in columns 1 and 2 indicates a positive relation between (lagged) market value of equity (company size) and firms CSR performance, each significant at the 1%. Furthermore, positive and significant coefficients on volatility (at the 5% and 1% level with and without clustered standard errors, respectively) suggest a positive relationship

between company risk and future CSR efforts. This is in line with Dyck et al. (2019), who find evidence of increasing investor pressure for environmental and social (E&S) measures after the Deepwater Horizon oil spill and financial crisis shocks. Furthermore, both life and non-life insurers have statistically significant (at the one 1% level) lower levels of CSR than composite insurers.

3.4 Corporate social responsibility, firm outcomes, and risk performance

After exploring the main drivers of CSRI, this section investigates the consequences of CSR efforts on the firm outcomes leverage, firm value, and profitability (return on equity), as well as the firm risk measures volatility, beta, and expected shortfall.

We address potential endogeneity issues relating to CSRI and its outcomes in several ways. Firstly, by using lagged explanatory variables in all of our regressions, we are able alleviate some of the reverse causality concerns through elimination of the contemporaneous correlation effect. Secondly, by including time fixed effects and standard errors clustered at the country level, we account for time trends as well CSR differences that are attributable to a countrys unique CSR culture. Finally, by including insurance type dummies in our panel regressions, we control for differences between life, non-life, and composite insurers.

Starting with the firm outcomes, we set up a panel regression in the form of Equation (2):

$$Firm\,Outcomes_{j,t} = \alpha + \beta^1 \cdot CSRI_{j,t-1} + \sum_{i=2}^{n} \beta^i \cdot X^i_{j,t-1} + Type\,Dummy \tag{2}$$

Again, the subscript j denotes the insurance company, t denotes the year, and X^i with $i = 2, ..., n$ are firm control variables in year $t-1$. For firm control variables, we use the variables discussed in the previous section and additionally the (lagged) CSRI, liquidity (share of cash on total assets), bid-ask spread, and beta. Note that all regressors are lagged by one year. In all of our regressions, we include insurer type and year fixed effects. The panel regression analyses the entire sample from 2006 to 2015.

We define two regression specifications for each of the dependent variables leverage, market to

book value, return on equity. In regression (2), (4), and (6) we control for possible country effects by clustering standard errors.

Table VII reports the regression results. We estimate regressions according to the specification in Equation (2) with leverage as the dependent variable for regression (1) and (2), firm value as the dependent variable for regression, and profitability as the dependent variable for regression (5) and (6). Our main variable of interest is CSRI and we use as controls a set of firm variables that might affect the respective insurer outcomes.

There is no clear theoretical relationship between CSR and leverage. On the one hand, the perception of considerable engagements in CSR being a waste of financial resources could scare away investors and thus put constraints on the firms optimal capital structure. On the other hand, financial constraints could be indirectly eased if CSR increases profitability or revenue growth. Column (1) provides weak evidence (statistical significance at the 10% level) that insurance companies with higher CSR activities will have higher leverage the following year. /

We hypothesize that the potential effect of CSRI on market to book value is similar to leverage. Insurance companies could either be doing well by doing good if, e.g., institutional investors such as pension funds honor high CSR performance. Then again spending resources on investments, dividends, or buyback might be the better alternative to maximize shareholder value. Column (3) and (4) provide strong evidence that past CSR measures are favorable for insurers market valuation. The results are also economically significant, e.g., an increase in the CSRI by five points will result in an almost 9% higher market valuation.

CSR could affect insurers' profitability via the same channels as discussed before: through investors or indirectly via customers by increasing revenue. The positive and significant (on the 5% level) coefficient of lagged CSRI indicates that profitability potentially accelerates because either investors ease financial constraints on better performing insurers in CSR terms, or higher revenues due to more or more willing to pay customers increase returns on company assets.

To control for unobserved heterogeneity across countries, we test the robustness of our results by including country clustered standard erros in regression (1), (3), and (5) finding that the CSRI

coefficient loses its statistical significance for leverage and return on equity. This suggests that country effects were important determinants of those firm outcomes, rendering corporate social responsibility less crucial.

After exploring the role of CSRI on firm outcomes, this section investigates the consequences of CSR for firm risk measures. We estimate the following multivariate regression in the form of Equation (3):

$$Firm\,Risk_{j,t} = \alpha + \beta^1 \cdot CSRI_{j,t-1} + \sum_{i=2}^{n} \beta^i \cdot X^i_{j,t-1} + Type\,Dummy \tag{3}$$

Again, the subscript j denotes the insurance company, t denotes the year, and X^i with $i = 2, ..., n$ are firm control variables in year $t-1$. For firm control variables, we use the variables discussed in the previous section. Note again that all regressors are lagged by one year and that the regression analyses the entire sample from 2006 to 2015.

We define two regression specifications for each of the firm risk measures volatility, beta and expected shortfall. In regression (8), (10), and (12) we again control for possible country effects by clustering standard errors.

– Insert Table VII about here. –

Table VII reports the regression results. We estimate regressions according to the specification in Equation (3) with volatility as dependent variable in regression (7) and (8), beta dependent variable in regression in regression (9) and (10), and expected shortfall as dependent variable for regression (11) and (12). As in the previous analyses our main variable of interest is CSRI and we use as controls the same a set of firm variables that might affect the respective risk variable.

We hypothesize that good corporate governance or social and environmental commitment, as measured by our index should in general not contribute to firms' risk. Firm risk could only be expected to increase if CSR activities tie up so many resources that investments or other shareholder increasing activities get significantly impaired. However, we did not find evidence for any insurer in our sample that CSR spending got out of hand. Some companies reported to commit 1% of

profit to charitable causes or other CSR activities.

On the other hand, CSR engagements might reduce idiosyncratic firm risks if it increases the insurance company's reputation. Thereby it might insulate from bad press which affects customers' or other stakeholders' firm perception. However, the statistical insignificance of CSRI in the regression with stock volatility as dependent variable give no evidence that CSR works through this channel, although the negative coefficient suggest that CSR works in our hypothesized direction.

Engagements in ESG could also decrease the companies' beta by shielding from market risks, e.g., industry scandals such as the large scale sale of toxic assets prior to the last financial crisis. Contrary to our hypothesis the coefficient for CSR is positive. However, the statistically significant is very (at the 10% level) and fully disappears when standard errors are clustered at the country level.

CSR might only affect extreme risks as measured by the stocks expected shortfall. Dyck et al. (2019) report evidence that high levels of E&S engagements can mitigate the financial effects of company shocks such as in the Deep Water Horizon oil spill. We assume that tail risk decrease if firms increase their CSR activities but again do not find evidence.

A possible explanation for the weak statistical performance might be that CSR only affects insurer outcomes and firm risk in the medium term.

To test this hypothesis, we perform panel regressions with further lags of CSRI in the form of Equation (4):

$$Risk_{j,t} = \alpha + \beta^1 \cdot CSRI_{j,t-1} + \beta^2 \cdot CSRI_{j,t-2} + \beta^3 \cdot CSRI_{j,t-3} + \sum_{i=4}^{n} \beta^i \cdot X^i_{j,t-1} + Type\,Dummy \quad (4)$$

Again, the subscript j denotes the insurance company, t denotes the year, and X^i with $i = 2, ..., n$ are firm control variables in year $t-1$. For firm control variables, we use the variables discussed in the previous section and additionally the (lagged) CSRI, liquidity (share of cash on total assets), bid-ask spread, and beta. Note that all regressors are lagged by one year. In all of

our regressions, we include insurer type and year fixed effects. The panel regression analyses the entire sample from 2006 to 2015.

– Insert Table VIII about here. –

Table VIII reports the regression results. We estimate regressions according to the specification in Equation (2) with one and two additional lags of CSRI and leverage as dependent variable in regression (1) and (2), market to book value as the dependent variable in regression in regression (3) and (4), and return on equity as dependent variable for regression (5) and (6). The main variables of interest are all lagged regressors of CSRI. Beside that we use the same set of firm variables as further controls.

We do not find evidence that more distant CSRI performance has any effect on leverage. On the other hand our results indicate that CSR efforts positively and statistically significant affect the market valuation of insurers after two years even when clustering for standard errors at the country level. Additionally, the coefficients for CSRI of all lags are weakly statistically when regressing on firms' profitability.

In the last set of regressions we examine whether short and medium term effects of CSRI exist for firm risk measures. Equation (5) has following form:

$$Risk_{j,t} = \alpha + \beta^1 \cdot CSRI_{j,t-1} + \beta^2 \cdot CSRI_{j,t-2} + \beta^3 \cdot CSRI_{j,t-3} + \sum_{i=4}^{n} \beta^i \cdot X^i_{j,t-1} + Type\,Dummy \quad (5)$$

Table VIII reports the result for the panel regression. Adding the additional lags of CSRI does not affect the coefficients of the CSR measure for both the idiosyncratic and the market risk measure. This indicates that insurers' CSR efforts do not mitigate those risks form those sources. However, we find evidence that CSR activities have a medium-term effect on extreme risks as regressions on expected shortfall show. Coefficients are statistically significant on the 5% percent level for CSRI lagged by two years for both regressions and additionally at the 10% level for CSRI lagged if we cluster standard errors at the country level. The positive sign of all coefficients

also supports our hypothesis that CSR if at all reduces firm risk. Furthermore, it seems that CSR measures are more effective in the medium than in the long term regarding tail risks. A possible explanation might be that building a credible reputation takes time.

4 Conclusion

In this paper, we propose a novel corporate social responsibility index (CSRI) that captures various aspects of an insurer's internal and external CSR activities. We hand-collect data on global insurers' CSR activities and compute our CSR index for a comprehensive sample of life, non-life, and composite insurers between 2006 to 2015. We then perform several regression analyses into the driving factors of insurers' corporate social responsibility and the effects it has on various firm variables.

We show that insurers worldwide significantly increased their CSR activities with the average index value almost doubling between 2006 and 2015. CSR activities are particularly pronounced at large firms, composite insurers, and insurance companies in Europe. We then show that the CSR activities of an insurer are driven by the insurer's firm size, market valuation, as well as its stock volatility in previous times. Our findings thus support the notion that experienced risk in the past cautions insurers into engaging more in CSR. Finally, we provide empirical evidence that an insurer's CSR significantly increases its market valuation while at the same time reducing its short- and medium-term tail risk.

Our results support current initiatives by industry associations, regulators, and supranational organizations like the United Nations that attempt to foster sustainable finance in the forms of sustainable asset management and insurance. We find clear empirical evidence not only for a value-enhancing effect of CSR on global insurers. Our analysis also reveals a risk-shielding effect of CSR against extreme tail risk and thus a possible defensive strategy against reputational or operational risks that could result in "offsetting CSR". Insurers are thus well-advised to consider increasing their engagement in sustainable insurance.

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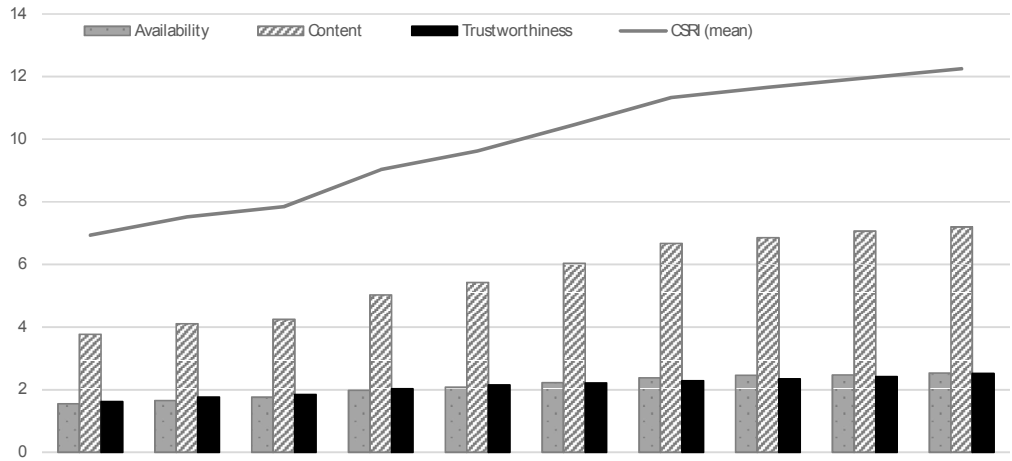
Figure 1: CSRI and Its Components Over Time

This figure presents a time series of CSRI and its three sub-categories ”Availability”, ”Content”, and ”Trustworthiness”. The horizontal axis shows the years from 2006 to 2015 and the vertical axis the score values for the CSRI, the subcategory ”Availability”, ”Content”, and ”Trustworthiness”, respectively. In this diagram, the line depicts the mean of the CSRI, the dotted grey bar depicts ”Availability”, the cross-hatched bar depicts ”Content”, and the black bar depicts ”Trustworthiness”. Note that the three sub-categories are not equally weighted. Sub-category ”Availability”, ”Content”, and ”Trustworthiness” have maximum scores of 6, 17 and 13, respectively. The values for the CSRI and the percentage value of each sub-categories' maximum score underlying this graph are indicated in the lower box.



	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
CSRI (mean)	6.93	7.52	7.85	9.03	9.63	10.47	11.33	11.66	11.95	12.25
Availability (%)	25.79	27.50	29.30	33.03	34.57	37.06	39.57	41.01	41.21	42.25
Content (%)	23.59	25.68	26.54	31.39	33.91	37.71	41.67	42.83	44.17	45.01
Trustwort. (%)	12.39	13.53	14.18	15.56	16.56	17.01	17.60	18.04	18.57	19.35

Table I: Summary Statistics

This table presents summary statistics on all variables used in the multivariate analyses including CSRI characteristics and firm. N refers to the number of observations for this variable in the entire panel spanning from 2006 to 2015. The following columns indicate the mean, median, standard deviation, as well as the lower and upper quartiles. The CSRI and its components are defined in the AppendixII

Variable	N	Mean	Median	Std. Dev	p25	p75
Corporate Social Responsibility Measures						
CSRI	2,266	10.03	7.00	10.50	0.00	17.00
Sustainability Report	2,266	1.20	1.00	1.10	0.00	2.00
Reporting Structure	2,266	0.94	0.00	1.12	0.00	2.00
Const. & Work Processes	2,266	0.88	0.00	1.20	0.00	2.00
Sust. Investments	2,266	0.23	0.00	0.42	0.00	0.00
Sust. Insurance Solutions	2,266	0.16	0.00	0.37	0.00	0.00
Consumer Protection	2,266	0.24	0.00	0.43	0.00	0.00
Sust. Value Chain	2,266	0.20	0.00	0.40	0.00	0.00
Social Commitment	2,266	1.31	1.00	1.31	0.00	3.00
Wellbeing of Empl.	2,266	0.92	0.00	1.09	0.00	2.00
Integration of Empl.	2,266	0.56	0.00	0.99	0.00	1.00
Subventions	2,266	0.02	0.00	0.15	0.00	0.00
Sust. Targets & Progress	2,266	0.49	0.00	0.95	0.00	0.00
Reporting Standard	2,266	0.52	0.00	1.12	0.00	0.00
Formulation	2,266	1.27	1.00	1.16	0.00	2.00
Unsolved Difficulties	2,266	0.10	0.00	0.30	0.00	0.00
Compliance	2,266	0.52	1.00	0.50	0.00	1.00
External Audit	2,266	0.08	0.00	0.27	0.00	0.00
Certification	2,266	0.17	0.00	0.37	0.00	0.00
Anti-Corruption	2,266	0.21	0.00	0.41	0.00	0.00
Firm characteristics						
Size (total assets, $US millions)	2,300	91,800	11,500	264,000	2,185	56,900
Return on assets (%)	2,297	2.40	1.63	5.05	0.58	3.81
Market to Book Value	2,060	1.50	1.22	1.17	0.87	1.79
Financial leverage	2,290	63.22	25.59	221.49	5.60	52.07
Bid-Ask spread	2,023	0.01	0.00	0.06	0.00	0.01
Beta	2,142	0.85	0.82	0.57	0.47	1.15
Solvency	2,229	30.07	23.28	25.45	10.54	40.83
Volatility	2,275	144.12	1.77	4,460.31	0.46	4.71
Expected shortfall (%)	2,090	-4.96	-4.16	3.52	-5.87	-3.07
Liqudity (cash/total assets, %)	2,259	7.09	1.25	14.37	1.25	6.82
Revenue growth (%)	2,039	16.64	5.32	243.66	-4.51	17.32

Table II: Summary Statistics for Insurance Companies by Region, Type, Size, Risk

This table presents summary statistics for insurance companies of different regions, business types, size, and risk. Size is defined by total assets in 2006 with small insurers being below and large insurers being above the median, respectively. Risk is defined by stock volatility in 2006 with small insurers being below and large insurers being above the median, respectively. Total assets are measured in $US millions and expected shortfall in percent.

		CSRI			Total Assets			Market to Book Value			Expected Shortfall		
		Mean	Median	SD	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD
Region	North America	3.5	0.0	6.5	62,800	13,600	146,000	1.33	1.15	0.78	-0.037	-0.049	0.036
	Europe	18.7	21.5	10.3	18,100	17,200	3,095	2.72	2.93	0.55	-0.044	-0.041	0.008
	Other	2.7	0.0	3.9	670	639	281	1.32	1.12	1.07	-0.033	-0.005	0.036
Type	Life	10.6	9.0	9.6	139,000	41,600	387,000	1.70	1.41	1.23	-0.053	-0.043	0.039
	Non-life	6.6	2.0	8.8	25,400	3,695	118,000	1.56	1.22	1.56	-0.048	-0.040	0.033
	Composite	12.9	10.0	11.6	131,000	23,800	266,000	1.32	1.14	0.90	-0.050	-0.042	0.035
Size	Small	6.1	2.0	8.0	4,232	2,341	5,203	1.54	1.22	1.23	-0.050	-0.044	0.035
	Large	12.5	10.0	11.1	160,000	47,700	337,000	1.47	1.23	1.11	-0.049	-0.040	0.035
Risk	Low	10.3	7.0	10.9	121,000	18,700	321,000	1.50	1.18	1.27	-0.040	-0.051	0.035
	High	9.6	7.0	9.6	45,100	6,066	110,000	1.51	1.27	1.01	-0.048	-0.043	0.035

Table III: Definitions and Score Ranges of CSRI Components

Appendix

CSRI Components	Score Range	
Report Availability and Structure (0 to 6)		
Sustainability Report	3	A stand-alone sustainability report is available.
	2	The annual report contains a chapter on sustainability.
	1	The annual report contains information on sustainability. The information is poorly structured and not within a separate chapter.
	0	No information.
Reporting Structure	3	All relevant areas of sustainability are considered. The information on sustainability is well structured and precise.
	2	Several areas of sustainability are considered. The information on sustainability is well structured and precise.
	1	Only few areas of sustainability are considered. The information on sustainability is poorly structured and vague.
	0	No information.
Content (0 to 17)		
Construction & Work Processes	3	Detailed information about measures for sustainable consumption of energy, water, and other materials in business operations and/or offices.
	2	Information is disclosed, but does not cover all aspects as described above.
	1	Disclosed information is vague and non-transparent or covers only one aspect as described above, e.g., water consumption.
	0	No information.
Sustainable Investments	1	Information on ecological, social, and/or ethical criteria in asset management is disclosed, e.g., ESG screening of assets.
	0	No information.
Sustainable Insurance Solutions	1	Information on insurance products with sustainable aspects is disclosed, e.g., micro insurance or bonus for energy saving.
	0	No information is disclosed.
Consumer Protection	1	Information on measures to protect customer's data, increase transparency in sales, or improve complaint management is disclosed.
	0	No information.
Sustainable Value Chain	1	Information on sustainable purchasing practices is disclosed, e.g., code of conduct for suppliers about employees' human and work rights.
	0	No information.
Social Commitment	3	Information about donations towards charitable organizations, communities, social sponsoring, support of education, art, and sports.
	2	Information are disclosed, but do not cover all aspects as described above.
	1	Disclosed information is vague and non-transparent or covers only one aspect as described above, e.g., donations towards communities.
	0	No information.
Well being of Employees	3	Information about work-related education and training offers, measures for work-life balance, support of healthy nutrition, or sports.
	2	Information are disclosed, but do not cover all aspects as described above.
	1	Disclosed information is vague and in-transparent or covers only one aspect as described above, e.g., training offers.
	0	No information.
Integration of Employees	3	Information about measures to ensure diversity of workforce, integration of women, or disabled.
	2	Information are disclosed, but do not cover all aspects as described above.
	1	Disclosed information is vague and non-transparent or covers only one aspect as described above, e.g., integration measures for women.
	0	No information.
Anti-Corruption	1	Information on measures about corruption is disclosed, e.g., support of whistle-blowing.
Measure	0	No information.
Subventions	1	Information about received subventions.
	0	No information.

Table II: Definitions and Score Ranges of CSRI Components (continued)

CSRI Components	Score Range	
Trustworthiness (0 to 13)		
Sust. Targets & Progress	3	Information about sustainability related goals, measures, and their level of attainment.
	2	Information are disclosed, but do not cover all aspects as described above.
	1	Only little information is disclosed or covers only one area.
	0	No information.
Reporting Standard	3	Sustainability report is in line with an internationally recognized reporting standard, e.g. Global Reporting Initiative or UN Reporting on Progress.
	2	Sustainability report is in line with a nationally recognized reporting standard, e.g. Sustainability Accounting Standards Board or ISO 5001.
	1	Sustainability report is in line with a reporting standard developed by the insurer.
	0	No information.
Formulation	3	Information on measures, financial data and, examples of reported sustainability topics are well structured and precise.
	2	Information on measures are to some extent supported by financial data or examples and mostly well structured and precise.
	1	Information on measures are not supported by financial data or examples and mostly poorly structured and vague.
	0	No information.
Unsolved Difficulties	1	Information on unsolved problems regarding sustainability and difficulties to attain company sustainability targets are disclosed.
	0	No information.
Compliance	1	Information on compliance measures is disclosed.
	0	No information.
External Audit	1	Information on sustainability was audited by an independent third party.
	0	No information.
Certification	1	Sustainability measures are certified by a (nationally or internationally) recognized standard.
	0	No information

Table III: Correlations Among CSRI and its Components

This table presents correlations among the corporate social responsibility index and its components. All variables are statistical significant at the 1 percent level and defined in the Appendix II

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
CSRI (1)	1.00																			
Sustainability Report (2)	0.91	1.00																		
Reporting Structure (3)	0.93	0.89	1.00																	
Constr. & Work Processes (4)	0.88	0.78	0.83	1.00																
Sust. Investments (5)	0.69	0.59	0.65	0.65	1.00															
Sust. Insurance Solutions (6)	0.59	0.51	0.51	0.52	0.45	1.00														
Consumer Protection (7)	0.61	0.49	0.53	0.51	0.41	0.32	1.00													
Sust. Value Chain (8)	0.74	0.62	0.66	0.66	0.53	0.45	0.45	1.00												
Social Commitment (9)	0.78	0.78	0.73	0.60	0.47	0.41	0.46	0.46	1.00											
Wellbeing of Employees (10)	0.82	0.72	0.73	0.67	0.49	0.41	0.51	0.57	0.65	1.00										
Integration of Employees (11)	0.78	0.63	0.69	0.67	0.50	0.39	0.45	0.63	0.47	0.65	1.00									
Subsidies (12)	0.15	0.11	0.07	0.13	0.11	0.11	0.12	0.11	0.12	0.12	0.14	1.00								
Sust. Targets & Progress (13)	0.79	0.65	0.69	0.71	0.61	0.51	0.45	0.66	0.49	0.56	0.58	0.12	1.00							
Reporting Standard (14)	0.77	0.63	0.66	0.65	0.54	0.48	0.44	0.65	0.43	0.56	0.66	0.12	0.67	1.00						
Formulation (15)	0.82	0.81	0.77	0.67	0.51	0.41	0.48	0.52	0.76	0.65	0.53	0.08	0.57	0.50	1.00					
Unsolved Difficulties (16)	0.52	0.41	0.44	0.45	0.42	0.39	0.33	0.43	0.30	0.34	0.34	0.06	0.57	0.44	0.37	1.00				
Compliance (17)	0.62	0.60	0.55	0.49	0.32	0.28	0.42	0.37	0.55	0.55	0.46	0.06	0.36	0.38	0.57	0.21	1.00			
External Audit (18)	0.51	0.41	0.44	0.43	0.36	0.36	0.28	0.41	0.29	0.39	0.45	0.04	0.41	0.50	0.29	0.32	0.24	1.00		
Certification (19)	0.62	0.60	0.55	0.49	0.32	0.28	0.42	0.37	0.55	0.55	0.46	0.06	0.36	0.38	0.57	0.21	1.00	0.24	1.00	
Anti-Corruption (20)	0.64	0.54	0.58	0.52	0.42	0.38	0.46	0.48	0.40	0.51	0.57	0.10	0.43	0.55	0.44	0.30	0.41	0.42	0.41	1.00

Table IV: Correlations Among CSRI and Lagged Firm Variables

This table presents correlations among the corporate social responsibility index and lagged firm variables. *** denotes statistical significance at the 1 percent level.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) $CSRI_t$	1.000										
(2) Total $assets_{t-1}$	0.282***	1.000									
(3) Return on $assets_{t-1}$	-0.072***	-0.118***	1.000								
(4) $Beta_{t-1}$	0.185***	0.386***	-0.177***	1.000							
(5) $Leverage_{t-1}$	0.111***	0.211***	-0.074***	0.192***	1.000						
(6) Bid-Ask $spread_{t-1}$	-0.032	-0.062***	0.026	-0.135***	-0.020	1.000					
(7) $Solvency_{t-1}$	0.061***	-0.079***	0.234***	-0.072***	-0.061***	-0.022	1.000				
(8) $Volatility_{t-1}$	-0.027***	0.055	0.009	0.001	-0.004	-0.005	-0.004	1.000			
(9) Expected $shortfall_{t-1}$	0.002	-0.065***	0.209***	-0.353***	-0.129***	0.003	0.070	0.020	1.000		
(10) Revenue $growth_{t-1}$	-0.002	-0.024	-0.191***	-0.05	-0.009	-0.002	0.035	-0.001	0.01	1.000	
(11) $Liquidity_{t-1}$	-0.084***	-0.087***	0.037	-0.118***	-0.054***	0.037	0.085***	0.014	-0.067***	0.025	1.000

Table V: Average of CSRI and Its Components Over the Sample Period

This table presents the yearly mean over all sample firms of corporate social responsibility index and its components (Sustainability Report, Reportings Structure, Construction & Work Processes, Sustainable Investments, Sustainable Insurance Solutions, Consumer Protection, Sustainable Value Chain, Social Commitment, Wellbeing of Employees, Integration of Employees, Subventions, Sustainability Targets & Progress, Reporting Standard, Formulation, Unsolved Difficulties, Compliance, External Audit, Certification, and Anti-Corruption). All Variables are defined in the Appendix.

	CSRI	Sustainability Report	Reporting Structure	Const. & Work Processes	Sustainable Investments	Sust. Insurance Solutions	Consumer Protection	Sust. Value Chain	Social Commitment	Wellbeing of Empl.
2006	6.93	0.90	0.65	0.51	0.14	0.11	0.15	0.14	1.03	0.61
2007	7.52	0.97	0.68	0.58	0.17	0.12	0.18	0.13	1.12	0.67
2008	7.85	1.02	0.74	0.62	0.15	0.10	0.18	0.15	1.18	0.70
2009	9.03	1.13	0.85	0.79	0.18	0.13	0.20	0.17	1.28	0.82
2010	9.63	1.18	0.90	0.82	0.22	0.14	0.23	0.18	1.29	0.91
2011	10.47	1.24	0.98	0.95	0.24	0.17	0.24	0.20	1.34	1.00
2012	11.33	1.30	1.07	1.04	0.28	0.20	0.27	0.25	1.39	1.02
2013	11.66	1.33	1.13	1.06	0.29	0.21	0.29	0.25	1.39	1.06
2014	11.95	1.34	1.13	1.11	0.30	0.22	0.31	0.27	1.40	1.07
2015	12.25	1.36	1.17	1.16	0.31	0.19	0.32	0.28	1.49	1.09

	Integration of Empl.	Subsidies	Sust. Targets & Progress	Reporting Standard	Formulation	Unsolved Difficulties	Compliance	External Audit	Certification	Anti Corruption
2006	0.36	0.02	0.34	0.28	1.00	0.08	0.38	0.05	0.09	0.09
2007	0.35	0.02	0.34	0.33	1.11	0.09	0.40	0.05	0.11	0.09
2008	0.36	0.01	0.34	0.33	1.14	0.09	0.45	0.04	0.13	0.12
2009	0.46	0.01	0.44	0.39	1.24	0.09	0.50	0.05	0.14	0.15
2010	0.54	0.02	0.44	0.44	1.30	0.10	0.54	0.06	0.15	0.18
2011	0.60	0.03	0.52	0.52	1.31	0.10	0.55	0.08	0.17	0.22
2012	0.67	0.02	0.60	0.67	1.35	0.11	0.56	0.09	0.17	0.25
2013	0.68	0.02	0.63	0.70	1.36	0.12	0.57	0.10	0.20	0.27
2014	0.70	0.03	0.64	0.71	1.37	0.12	0.57	0.12	0.23	0.30
2015	0.75	0.03	0.60	0.67	1.43	0.14	0.59	0.12	0.22	0.31

Table VI: Determinants of Corporate Social Responsibility

This table presents estimation results for the regressions of lagged firm variables on CSRI in the sample period between 2006 and 2015. All regressions include type and year dummies. Regression (2) also includes country clustered standard errors. Standard errors are shown in parentheses. *, **, and *** denote statistical significance at the 10, 5, and 1 percent levels, respectively.

	$CSRI_t$			
	(1)		(2)	
$Leverage_{t-1}$	0.000	(0.001)	0.000	(0.001)
$Market\ to\ Book\ Value_{t-1}$	1.666	(0.228)***	1.666	(0.374)***
$Return\ on\ assets_{t-1}$	-0.002	(5.714)	-0.002	(10.777)
$Total\ asset_{t-1}$	0.000	(0.000)***	0.000	(0.000)***
$Revenue\ growth_{t-1}$	0.209	(0.139)	0.209	(0.144)
$Volatility_{t-1}$	0.000	(0.000)**	0.000	(0.000)***
$Expected\ Shortfall_{t-1}$	2.477	(8.421)	2.477	(10.178)
Life	-2.666	(0.638)***	-2.666	(1.472)**
Nonlife	-5.469	(0.552)***	-5.469	(1.462)***
Constant	5.224	(0.947)***	5.224	(1.999)***
Observations	1,632		1,614	
R^2	0.24		0.24	
Type dummy	Yes		Yes	
Year FE	Yes		Yes	
Country clustered standard errors	No		Yes	

Table VII: The Effects of CSR on Insurer Outcomes

This table presents estimation results for the regressions of lagged CSRI and lagged firm variables on leverage, market to book value, return on equity, volatility, beta, and expected shortfall in the sample period between 2006 and 2015. All regressions include type and year dummies. Regression (2), (4), (6), (8), (10), and (12) also include country clustered standard errors. Standard errors are shown in parentheses. *, **, and *** denote statistical significance at the 10, 5, and 1 percent levels, respectively.

	Leverage$_t$				Market to Book Value$_t$				Return on Equity$_t$			
	(1)		(2)		(3)		(4)		(5)		(6)	
CSRI$_{t-1}$	0.879	(0.497)*	0.879	(0.854)	0.018	(0.003)***	0.018	(0.005)***	0.087	(0.038)**	0.087	(0.083)
Leverage$_{t-1}$					0.000	(0.000)	0.000	(0.000)	-0.004	(0.003)*	-0.004	(0.005)
Market to Book Value$_{t-1}$	-8.828	(4.504)**	-8.828	(13.202)					2.796	(0.34)***	2.796	(1.388)**
Return on assets$_{t-1}$	-40.176	(125.058)	-40.176	(91.834)	4.611	(0.664)***	4.611	(2.921)				
Total asset$_{t-1}$	0.000	(0.000)***	0.000	(0.000)	0.000	(0.000)***	0.000	(0.000)**	0.000	(0.000)***	0.000	(0.000)
Revenue growth$_{t-1}$	-1.076	(3.045)	-1.076	(1.423)	0.054	(0.016)***	0.054	(0.031)*	0.148	(0.201)	0.148	(0.160)
Liquidity$_{t-1}$	-20.273	(46.034)	-20.273	(37.725)	0.287	(0.247)	0.287	(0.35)	-4.521	(3.555)	-4.521	(5.434)
Volatility$_{t-1}$	-0.018	(0.039)	-0.018	(0.033)	0.000	(0.000)	0.000	(0.000)	-0.019	(0.003)***	-0.019	(0.001)***
Beta$_{t-1}$	1.137	(10.904)	1.137	(22.328)	-0.038	(0.058)	-0.038	(0.079)	0.261	(0.828)	0.261	(1.201)
Expected Shortfall$_{t-1}$	-718.586	(200.961)***	-718.586	(543.735)	3.282	(1.087)***	3.282	(0.897)***	117.109	(15.648)***	117.109	(64.112)*
Solvency$_{t-1}$	-0.319	(0.193)*	-0.319	(0.286)	-0.001	(0.001)	-0.001	(0.003)	0.024	(0.015)*	0.024	(0.020)
Bid-Ask spread$_{t-1}$	-2.019	(102.242)	-2.019	(47.357)	-0.617	(0.548)	-0.617	(0.587)	0.438	(7.759)	0.438	(7.455)
Life	16.637	(13.071)	16.637	(26.792)	0.395	(0.070)***	0.395	(0.157)**	3.923	(0.996)***	3.923	(0.846)***
Nonlife	-17.289	(11.021)	-17.289	(16.678)	0.178	(0.059)***	0.178	(0.102)*	1.506	(0.837)*	1.506	(0.899)*
Constant	127.861	(21.017)***	127.861	(18.302)***	1.684	(0.114)***	2.091	(0.195)***	18.241	(1.587)***	18.241	(2.941)***
Observations	1,472		1,472		1,456		1,456		1,464		1,464	
R^2	0.05		0.05		0.17		0.17		0.19		0.19	
Type dummy	Yes		Yes		Yes		Yes		Yes		Yes	
Year FE	Yes		Yes		Yes		Yes		Yes		Yes	
Country clustered standard errors	No		Yes		No		Yes		No		Yes	

	Volatility$_t$				Beta$_t$				Expected Shortfall$_t$			
	(7)		(8)		(9)		(10)		(11)		(12)	
CSRI$_{t-1}$	-0.251	(0.166)	-0.251	(0.174)	0.002	(0.001)*	0.002	(0.004)	0.000	(0.000)	0.000	(0.000)
Leverage$_{t-1}$	0.003	(0.01)	0.003	(0.007)	0.000	(0.000)	0.000	(0.000)	0.000	(0.000)***	0.000	(0.000)**
Market to Book Value$_{t-1}$	-2.259	(1.507)	-2.259	(1.378)*	-0.031	(0.012)***	-0.031	(0.022)	0.000	(0.001)	0.000	(0.001)
Return on assets$_{t-1}$	-25.353	(41.334)	-25.353	(24.388)	-0.813	(0.326)**	-0.813	(0.685)	0.082	(0.017)***	0.082	(0.050)*
Total asset$_{t-1}$	0.000	(0.000)	0.000	(0.000)	0.000	(0.000)**	0.000	(0.000)***	0.000	(0.000)	0.000	(0.000)
Revenue growth$_{t-1}$	0.481	(1.014)	0.481	(0.589)	-0.015	(0.008)*	-0.015	(0.010)	0.001	(0.000)**	0.001	(0.001)
Liquidity$_{t-1}$	-20.310	(15.333)	-20.310	(14.532)	-0.099	(0.120)	-0.099	(0.154)	-0.018	(0.006)***	-0.018	(0.01)*
Volatility$_{t-1}$					0.000	(0.000)	0.000	(0.000)	0.000	(0.000)***	0.000	(0.000)***
Beta$_{t-1}$	-1.544	(3.632)	-1.544	(4.271)					-0.012	(0.001)***	-0.012	(0.002)***
Expected Shortfall$_{t-1}$	-42.789	(67.186)	-42.789	(150.499)	-6.613	(0.473)***	-6.613	(2.048)***				
Solvency$_{t-1}$	-0.036	(0.065)	-0.036	(0.057)	-0.001	(0.001)	-0.001	(0.001)	0.000	(0.000)	0.000	(0.000)
Bid-Ask spread$_{t-1}$	12.589	(34.074)	12.589	(24.487)	-1.028	(0.265)***	-1.028	(0.647)	0.019	(0.014)	0.019	(0.016)
Life	1.800	(4.350)	1.800	(2.532)	0.127	(0.034)***	0.127	(0.073)*	-0.003	(0.002)	-0.003	(0.002)
Nonlife	9.163	(3.679)**	9.163	(5.515)*	0.003	(0.029)	0.003	(0.056)	0.002	(0.002)	0.002	(0.002)
Constant	13.440	(7.013)*	13.440	(5.887)**	0.638	(0.055)***	0.638	(0.138)***	-0.028	(0.003)***	-0.028	(0.006)***
Observations	1,468		1,468		1,458		1,458		1,459		1,459	
R^2	0.12		0.12		0.35		0.35		0.47		0.47	
Type dummy	Yes		Yes		Yes		Yes		Yes		Yes	
Year FE	Yes		Yes		Yes		Yes		Yes		Yes	
Country clustered standard errors	No		Yes		No		Yes		No		Yes	

Table VIII: The Short- and Medium-term Effects of CSR on Insurer Outcomes

This table presents estimation results for the regressions of CSRI lagged by 1, 2, and 3 years as well as lagged firm variables on leverage, market to book value, return on equity, volatility, beta, and expected shortfall in the sample period between 2006 and 2015. All regressions include type and year dummies. Regression (2), (4), (6), (8), (10), and (12) also include country clustered standard errors. Standard errors are shown in parentheses. *, **, and *** denote statistical significance at the 10, 5, and 1 percent levels, respectively.

	Leverage$_t$				Market to Book Value$_t$				Return on Equity$_t$			
	(1)		(2)		(3)		(4)		(5)		(6)	
CSRI$_{t-1}$	1.831	(1.150)	1.831	(2.159)	0.009	(0.006)	0.009	(0.006)	0.143	(0.086)*	0.143	(0.112)
CSRI$_{t-2}$	-2.056	(1.325)	-2.056	(1.550)	0.013	(0.007)*	0.013	(0.005)***	-0.167	(0.099)*	-0.167	(0.112)
CSRI$_{t-3}$	1.140	(0.894)	1.140	(0.897)	-0.004	(0.005)	-0.004	(0.004)	0.126	(0.067)*	0.126	(0.098)
Life	17.742	(13.969)	17.742	(27.983)	0.402	(0.073)***	0.402	(0.16)**	4.204	(1.039)***	4.204	(0.902)***
Nonlife	-18.702	(11.799)	-18.702	(17.220)	0.166	(0.063)***	0.166	(0.11)	1.546	(0.874)*	1.546	(0.935)*
Constant	76.405	(22.206)***	76.405	(19.192)***	1.650	(0.118)***	1.650	(0.203)***	18.246	(1.634)***	18.246	(2.786)***
Observations	1,372		1,372		1,335		1,335		1,365		1,365	
R^2	0.06		0.06		0.19		0.19		0.24		0.24	
Firm controls	Yes		Yes		Yes		Yes		Yes		Yes	
Type dummy	Yes		Yes		Yes		Yes		Yes		Yes	
Year FE	Yes		Yes		Yes		Yes		Yes		Yes	
Country clustered standard errors	No		Yes		No		Yes		No		Yes	

	Volatility$_t$				Beta$_t$				Expected Shortfall$_t$			
	(7)		(8)		(9)		(10)		(11)		(12)	
CSRI$_{t-1}$	-0.259	(0.391)	-0.251	(0.387)	-0.001	(0.003)	-0.001	(0.003)	0.000	(0.000)	0.000	(0.000)*
CSRI$_{t-2}$	-0.090	(0.447)	-0.090	(0.215)	0.001	(0.003)	0.001	(0.003)	0.000	(0.000)**	0.000	(0.000)**
CSRI$_{t-3}$	0.091	(0.297)	0.091	(0.176)	0.003	(0.002)	0.003	(0.003)	0.000	(0.000)	0.000	(0.000)
Life	1.131	(4.651)	1.800	(2.737)	0.114	(0.035)***	0.114	(0.078)	-0.003	(0.002)	-0.003	(0.002)
Nonlife	9.240	(3.941)**	9.163	(5.872)	0.006	(0.030)	0.006	(0.052)	0.002	(0.002)	0.002	(0.002)
Constant	14.309	(7.421)*	13.440	(5.883)**	0.627	(0.056)***	0.627	(0.138)***	-0.027	(0.003)***	-0.027	(0.006)***
Observations	1,368		1,368		1,358		1,358		1,358		1,358	
R^2	0.12		0.12		0.36		0.36		0.49		0.49	
Firm controls	Yes		Yes		Yes		Yes		Yes		Yes	
Type dummy	Yes		Yes		Yes		Yes		Yes		Yes	
Year FE	Yes		Yes		Yes		Yes		Yes		Yes	
Country clustered standard errors	No		Yes		No		Yes		No		Yes	