Corporate Social Responsibility, Governance Environment, and Firm Risk around the World

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ABSTRACT

This study examines a panel sample of 4,229 publicly-listed firms across 56 countries over the ten-year period from 2009 to 2018 to address the question of whether, and to what extent, corporate social responsibility (CSR) helps mitigate firm risk. Our empirical findings indicate that CSR engagement leads to a lower level of bankruptcy risk, a reduction in stock volatility, and less operational risk. These findings are significant in countries with good governance environments. When governance environment is poor, CSR engagement plays an insignificant role in reducing firms' bankruptcy risk and operational risk, and it tends to increase stock volatility. Our results are robust over time, after addressing endogeneity concerns, and controlling for other firm-level and country-level factors.

Keywords: Corporate social responsibility, corporate governance, firm risk

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1. INTRODUCTION

Over the past decade, corporate social responsibility (CSR) has been employed as a strategic priority for a growing body of business entities around the world. In recent years, the focus has been moved from just political climate to an entrenched balance among responsibility, humanity, and impact in the institution. The public interest in CSR will continue to swell. To date most empirical studies on CSR focus on what determines CSR engagement (e.g., Belkaoui and Karpik, 1989; Roberts, 1992; Jones, 1999; Toms, 2002; Reverte, 2009; Chih et al., 2010), the relation to firm characteristics and corporate decisions such as investment and leverage policies (e.g., Roberts, 1992; Graves and Waddock, 1994; Stanwick and Stanwick, 1998; Johnson and Greening, 1999; Deniz-Deniz and Garcia-Falcon, 2002; Zu and Song, 2009; Muller and Kolk, 2010), and the connection to ownership structure or political relations (e.g., Graves and Waddock, 1994; Johnson and Greening, 1999; Li and Zhang, 2010).

Despite the rich literature that has accumulated, a careful review of the literature indicates that there are nontrivial gaps in this line of inquiry that need to be addressed. First, while there is a growing interest in the risk reduction role of CSR, the focus has been on either credit risk (e.g., Attig et al., 2013) or stock risk (total risk, idiosyncratic risk, and systematic risk) (e.g., Benlemlih and Girerd-Potin, 2017; Bouslah et al. 2013; Jo and Na, 2012). There is limited evidence on the complete picture of firm risk. Second, with few exceptions (e.g., Benlemlih and Girerd-Potin, 2017; Dyck et al. 2019), there is little evidence on the role of CSR in international settings, and it is not clear how, and to what extent, the institutional contexts moderate the role of CSR. As Benlemlih and Girerd-Potin (2017) point out, the relationship between CSR and financial risk is moderated significantly by the institutional context of the firm. Therefore, the key to understanding the determinants and impact of CSR also rests on the unique institutional features of the markets involved. This study attempts to bridge these gaps. In particular, we investigate whether, and to what extent, CSR mitigates firm risk using three

different risk measures (i.e., potential bankruptcy risk, stock volatility, and operational risk), contingent upon the governance environment of the country.

Behaving in a socially responsible way sends a positive signal about the firm and, therefore, earns support from both the product market (e.g., Luo and Bhattacharya, 2006) and the capital market (e.g., Attig et al., 2013; El Ghoul et al., 2011). CSR also tends to reduce information asymmetry and lower idiosyncratic risk (Benlemlih et al., 2016 and Benlemlih and Girerd-Potin, 2017). Moreover, it is argued that CSR is especially valuable to firms under unfavorable conditions. For instance, Godfrey et al. (2009) find that CSR investments generate moral capital or goodwill, which can provide "insurance-like" protection to preserve financial performance and reduce firm risk. Lins et al. (2017) find that CSR pays off when the overall level of trust in corporations and markets suffers a negative shock. All of these factors tend to alter the firm's risk profile. We argue that CSR engagement may be considered by managers as an effective strategy tool to mitigate firm risk.

In this study, we measure firm risk using three alternative proxies. To directly measure the risk of financial distress or bankruptcy risk, we use the Altman's Z-Score (Altman, 1968). Ever since its debut, the model has continued to be used worldwide, in both academic research and practice, as the main tool for predicting bankruptcy and financial distress (Altman et al., 2017). The second risk measure utilized in this study is stock volatility, which is the standard deviation of stock returns (e.g., Jo and Na, 2012). The third risk measure is the standard deviation of the ROA ratio, a common measure of corporate risk-taking and operatically risk (e.g., Harjoto and Laksmana, 2018). Our analyses are based on a rich firm-level dataset and a sample that covers 56 countries between 2009 and 2018. Our empirical evidence indicates that the risk of bankruptcy is negatively associated with CSR. More specifically, each extra point on the CSR score lowers the risk of bankruptcy by about 6.22%, ceteris paribus. We also find similar effect of CSR on market volatility and operation risk. Further investigation indicates

that the risk reduction effect of CSR is only significant in countries with good governance environments. When governance environment is poor, CSR plays an insignificant role in reducing firms' bankruptcy risk and operational risk, and it tends to increase stock volatility.

Our study contributes to the literature in many ways. First, it adds to the well-established literature on the risk of bankruptcy by exploring new insights on the role of CSR in a firm's financial health and stability using a global sample across 56 countries. Consistent with previous evidence and with our predictions, we report that a firm's CSR practices decrease the potential risk of bankruptcy, as measured by Altman's Z-score. In addition, we find that this result is not mitigated by other firm characteristics, especially firm leverage, that potentially increase the risk of bankruptcy (Miller, 1991; Leland and Toft, 1996). Second, this study adds to the CSR literature by providing a more complete picture of the risk reduction role of CSR and by providing evidence across different institutional contexts. In addition to bankruptcy risk, we use two additional risk measures, specifically, the standard deviation of returns to capture stock volatility and the standard deviation of ROA as for operational risk. Consistent with the analysis on bankruptcy risk, our results show that CSR also reduces stock volatility and operational risk. Despite the rich literature that has accumulated on CSR, there is a lack of cross-country research and it is not clear how institutional environments moderate the role of CSR. This study adds to this limited body of empirical research. As highlighted by Benlemlih and Girerd-Potin (2017), the relationship between CSR and financial risk should be considered within the institutional context of the firm. Lastly, our study adds to the governance literature by examining whether the effect of CSR on firm risk is different in strong and weak governance environments. Our evidence shows that CSR engagement is an important channel to lower firm risk in strong governance environments but not in weak governance environments.

The remainder of the paper proceeds as follows. Section 2 reviews the related literature and develops the hypotheses. Section 3 describes the data, methodology, and summary

statistics. Section 4 reports baseline empirical results, provides results of further analyses, and addresses endogeneity concerns with empirical analyses. Section 5 concludes the paper.

2. LITERATURE REVIEW & HYPOTHESES

In this section, we summarize prior studies of the relationship between CSR and firm risk. We also analyze literature on the inter-relations between CSR, governance environment, and firm risk (captured by bankruptcy risk, stock volatility, and operational risk). Our research hypotheses are discussed and motivated at the end of this section.

2.1 The Role of CSR in Corporate Characteristics, Corporate Decisions, and Firm Risk

In recent years, there has been a growing interest in the effects of CSR on corporate financial and investment decisions. For instance, CSR has been found to significantly and positively affect innovation development (e.g., Porter and van der Linde, 1995a, 1995b), R&D efficiency (Hall and Rothenberg, 2008), and a mix of results of CSR on financial performance (e.g., Aupperle et al., 1985; McGuire et al., 1988; Worrell et al., 1991; Clinebell and Clinebell, 1994; Hannon and Milkovich, 1996; Posnikoff, 1997; McWilliams and Siegel, 1997, 2000; Wright and Ferris, 1997; Waddock and Graves, 1997). The existing literature on the relation between CSR and firm activities, while extensive, has essentially overlooked the link of CSR with innovation. As highlighted by Hull and Rothenberg (2008), innovation and firm differentiation in the industry are significantly moderators to the positive relation between CSR and financial performance. CSR engagement also brings positive effects on financial and environmental performance (Stanwick and Stanwick, 1998), and has a strong connection to ownership structure (Johnson and Greening, 1999). Barnea and Rubin (2006) study that firms with high leverage prevents managers to over-invest in CSR. A trade-off relation is found between CSR and firm leverage that if firms tend to invest more in CSR, their leverage ratios are relatively lower (Verwijmeren and Derwall, 2010). Yet, the link between the role of CSR

to improve capital structure and hence reduce the risk of default has received little attention. In this paper, we aim to fill this gap by investigating the direct effect of CSR on bankruptcy risk.

The relevance of the risk of bankruptcy and bankruptcy costs to a firm's capital structure has been examined with strong evidence in literature (see, for example, Castanias, 1983; Altman, 1984; Kale et al., 1991; John, 1993; Molina, 2005). Castanias (1983) posits that, since bankruptcy is costly, the ex-ante default costs play an influential role in the leverage policy of the firm. Mainly, firms tend to hold a mix of debt and equity to accommodate the potentially massive costs of bankruptcy. A higher leverage induces a lower credit rating. In the case of credit rating downgrades, firms tend to reduce leverage (Kisgen, 2009).

A rather early study by Waddock and Graves (1997) provides empirical evidence support that US firms engage more efforts in social issues tend to succeed financially. Relatedly, Cooper and Uzun (2019) examine a small sample of 78 bankruptcy firms in US and find a negative relation between CSR and the bankruptcy outcome. These previous studies focus on US firms only, and yet explore with a wider range of sample internationally.

CSR tends to reduce information asymmetry and lower idiosyncratic risks (Benlemlih et al., 2016 and Benlemlih and Girerd-Potin, 2017). The *Forbes* states that the public requests more transparency about firms to report their strategies and goals related to CSR engagement.[1] For instance, the theoretical work of Berk et al. (2010) presents that the bankruptcy costs borne by employees are potentially substantial. Verwijmeren and Derwall (2012) show that firms with high scores for employee well-being have a lower chance of bankruptcy. Thus, it is likely that CSR engagement has the function to mitigate firms' potential bankruptcy risk by

[1] McPherson, S., Corporate Responsibility: What to Expect in 2019, *The Forbes*, January 14, 2019.

improving the social responsibility behavior. The main objective of this study is to provide this important insight into the determinants of firm risk by taking CSR engagement into account.

We argue that CSR engagement may be considered by managers as an effective strategy tool to help managers and firms signal about how institutions are socially accountable to its stakeholders, the local communities, and the public. This is because CSR is recognized as an economic phenomenon and, statistically, there are 74% of British consumers who mentioned that their purchase decisions are influenced by a firm's social reputation and ethical behavior (IPsos MORI, 2003).[2] Thus, CSR activities are informative in that they help firms to communicate with the public that they have engaged in strengthening a firm's values and the values of its customers, employees, and investors. Thus, consistent with prior evidence (Kitzmueller and Shimshack, 2012) that CSR produces higher welfare than other public good provision channels, we expect a higher profile of CSR engagement to be positively related to a reduction of firm risk. In this paper, firm risk is reflected by potential bankruptcy risk, stock volatility, and operational risk.

2.2 CSR, Governance Environment, and Firm Risk

A number of existing studies have substantially examined the shareholder-value impact of CSR (see Renneboog et al., 2008, for a detailed critical review). Smith (2003) discusses that country development induces to different implications of CSR to corporate competition environment and to what extent of the wealth created. CSR is considered as a vital role in communicating with stakeholders and investors (Carroll, 2015), as it relates to business commitment to social environment that affects to the quality of life of communities and employees.

CSR is an effective tool for stakeholder management (Erhemjamts et al., 2013; Wu and Shen, 2013) through investment and organizational strategies. However, business models

[2] Ipsos MORI, 2003. *Ethical Companies.* Available at https://www.ipsos.com/ipsos-mori/en-uk/ethical-companies (accessed 14 January, 2020).

around the world may different by local culture and social activities. As highlighted by La Porta et al. (2000) that agency problems could be pronounced more in minority shareholders of businesses in countries with weak shareholder protection. Similarly, more family firms in some countries, which also can cause the potential agency issues that some members tend to maximize personal wealth (see, for example, Bae et al., 2002; Bertrand et al., 2002). These prior studies have highlighted that national governance environment determines firms' CSR practices and behavior.

The focus of prior studies has been on either the relation between CSR and corporate governance or the relation between corporate governance and bankruptcy risk. Can a firm improve financial heath and thus reduce firm risk by engaging more in CSR? The research on the inter-relation between CSR practices, governance environment, and the risk of bankruptcy has not provided support to this question. There is no lack of literature reporting significant relationships between corporate governance and the risk of the bankruptcy (e.g., Daily and Dalton. 1994; Elloumi and Gueyie, 2001; Fich and Slezak, 2008; Platt and Platt, 2012; Darrat et al., 2016). For instance, Eckbo et al. (2016) find that CEO career change is strongly linked to creditor control rights during bankruptcy. They also highlight that CEO, firm, and bankruptcy characteristics are significantly associated with the likelihood of CEO turnover and the likelihood of incumbent CEO departing to an executive position.

The implications and causes of CSR may differ across countries. Studies by pioneers such as Keim (1978), Ullmann (1985), and Roberts (1992) document a positive relationship between CSR reporting from business ethical issues and dispersed corporate ownership in developed countries. Others have studied in related topics in the context of developed and emerging countries (e.g., Ge and Thomas, 2007; Lam and Shi, 2008; Whitcomb et al., 1998).[3]

[3] See Ali et al. (2017) for a detailed review of the literature on determinants of CSR disclosure in developed and developing countries.

In summary, the existing corporate governance literature suggests that companies act to CSR engagement and disclosure in a various manner. CSR engagement is likely to gain a rather comparative advantage in countries with better governance environment as mangers, consumers, and investors coordinate efficiently, than countries with less strong governance environment. Kitzmueller and Shimshack (2012) state that "Consumers in developed countries may influence environmental and social performance of firms operating in the developing world". Yet, prior research does not provide evidence to this predication. The combined effect of CSR and governance environment on corporate risk has been overlooked in the existing related literature. In this paper, we aim to fill this gap by investigate whether worldwide governance environment along with CSR engagement affects firm risk. We focus on firm risk, specifically the risk of bankruptcy, stock volatility, and operation risk, because these measures should reflect firm financial health and the potential probability of bankruptcy, which is the ultimate issue investors care about. This paper considers the role of corporate social responsibility (CSR) in firm risk.

Based on the above discussions, we drive our predictions as summarized below.

Hypothesis 1 (H1): *CSR reduces bankruptcy risk. The risk reduction effect is more significant in strong governance environments.*

Hypothesis 2 (H2): *CSR reduces stock risk. The risk reduction effect is more significant in strong governance environments.*

Hypothesis 3 (H3): *CSR reduces operational risk. The risk reduction effect is more significant in strong governance environments.*

3. DATA AND METHODOLOGY

3.1 CSR Data

This study investigates a panel sample of 4,229 publicly-listed firms across 56 countries over the ten year period from 2009 to 2018 to address the question of whether, and to what extent, CSR engagement mitigates firm risk.

Along the same line with other international-based CSR studies (e.g., Dyck et al., 2019), we obtain data on firms' CSR engagement from the Thomson Reuters ASSET4 ESG database. Thomson Reuters ASSET4 ESG database started to cover firms' CSR engagements on a consistent basis in 2004, with international coverage starting in 2009. The Thomson Reuters ESG Score is an overall company score based on the company's reported information in the environmental, social, and corporate governance pillars. In particular, the scores are based on 178 company level ESG measures across ten categories (i.e., resource use, emissions, innovation, workforce, human rights, community, product responsibility, management, shareholders, and CSR strategy). A combination of the ten categories, weighted proportionately, formulates the three pillar scores (i.e., the environmental, social, and corporate governance pillar scores), and the final ESG score. The overall ESG Combined Score is the ESG Score discounted for significant CSR controversies impacting the corporations. This study uses the ESG Combined Score, which we believe is a more complete and accurate reflection of the company's CSR commitment and effectiveness. We use data from the first year of international coverage through year-end 2018 for our research.

3.2 Governance Environment

The governance environment is measured using the Worldwide Governance Indicators (WGI) score, which aggregates six individual dimensions of governance for over 200 countries and territories over the period from 1996 to 2018. The six individual dimensions are voice and

accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption. These indicators are based on over 30 individual data sources produced by a variety of survey institutes, think tanks, non-governmental organizations, international organizations, and private sector firms.

3.3 Measure of Firm Risk

In this study, we measure firm risk using three alternative proxies. To directly measure the risk of financial distress or bankruptcy risk, we use the Z-Score developed by Altman's (1968) multiple discriminant analysis. Following Altman (1968), the Z-Score is measured as $Z = 0.012X_1 + 0.014X_2 + 0.033X_3 + 0.006X_4 + 0.999X_5$, where X_1 is the working capital to total assets ratio, X_2 is the retained earnings to total assets ratio, X_3 is the earnings before interest and taxes to total assets ratio, X_4 is the market value of equity to book value of total debt ratio, and X_5 is the sales to total assets ratio. Ever since its debut, the model has continued to be used worldwide, in both academic research and practice, as the main tool for predicting bankruptcy and financial distress (Altman et al., 2017). The second risk measure utilized in this study is stock volatility, measured by the standard deviation of stock returns (e.g., Jo and Na, 2012). The third risk measure is the standard deviation of the ROA ratio, a common measure of corporate risk-taking and operatically risk (e.g., Harjoto and Laksmana, 2018). All of our firm-level data are compiled from Thomson Reuters, FactSet, and Bloomberg, three commonly used multinational financial databases by investment professionals.

3.4 Control Variables

The control variables in our study are chosen based on the nature of this study and previous studies (e.g., Benlemlih and Girerd-Potin, 2017). We collect data from Thomson Reuters, FactSet, and Bloomberg for constructing our control variables. In particular, the following controls are included in the regressions: firm size, calculated as the natural log of total assets; the market-to-book-ratio, measured as the stock market capitalization of the firm

divided by the total equity of the firm; the return on assets ratio, computed as EBIT divided by total assets; the leverage ratio, measured as the debt-to-assets ratio; and the liquidity ratio, measured as the current assets to current liabilities ratio. Here, the book-to-market ratio, the return on assets ratio, and the leverage ratio are included, to account for growth opportunities, profitability, and capital structure, respectively. For a more rigorous analysis, the regressions are also conducted with additional control variables, including firm age, dividend yield, stock market turnover, sales growth, Capex to total assets ratio, cash holding to total assets ratio, CFO to total assets ratio, board size, and board independence. These additional controls have no evident impact on the main results.

3.5 Methodology

To achieve a direct assessment of the impact of CSR on firm risk, the following multilevel GLM regressions are conducted:

$$ZSCOREI_{i,t} = \lambda_0 + \lambda_1 CSR_{i,t-1} + \lambda_2 SIZE_{i,t-1} + \lambda_3 MTB_{i,t-1} + \lambda_4 ROA_{i,t-1} + \lambda_5 LEV_{i,t-1} + \lambda_6 LIQ_{i,t-1} + \lambda_7 IND + \lambda_8 YR + \lambda_9 CN + \varepsilon \quad (1)$$

$$SDRET_{i,t} = \lambda_0 + \lambda_1 CSR_{i,t-1} + \lambda_2 SIZE_{i,t-1} + \lambda_3 MTB_{i,t-1} + \lambda_4 ROA_{i,t-1} + \lambda_5 LEV_{i,t-1} + \lambda_6 LIQ_{i,t-1} + \lambda_7 IND + \lambda_8 YR + \lambda_9 CN + \varepsilon \quad (2)$$

$$SDROA_{i,t} = \lambda_0 + \lambda_1 CSR_{i,t-1} + \lambda_2 SIZE_{i,t-1} + \lambda_3 MTB_{i,t-1} + \lambda_4 ROA_{i,t-1} + \lambda_5 LEV_{i,t-1} + \lambda_6 LIQ_{i,t-1} + \lambda_7 IND + \lambda_8 YR + \lambda_9 CN + \varepsilon \quad (3)$$

The dependent variables in the models are the inverse of the Altman's Z-Score, *ZSCOREI*, the standard deviation of stock returns, *SDRET*, and the standard deviation of the ROA ratio, *SDROA*, respectively. The independent variables include the ASSET4 ESG Combined Score (*CSR*), firm size (*SIZE*), the market-to-book ratio (*MTB*), the return on assets ratio (*ROA*), the leverage ratio (*LEV*), and the liquidity ratio (*LIQ*). The industry fixed effect, the year fixed effect, and the country fixed effect are all controlled in the GLM regressions.

To ensure a rigorous analysis, close attention is paid to multicollinearity. While the correlation test indicates that there are a number of statistically significant relationships among

explanatory variables, none of the VIF statistics is greater than 2.0, suggesting that the concern about multicollinearity among the independent variables does not appear to be warranted.

Observing a significant impact of CSR on firm risk in a global context, an interesting question to ask is whether CSR plays different roles in different institutional environments. To address this question, we repeated the regressions with interaction terms between the CSR score and the strong and weak governance environment dummies. In particular, the following regressions are conducted:

$$\begin{aligned} ZSCOREI_{i,t} = {} & \lambda_0 + \lambda_1 CSR*SG_{i,t-1} + \lambda_2 CSR*WG_{i,t-1} + \lambda_3 SIZE_{i,t-1} + \lambda_4 MTB_{i,t-1} + \lambda_5 ROA_{i,t-1} + \lambda_6 LEV_{i,t-1} + \lambda_7 LIQ_{i,t-1} \\ & + \lambda_8 GDPPC_{j,t-1} + \lambda_9 DCOM_{j,t-1} + \lambda_{10} IND + \lambda_{11} YR + \lambda_{12} CN + \varepsilon \end{aligned} \quad (4)$$

$$\begin{aligned} SDRET_{i,t} = {} & \lambda_0 + \lambda_1 CSR*SG_{i,t-1} + \lambda_2 CSR*WG_{i,t-1} + \lambda_3 SIZE_{i,t-1} + \lambda_4 MTB_{i,t-1} + \lambda_5 ROA_{i,t-1} + \lambda_6 LEV_{i,t-1} + \lambda_7 LIQ_{i,t-1} \\ & + \lambda_8 GDPPC_{j,t-1} + \lambda_9 DCOM_{j,t-1} + \lambda_{10} IND + \lambda_{11} YR + \lambda_{12} CN + \varepsilon \end{aligned} \quad (5)$$

$$\begin{aligned} SDROA_{i,t} = {} & \lambda_0 + \lambda_1 CSR*SG_{i,t-1} + \lambda_2 CSR*WG_{i,t-1} + \lambda_3 SIZE_{i,t-1} + \lambda_4 MTB_{i,t-1} + \lambda_5 ROA_{i,t-1} + \lambda_6 LEV_{i,t-1} + \lambda_7 LIQ_{i,t-1} \\ & + \lambda_8 GDPPC_{j,t-1} + \lambda_9 DCOM_{j,t-1} + \lambda_{10} IND + \lambda_{11} YR + \lambda_{12} CN + \varepsilon \end{aligned} \quad (6)$$

The model specifications are based on Benlemlih and Girerd-Potin (2017). Additional independent variables in models (4) - (6) include the interaction term between the CSR score and the strong governance environment dummy (*CSR*SG*), the interaction term between the CSR score and the weak governance environment dummy (*CSR*WG*), the log of GDP per capital (*GDPPC*), and the common law dummy (*DCOM*), which takes the value of 1 for common law countries and 0 otherwise. GDP per capital and the common law dummy are included in models (4) - (6) to control for the economic development and the legal origin of the country. Here, *SG* is the strong governance dummy, which take the value of 1 for strong governance countries and 0 otherwise, and *WG* is the weak governance dummy, which take the value of 1 for weak governance countries and 0 otherwise. Specifically, we rank the 56 countries based on their WGI scores in 2018 and classify the top 30 percent as strong governance countries and the bottom 30 percent as weak governance countries. As a robustness

check, we also repeat the regressions with different country classification using the 40 percent and 60 percent cutoff levels. The results are unaffected.

3.6 Descriptive Statistics

Our country-level data are compiled from the World Bank's World Development Indicators (WDI) and Worldwide Governance Indicators (WGI) databases. Our firm-level data are compiled from Thomson Reuters, FactSet, and Bloomberg, three commonly used multinational financial databases by investment professionals. After deleting firms with no reported ESG scores in the Thomson Reuters ASSET4 database, firms with missing values on key variables, and firms in the financial industry, the final sample includes 4,229 firms (29,532 firm-year observations) in 56 countries. The financial industry is excluded from the sample because of the fundamental and regulatory differences of financial firms.

Table 1 shows the country distribution for the 29,532 firm-years observations included in the sample between 2009 and 2018, sorted by sample countries' governance environment scores. As previously discussed, we split the sample into two groups of strong and weak governance environments based on the WGI scores. Specifically, we rank the 56 countries based on their WGI scores in 2018 and classify the top 30 percent as strong governance countries and the bottom 30 percent as weak governance countries. Based on our classification, strong governance countries include Australia, Austria, Canada, Denmark, Finland, Germany, Hong Kong, Ireland, Japan, Luxembourg, Netherlands, New Zealand, Norway, Singapore, Sweden, Switzerland, United Kingdom, and United States. Weak governance countries include Argentina, Brazil, China, Colombia, Egypt, India, Indonesia, Kuwait, Mexico, Morocco, Papua New Guinea, Peru, Philippines, Russia, Saudi Arabia, Thailand, and Turkey.

****Insert Table 1 about here****

Table 2 reports the summary statistics of the sample. The variables in the table are defined as follows: *ZSCOREI* is the inverse of the Altman's Z-Score. Following Altman (1968), the Z-Score is measured as $Z = 0.012X_1 + 0.014X_2 + 0.033X_3 + 0.006X_4 + 0.999X_5$, where X_1 is the working capital to total assets ratio, X_2 is the retained earnings to total assets ratio, X_3 is the earnings before interest and taxes to total assets ratio, X_4 is the market value of equity to book value of total debt ratio, and X_5 is the sales to total assets ratio. *SDRET* is the standard deviation of annualized stock returns. *SDROA* is the standard deviation of the return on assets ratio. *CSR* is the Thomson Reuters ASSET4 ESG Combined Score. *SIZE* is the size of the firm, calculated as the natural log of total assets. *MTB* is the market-to-book-ratio, measured as the stock market capitalization of the firm divided by the total equity of the firm. *ROA* is the return on assets ratio, computed as EBIT divided by total assets. *LEV* is the leverage ratio, measured as the debt-to-assets ratio. *LIQ* is the liquidity ratio, measured as the current assets to current liabilities ratio. All variables are measured using calendar-year-end values and are winsorized at the 1% and 99% levels.

****Insert Table 2 about here****

Table 3 presents the correlation matrix of main variables. As Table 3 indicates, CSR is negatively correlated with all three measures of risk. While Tables 1 and 2 provide some preliminary evidence on the relationships among key variables, such an analysis must be viewed cautiously, given that other cross-sectional factors are not taken into consideration.

****Insert Table 3 about here****

4. EMPIRICAL FINDINGS

4.1 Main Results

Table 4 reports the GLM regression results regarding the impact of CSR on firm risk. In Model 1, we examine the impact of CSR on bankruptcy risk, as measured by the inverse of Z-score. We find that a higher *CSR* score is associated with a lower level of bankruptcy risk (*t*-statistic of -7.78). That is, a one-standard deviation increase in the CSR score reduces a 6.22%-standard-deviation in potential bankruptcy risk. This evidence suggests that CSR plays a significant role in mitigating the risk of financial distress or bankruptcy risk. Our second regression specification (Model 2) in Table 4 assesses the impact of CSR on stock market volatility. The coefficient estimate on *CSR* is negative and significant (*t*-statistic of -12.84), suggesting that CSR tends to reduce stock volatility. In particular, a one-standard deviation increase in the CSR score is associated with a reduction of a 7%-standard-deviation in stock volatility. In Model 3, we regress the CSR score on operational risk proxied by the standard deviation of ROA. We again find a significantly negative relation between CSR and ROA volatility (*t*-statistic of -7.81). The economically significance we find is that a one-standard deviation increase in the CSR score is associated with a decrease of a 3.78%-standard-deviation in operational risk. In terms of control variables, we find that leverage increases all three kinds of firm risk, while profitability reduces all three kinds of firm risk. Firm size tends to increase bankruptcy risk but reduce stock volatility and operational risk. Growth opportunities and firm liquidity appear to reduce bankruptcy risk, but increase stock volatility and operational risk.

****Insert Table 4 about here****

Table 5 reports the GLM regression results regarding the impact of CSR on firm risk, where we add two interaction terms between CSR and the strong/weak governance

environment dummies. Consistent with hypothesis *H1*, the coefficient estimate on *CSR*SG* in Model 1 is negative and significant, suggesting that CSR plays an important role in reducing bankruptcy risk in strong governance environments (*t*-statistic is -6.38). Statistically in economic significance, we find that a one-standard deviation increase in the CSR score is associated with a decrease of a 4.56%-standard-deviation in bankruptcy risk. We do not find this phenomenon exists in weak governance environment. Model 2 of Table 5 assesses the association between CSR and stock volatility when governance environment quality is taken into consideration. Consistent with hypothesis *H2*, we find that, all else equal, a one-standard deviation increase in the CSR score is associated with a decrease of a 1.27%-standard-deviation stock volatility, which is slightly less strong compared to the effect on bankruptcy risk but remains significant (*t*-statistic is -2.50). Surprisingly, we find that CSR engagement tends to increase stock volatility in weak governance environments. This implies that CSR may not be totally recognized and valued by investors in poor governance environments. In Model 3, we assess the inter-effect of CSR engagement and governance environment quality on operational risk. Our results show that CSR reduces operational risk in strong governance environments (*t*-statistic is -7.68). Statistically in economic significance, we find that a one-standard deviation increase in the CSR score is associated with a decrease of a 4.56%-standard-deviation in operational risk. We do not find this phenomenon exists in weak governance environment. With respect to control variables, we find that leverage increases all three kinds of firm risk, while profitability reduces all three kinds of firm risk. Firm size tends to increase bankruptcy risk but reduce stock volatility and operational risk. Growth opportunities and firm liquidity appear to reduce bankruptcy risk, but increase stock volatility and operational risk.

****Insert Table 5 about here****

4.2 Robustness Checks

In the literature, an inevitable empirical challenge associated with studies that attempt to assess the impact of a firm strategy is endogeneity. In this study, the following approaches are utilized to mitigate potential endogeneity. First, note that endogeneity, omitted-variables bias in particular, is less of an issue for panel models than for cross-sectional models. This is because the past values of the variables in the panel automatically capture the effects of the missing variables. Second, we use lagged independent variables in all regressions to control for the issue of reverse casualty. In addition to these efforts made in mitigating endogeneity, the two-stage models are further conducted. For the two-stage model to work, we need at least one instrumental variable that is highly correlated with the endogenous regressor, the CSR score, but is uncorrelated with the error term. This study uses two instrumental variables. Following recent studies (e.g., Attig et al., 2013; Benlemlih and Girerd-Potin, 2017; El Ghoul et al. 2011), the first instrumental variable we use in this study is the dummy variable that take the value of one if the previous year's earnings are negative and zero otherwise. The second instrumental variable we use in this study is the industry-level ESG score. Once the instrumental variables are identified, the two-stage models are then applied, where the fitted values of earnings management from the first stage are utilized in second-stage regressions. The empirical results are reported in Tables 6 and 7. As can be seen, the results from the two-stage models are highly consistent with the results reported in Tables 4 and 5.

****Insert Table 6 about here****

****Insert Table 7 about here****

Moreover, to ensure a rigorous analysis, close attention is paid to multicollinearity. As previously noted, both the correlation test and the VIF statistics are utilized to detect potential multicollinearity among independent variables. While the correlation test indicates that there are a number of statistically significant relationships among explanatory variables, none of the VIF statistics is greater than 2.0, suggesting that the concern about multicollinearity among the independent variables does not appear to be warranted.

In addition to multicollinearity and endogeneity checks, a series of robustness tests are further conducted to gain additional confidence. First, the regressions are conducted with additional control variables. Such variables include firm age, dividend yield, stock market turnover, sales growth, Capex to total assets ratio, cash holding to total assets ratio, CFO to total assets ratio, board size, and board independence. Second, the regressions are repeated with respect to the ESG Score (instead of the ESG Combined Score). Moreover, in order to test the sensitivity of our results to different classifications of good/bad governance environments, we also split the sample based on the 40 percent and 60 percent cutoff levels (instead of the 30 percent and 70 percent cutoff levels). Lastly, the regressions are repeated excluding observations in 2009 to examine whether the results are sensitive to the inclusion of the year of financial market crisis. These additional tests have no evident impact on the main results.

5 CONCLUDING REMARKS

Using data on 4,229 publicly-listed firms across 56 countries over the ten-year period from 2009 to 2018, we investigate whether, and to what extent, corporate social responsibility (CSR) engagement mitigates firm risk. Our empirical evidence indicates that CSR engagement leads to a lower level of bankruptcy risk, reduced stock volatility, and less operational risk in countries with good governance environments, but not in countries with poor governance

environments. Our results are robust over time, after addressing endogeneity concerns, and controlling for other firm-level and country-level factors.

The present study contributes to the literature in many aspects. First, it adds to the risk management literature by exploring new insights on the role of CSR in a firm's financial health and stability using a global sample across 56 countries. Consistent with previous evidence and with our predictions, we find that CSR plays an important role in mitigating various firm risk, including bankruptcy risk, stock market risk, and operational risk. Second, this study adds to the CSR literature by providing a more complete picture of the risk reduction role of CSR and by providing evidence across different institutional contexts. While there is a growing interest in the risk reduction role of CSR, the focus has been on either credit risk (e.g., Attig et al., 2013) or stock risk (total risk, idiosyncratic risk, and systematic risk) (e.g., Benlemlih and Girerd-Potin, 2017; Bouslah et al. 2013; Jo and Na, 2012). This study provides a more complete picture of the risk reduction role of CSR. Moreover, despite the rich literature that has accumulated on CSR, there is a lack of cross-country research and it is not clear how different institutional environments affect the determinants and effectiveness of CSR. This study adds to this limited body of research. Lastly, the present paper also contributes to the governance literature by recognizing the crucial role of governance environment in moderating the relationship between CSR and firm risk. As with other international business issues, the key to understanding the determinants and effectiveness of CSR rests on the unique institutional features of the markets involved. In this study, we show that governance environment plays an important role in moderating the effectiveness of CSR. The effect is significant even after controlling for the level of economic development and the impact of legal origin, which has been documented by Benlemlih and Girerd-Potin (2017) to be an important moderating factor.

Besides its contributions to the academic literature, this study also offers practical insights to firm management, investors, and policy makers. As our empirical findings indicate, CSR engagement indeed plays a significant role in mitigating firm risk in strong governance environments. However, CSR activities may not be in the best interests of firms in weak governance environments, because they are likely to be perceived as window dressing and less genuine activities in such environments.

Furthermore, the present paper also points out a promising area for future research. In this study, we focus mainly on the moderating role of governance environment on the relationship between CSR and firm risk. We do not try to rule out the impact of other formal and informal institutional differences across different country settings. Rather, we hope this study will stimulate more cross-country comparative studies and explore the impact of different institutional contexts on the determinants and effectiveness of CSR.

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Table 1. Sample Breakdown by Country

This table represents the country distribution for the 29,532 firm-years observations included in the sample between 2009 and 2018, sorted by country-level governance environment, as measured by the WGI score. The WGI score and the aggregate ESG combined score of the country are reported in columns 3 and 4.

Panel A. Strong Governance Countries (Top 30%)

Country	N	WGI Score	Aggregate ESG Score
Australia	1903	1.5754	43.2360
Austria	113	1.4642	50.6639
Canada	934	1.5901	45.3803
Denmark	174	1.6871	52.6901
Finland	236	1.7635	55.4274
Germany	697	1.4955	50.1610
Hong Kong	875	1.4698	41.2617
Ireland	223	1.3981	48.2688
Japan	3557	1.3409	48.6328
Luxembourg	71	1.7268	50.6829
Netherlands	317	1.6927	52.6506
New Zealand	193	1.8114	44.6368
Norway	141	1.7643	52.4916
Singapore	300	1.6361	43.6446
Sweden	464	1.6998	54.2888
Switzerland	543	1.7865	48.7112
United Kingdom	2387	1.3339	49.9945
United States	8743	1.2414	43.0205

Panel B. Weak Governance Countries (Bottom 30%)

Country	N	WGI Score	Aggregate ESG Score
Argentina	61	-0.0305	33.0894
Brazil	606	-0.2352	49.8978
China	1165	-0.3079	37.6324
Colombia	64	-0.1940	54.5681
Egypt	45	-0.8167	31.0712
India	584	-0.1088	45.9551
Indonesia	248	-0.1424	49.1590
Kuwait	26	-0.0835	46.4159
Mexico	258	-0.3477	44.1007
Morocco	18	-0.2974	38.1288
Papua New Guinea	19	-0.5930	48.8380
Peru	74	-0.1425	38.1864
Philippines	126	-0.3352	47.0459
Russia	288	-0.6400	41.9562
Saudi Arabia	26	-0.2417	26.8438
Thailand	167	-0.2769	56.6508
Turkey	179	-0.4615	50.6392

Panel C. Other Countries			
Country	**N**	**WGI Score**	**Aggregate ESG Score**
Belgium	173	1.1838	56.4244
Cayman Islands	24	0.8892	38.7037
Chile	199	1.0103	40.2766
Cyprus	17	0.9020	65.4688
Czech Republic	24	0.9513	42.3611
France	568	1.1173	56.2168
Greece	101	0.2784	49.9622
Hungary	29	0.5094	58.6564
Israel	118	0.6593	38.4469
Italy	211	0.4887	51.5796
Korea	821	0.9084	46.0907
Macau	23	0.9192	48.0662
Malaysia	350	0.4709	48.3183
Oman	11	0.1582	26.3814
Panama	13	0.1193	35.8137
Poland	151	0.6567	41.2508
Portugal	48	1.0724	61.6364
Qatar	32	0.3482	28.9186
South Africa	441	0.1282	52.4000
Spain	304	0.8092	60.2729
United Arab Emirates	49	0.6590	38.3368

Table 2. Summary Statistics

This table reports the summary statistics of the sample. The variables in the table are defined as follows: *ZSCOREI* is the inverse of the Altman's *Z*-Score; *SDRET* is the standard deviation of annualized stock returns; *SDROA* is the standard deviation of the return on assets ratio; *CSR* is the Thomson Reuters ASSET4 ESG Combined Score; *SIZE* is the size of the firm, calculated as the natural log of total assets; *MTB* is the market-to-book-ratio, measured as the stock market capitalization of the firm divided by the total equity of the firm; *ROA* is the return on assets ratio, computed as EBIT divided by total assets; *LEV* is the leverage ratio, measured as the debt-to-assets ratio; *LIQ* is the liquidity ratio, measured as the current assets to current liabilities ratio. All variables are measured using calendar-year-end values and are winsorized at the 1% and 99% levels.

	N	**Mean**	**Std Dev**	**Minimum**	**Maximum**
ZSCOREI	29,532	0.4754	0.3978	0.0183	2.5773
SDRET	29,532	0.3878	0.2593	0.0763	1.5609
SDROA	29,532	0.0380	0.0436	0.0023	0.3091
CSR	29,532	46.1231	16.4946	7.3023	94.6832
SIZE	29,532	23.4464	2.7943	10.8546	33.4737
MTB	29,532	3.1252	4.4041	-7.8135	28.7934
ROA	29,532	0.0749	0.0998	-0.3904	0.3639
LEV	29,532	0.5537	0.2180	0.0601	1.2184
LIQ	29,532	1.9946	1.8190	0.2413	12.8009

Table 3. Correlation Matrix

This table reports the correlation coefficients of key variables. The variables in the table are defined as follows: *ZSCOREI* is the inverse of the Altman's Z-Score; *SDRET* is the standard deviation of annualized stock returns; *SDROA* is the standard deviation of the return on assets ratio; *CSR* is the Thomson Reuters ASSET4 ESG Combined Score; *SIZE* is the size of the firm, calculated as the natural log of total assets; *MTB* is the market-to-book-ratio, measured as the stock market capitalization of the firm divided by the total equity of the firm; *ROA* is the return on assets ratio, computed as EBIT divided by total assets; *LEV* is the leverage ratio, measured as the debt-to-assets ratio; *LIQ* is the liquidity ratio, measured as the current assets to current liabilities ratio. *, **, and *** indicate significance at the 10%, 5%, and 1% levels.

	ZSCOREI	**SDRET**	**SDROA**	**CSR**	**SIZE**	**MTB**	**ROA**	**LEV**	**LIQ**
ZSCOREI	1								
SDRET	0.02***	1							
SDROA	-0.07***	0.31***	1						
CSR	-0.01**	-0.10***	-0.09***	1					
SIZE	0.18***	-0.12***	-0.26***	0.12***	1				
MTB	-0.22***	0.02***	0.13***	-0.01*	-0.17***	1			
ROA	-0.27***	-0.12***	-0.12***	0.06***	0.04***	0.20***	1		
LEV	0.40***	-0.01**	-0.13***	0.06***	0.12***	0.06***	0.001	1	
LIQ	-0.26***	0.12***	0.29***	-0.09***	-0.22***	0.03***	-0.15***	-0.52***	1

Table 4. CSR and Firm Risk: Multilevel Regressions

This table reports the GLM regression results regarding the impact of CSR on firm risk. The dependent variables in the models are the inverse of Z-score, *ZSCOREI*, the standard deviation of stock returns, *SDRET*, and the standard deviation of the return on assets ratio, *SDROA*. The independent variables include the ASSET4 ESG combined score, *CSR*, firm size, *SIZE*, the market-to-book ratio, *MTB*, the return on assets ratio, *ROA*, the leverage (debt-to-assets) ratio, *LEV*, and the liquidity ratio, *LIQ*. All independent variables are lagged by one year. The *t*-values are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels.

	Model 1 ***DV: ZSCOREI***	***Model 2*** ***DV: SDRET***	***Model 3*** ***DV: SDROA***
CSR	-0.0015***	-0.0011***	-0.0001***
	(-7.78)	(-12.84)	(-7.81)
SIZE	0.0036***	-0.0074***	-0.0029***
	(2.94)	(-13.61)	(-32.91)
MTB	-0.0165***	0.0014***	0.0010***
	(-21.64)	(4.14)	(18.65)
ROA	-1.4509***	-0.2391***	-0.0425***
	(-43.82)	(-16.18)	(-17.63)
LEV	0.4826***	0.0734***	0.0018***
	(27.79)	(9.47)	(1.39)
LIQ	-0.0518***	0.0192***	0.0058***
	(-25.04)	(20.73)	(38.57)
Industry Fixed Effect	Yes	Yes	Yes
Country Fixed Effect	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes
# Obs.	29,532	29,532	29,532
R-Squared	0.1511	0.0468	0.1465

Table 5. CSR, Governance Environment, and Firm Risk: Multilevel Regressions

This table reports the GLM regression results regarding the impact of CSR on firm risk, with the interaction terms between CSR and the governance environment dummies. The dependent variables in the models are the inverse of Z-score, *ZSCOREI*, the standard deviation of stock returns, *SDRET*, and the standard deviation of the return on assets ratio, *SDROA*. The independent variables include the interaction term between CSR and the strong governance environment dummy, *CSR*SG*, the interaction term between CSR and the weak governance environment dummy, *CSR*WG*, the log of GDP per capita, *GDPPC*, the common law dummy, *DCOM*, firm size, *SIZE*, the market-to-book ratio, *MTB*, the return on assets ratio, *ROA*, the leverage (debt-to-assets) ratio, *LEV*, and the liquidity ratio, *LIQ*. All independent variables are lagged by one year. The *t*-values are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels.

	Model 1 ***DV: ZSCOREI***	***Model 2*** ***DV: SDRET***	***Model 3*** ***DV: SDROA***
CSR*SG	0.0003	0.0012***	0.00002
	(0.97)	(9.23)	(0.76)
CSR*WG	-0.0011***	-0.0002**	-0.0001***
	(-6.38)	(-2.50)	(-7.68)
GDPPC	-0.0028	-0.0216***	-0.0018***
	(-0.40)	(-6.88)	(-3.41)
DCOM	0.1005***	-0.0222***	-0.0027***
	(12.37)	(-6.18)	(-4.64)
SIZE	0.0094***	-0.0143***	-0.0036***
	(6.36)	(-21.79)	(-33.33)
MTB	-0.0172***	0.0010***	0.0010***
	(-22.40)	(2.89)	(18.13)
ROA	-1.4763***	-0.2646***	-0.0438***
	(-44.56)	(-18.01)	(-18.20)
LEV	0.4766***	0.0792***	0.0022***
	(27.40)	(10.27)	(1.72)
LIQ	-0.0510***	0.0198***	0.0059***
	(-24.66)	(21.63)	(39.02)
Industry Fixed Effect	Yes	Yes	Yes
Country Fixed Effect	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes
# Obs.	29,532	29,532	29,532
R-Squared	0.1550	0.0636	0.1520

Table 6. CSR and Firm Risk: The Two-Stage Models

This table reports the two-stage model results regarding the impact of CSR on firm risk. The dependent variables in the models are the inverse of Z-score, *ZSCOREI*, the standard deviation of stock returns, *SDRET*, and the standard deviation of the return on assets ratio, *SDROA*. The independent variables include the ASSET4 ESG combined score, *CSR*, firm size, *SIZE*, the market-to-book ratio, *MTB*, the return on assets ratio, *ROA*, the leverage (debt-to-assets) ratio, *LEV*, and the liquidity ratio, *LIQ*. All independent variables are lagged by one year. The *t*-values are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels.

	Model 1 ***DV: ZSCOREI***	***Model 2*** ***DV: SDRET***	***Model 3*** ***DV: SDROA***
CSR	-0.0049***	-0.0028***	-0.0003***
	(-15.30)	(-18.44)	(-10.83)
SIZE	0.0059***	-0.0051***	-0.0026***
	(5.13)	(-9.46)	(-30.18)
MTB	-0.0105***	0.0019***	0.0010***
	(-14.54)	(5.73)	(17.33)
ROA	-1.1841***	-0.2629***	-0.0401***
	(-37.55)	(-17.79)	(-16.76)
LEV	0.5383***	0.0927***	0.0042***
	(32.87)	(12.07)	(3.41)
LIQ	-0.0295***	0.0144***	0.0047***
	(-14.88)	(15.52)	(30.90)
Industry Fixed Effect	Yes	Yes	Yes
Country Fixed Effect	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes
# Obs.	29,532	29,532	29,532
R-Squared	0.2753	0.1084	0.2030

Table 7. CSR, Governance Environment, and Firm Risk: The Two-Stage Models

This table reports the two-stage model results regarding the impact of CSR on firm risk, with the interaction terms between CSR and the governance environment dummies. The dependent variables in the models are the inverse of Z-score, *ZSCOREI*, the standard deviation of stock returns, *SDRET*, and the standard deviation of the return on assets ratio, *SDROA*. The independent variables include the interaction term between CSR and the strong governance environment dummy, *CSR*SG*, the interaction term between CSR and the weak governance environment dummy, *CSR*WG*, the log of GDP per capita, *GDPPC*, the common law dummy, *DCOM*, firm size, *SIZE*, the market-to-book ratio, *MTB*, the return on assets ratio, *ROA*, the leverage (debt-to-assets) ratio, *LEV*, and the liquidity ratio, *LIQ*. All independent variables are lagged by one year. The *t*-values are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels.

	Model 1 ***DV: ZSCOREI***	***Model 2*** ***DV: SDRET***	***Model 3*** ***DV: SDROA***
CSR*SG	-0.0003	0.0015***	0.00001
	(-0.91)	(10.57)	(0.24)
CSR*WG	-0.0019***	-0.0003***	-0.0001***
	(-9.08)	(-3.07)	(-6.56)
GDPPC	0.0178**	-0.0164***	-0.0015***
	(2.46)	(-4.86)	(-2.74)
DCOM	0.0618***	-0.0149***	-0.0022***
	(7.98)	(-4.14)	(-3.65)
SIZE	0.0075***	-0.0123***	-0.0033***
	(5.39)	(-19.05)	(-31.37)
MTB	-0.0109***	0.0014***	0.0009***
	(-14.97)	(4.04)	(16.66)
ROA	-1.2334***	-0.3097***	-0.0429***
	(-39.25)	(-21.25)	(-17.98)
LEV	0.5233***	0.0935***	0.0044***
	(31.93)	(12.30)	(3.54)
LIQ	-0.0275***	0.0157***	0.0048***
	(-13.91)	(17.20)	(31.85)
Industry Fixed Effect	Yes	Yes	Yes
Country Fixed Effect	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes
# Obs.	29,532	29,532	29,532
R-Squared	0.2749	0.1220	0.2063