

Does Engagement in Corporate Social Responsibility Reduce Firm Risk? Evidence from China

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We set out in this study to examine whether social responsibility (CSR) engagement can reduce firm risk, using data from the Southern Weekend Journal, China Securities Market and Accounting Research (CSMAR) and Taiwan Economic Journal (TEJ) databases covering the years from 2008 to 2012. In general, we document evidence of a negative relation between CSR engagement and firm total risk, supporting risk-reducing hypothesis. Moreover, during the financial crisis period, we find that a firm's CSR engagement can effectively decrease its downside risk and increase investor utility, and the magnitude of utility change are more pronounced as investor risk aversion increases. Our evidence is generally consistent with Godfrey's (2005) argument that CSR carries 'insurance-like' effect for firm value at bad times. Overall, the general implication of this study is that firms can use CSR engagement as a risk management tool.

Key Words: Corporate social responsibility, risk-reducing hypothesis, window dressing hypothesis, state-owned enterprises, investor utility.

Introduction

Several prior studies on corporate social responsibility (CSR) (e.g., McGuire, Sundgren, & Schneeweis, 1988; Waddock & Graves, 1997; King & Lenox, 2002) find a positive relation between CSR engagement and corporate financial performance (CFP). Based on *stakeholder theory* (Jones, 1995), they argue that firms' CSR engagement have relatively low costs of

managing relationships among stakeholders and therefore improves their corporate image/reputation and thus firm performance. Conversely, a negative relation is also documented in literature (e.g., Mishra & Suar, 2010). This negative relation is based on *agency costs theory* which suggests that corporate philanthropy is costly and no commensurate return is obtained (Preston & O'Bannon, 1997). Other studies find no significant relation between corporate social performance (CSP) and CFP (e.g., Alexander & Buchholz, 1978; Aupperle, Carroll, & Hatfield, 1985). Actually, a negative CSR-CFP relation might not necessarily indicate a destruction of shareholder value. An investor's expected return is a function of the risks associated with that investment, so lower risk equates to lower expected returns. If we are willing to pay comparatively more for firms with lower risk due to their

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superior CSR performance, then the future income streams derived from these firms are expected to be comparatively lower than their riskier counterparts. Thus, only focused on CSR-CFP relation might be misinterpreted the impact of CSR.

China, an important emerging market, has increasingly engaged in CSR in recent years, and, at the same time, environmental pollution in China has become of great concern to society, as reported by the media and government agencies. The Chinese government has encouraged firms listed on the Shenzhen and Shanghai Stock Exchanges to engage in CSR and uses financial channels to motivate firms to do so, including the “green loan policy”¹ and “green securities.”² Since CSR has become an important issue in China, some institutions such as Southern Weekend Journal (SWJ) started to rank firms based on their CSR activities. An interesting phenomenon is identified that once a firm is included in the CSR ranking system by SWJ, the volatility of stock price of the firm decreases by 36% on average.³ However, since most of prior studies focus on CSR impact on firm performance (or firm value), few studies (e.g., Godfrey, 2005; Godfrey, Merrill, & Hansen, 2009) investigate the effects of CSR engagement from a risk management perspective. The primary motivation of this research is to examine the influence of CSR engagement on firm risk.

¹ Environmental agencies built up an information database that contains standardized information related to corporate environmental violations, environmental approval records, among other things, and provides the information to banks, which incorporate the information into credit assessments. For example, the Industrial and Commercial Bank of China (ICBC), one of the five major banks in China, claimed that in 2007 it assessed environmental performance, and 78 percent of ICBC were cleared for green loans of more than RMB 200 million, accounting for about 80 percent of its total loans.

² The State Environmental Protection Administration (SEPA) coordinated with the China Securities and Regulatory Commission (CSRS) to initiate a series of environmental measures called “green securities.” Under the green securities scheme, firms in high-pollution and high-energy consumption industries are subject to environmental performance reviews when applying for an initial public offering (IPO) or refinancing.

³ We collect data on the stock prices of the firms that are newly included by the SWJ as CSR firms and compare how the volatility of their stock prices has changed before and after the inclusion.

Two arguments that link CSR and firm risk have been proposed in literature. Lee and Faff (2009) find that leading (high) CSR firms exhibit significantly lower idiosyncratic risk. Elston, Hofler, and Lee (2011) examine the CSR on the cost of equity capital, and find that CSR investment improving employee relations, environmental policies and product strategies contributes substantially to reducing firms’ cost of equity. Oikonomou, Brooks and Pavelin (2012) using conventional and downside systematic risk measures to examine the relation between CSR and risk, and find that corporate social responsibility is negatively but weakly related to systematic firm risk and corporate social irresponsibility is positively and strongly related to financial risk. Kim, Li and Li (2014) investigate whether CSR can cover up bad news and find that CSR can mitigate a firm’s crash risk. Jo and Na (2012) find that the effect of risk reduction through CSR engagement is more economically and statistically in controversial industry firms. These studies are consistent with *risk-reducing hypothesis* of CSR activities. On the contrary, Orlitzky (2013) points out that CSR investment represents a costly diversion of scarce resources, implying that CSR may have a harmful impact on firms, especially the CSR behavior is driven by opportunistic managers for window dressing purposes. Then, CSR becomes an agency problem in managing the firms (Brown, Helland, & Smith, 2006; Borghesi, Houston, & Naranjo, 2014). Barnea and Rubin (2010) suggest CSR engagement as an agency problem between managers and shareholders, and argue that affiliated insiders have an interest in CSR overinvesting to obtain private benefits by building reputation as good social citizens, possibly at a cost to shareholders. Goss and Roberts (2011) propose that banks register CSR concerns as risks and respond with less attractive loan contract terms. They find that low quality borrowers, which agency risks are likely to be high and leaders punish investment in CSR, face higher loan spreads and shorter maturities. Their results suggest that efforts to manipulate stakeholder with “greenwashing” are unlikely to be successful. Based upon agency problem, firms with severe agency problems are less likely to transform CSR activities for stakeholder maximization.

Thus, most of social responsible actions could be self-serving or simply dismiss them as “greenwashing”, which are not credible. We label the argument as *window-dressing hypothesis* if investors eventually realize firms’ untruly CSR actions as intentions of window dressing, they penalized those firms. Therefore, CSR engagement will increase firm risk.

Most CSR studies are carried out in the context of developed countries, such as the U.S. and western countries. It is unclear whether the impact of CSR documented in developed countries can be generalized to China due to the unique characteristics of its listed sector. The most distinctive feature is that the majority of Chinese listed firms are former state-owned enterprises (SOEs) and that the government is still the largest shareholder in many of those firms. China has increasingly engaged in CSRs in recent years, while environmental pollution problems in China have become a social concern as reported by public media and government agencies. Mi and Wang (2000) state that the SOEs in China have severe government agency problem since the managers appointed by government have no incentives to pursue maximization values for various shareholders, they are only to serve the government interests. Government intervention may play a role in CSR engagement for SOEs. Firms with a different ownership structure might likely entail varying degree of agency costs in CSR engagement. The distinctive features of SOEs and government interference in China provide us a valuable experiment to examine the extent of ownership affecting the relationship between CSR and firm risk.

Moreover, a turbulent environment often makes a firm’s cash flow less stable and therefore increases the firm’s likelihood of default risk. Firms operating in an unpredictable environment may incur negative event more often. According to Godfrey et al. (2009), they suggest that CSR will mitigate the impact of negative events and save firm value at times for their shareholders through the creation of insurance-like protection. In this sense, CSR should be particularly effective in a high volatile environment. Hence, we further examine the CSR-risk relation during the 2007-2008.

This study uses a unique data set, the CSR ranking system provided by *Southern Weekend Journal*. The data covers from 2008 to 2012. Our results show that CSR engagement is significantly negatively related to firm risk measured by systematic risk and standard deviation after controlling for various firm characteristics and correct sample selection bias, supporting risk-reducing hypothesis. As expected, we find that SOEs are more likely to be CSR firms. However, we do not find that the risk-reducing effect is stronger for SOEs. Additionally, when risk is measured by systematic risk (BETA) and standard deviation (SD), evidence shows that the risk-reducing effect of CSR engagement is supported, but the risk-reducing effect is attenuated during the financial crisis period. However, only downside risk (VaR) can significantly capture the risk-reducing effect during financial crisis. These results are probably due to the fundamental difference between standard deviation and VaR. The former assumes a bell-shaped distribution, while the latter focuses on the tail risk. During the asymmetric distribution with negatively skewness in financial crisis period, the downside risk metric will dominate over conventional risk metrics. In other words, we argue that the VaR is a more appropriate risk metric during financial crisis period.

Further, using investor utility measure which incorporates risk, return and higher moments we provide evidence that CSR engagement can significantly increase investor certainty equivalent (CE) during financial crisis period and the effect is more pronounced as investor risk aversion is high. The result that CSR can alleviate downside risk and increase investor’s utility during financial crisis period supports Godfrey’s (2005) argument that CSR has insurance-like effect.

This study extends prior research and contributes to the literature on CSR in several ways. First, relative most of prior CSR studies focus on that CSR has wealth-enhancing effect to examine the relation between CSR and firm performance, but few studies focus on risk management perspective to examine CSR has wealth-protective effect. In this study, we emphasize on wealth-protective pathway to investigate not only the relation

between CSR and risk also the relation between CSR and investor utility. We link two *risk-reducing* and *window-dressing hypothesis* hypotheses to explain the relationships between CSR and firm risk/utility.

Second, heavy government intervention on listed firm is common in emerging markets and they lead to greater interest in CSR engagement by firms. The political intervention by the Chinese government may create severe agency problems between controlling and non-controlling shareholders for the SOEs than that of non-SOEs (Mi & Wang, 2000). To fill the gap in literature by examining the CSR effect for state-owned enterprises (SOEs), we are the first to examine directly the relationship between CSRs and firm risk for the SOEs in China.

Third, Husted (2005) suggests that CSR is a kind of real option. As a real option, CSR projects provide a way of reducing the downside risk of the firm and are thus an essential element in the risk management of the firm. Meanwhile, Godfrey (2005) proposes CSR can generate moral capital or goodwill that alleviates punitive sanctions by stakeholder during a negative event. Extending existing CSR-risk studies, which often look at risk simply in terms of the variability of returns or market risk, we include downside risk and higher moment measure of utility in this study. In other words, we apply two conventional risk measures (beta and standard deviation), one downside risk measure (Value-at-Risk) and investor's utility measures with various risk aversion levels in this study. Using various risk metrics can enrich the analysis of the CSR-risk relation and contribute to CSR literatures.

Finally, based upon Godfrey (2005)'s suggestion that CSR have insurance-like protection, we infer that the function contributes to shareholder wealth should be stronger while firm occurs in bad times or negative events. Thus, we further shed light on the relation between CSR and risk/utility during financial crisis period.

One prior study that has a close connection to ours is Jo and Na (2012). However, several major differences exist. First, Jo and Na (2012) use data on sinful firms in the U.S., but we focus on data in China. While there is very little known of the practice of CSR in China, China has a distinctive culture, social, political and economic

system that offers us an opportunity to examine the effects of a firm's CSR behavior on its risk. Second, Jo and Na (2012) use total risk measure (volatility) and market risk measure (beta) to proxy for firm risk, while we add a downside risk (Value-at-risk, VaR) and investor utility (certainty equivalent value) measures in addition to the two measures used by them. Since volatility is measured the variance of return (including gain and loss) and beta is more appropriate when the distribution of returns is symmetric, we consider downside risk and include higher moments (skewness and kurtosis) measures, which is more appropriate and extension of mean-variance criterion in examining the CSR effects from risk management perspective. Our empirical results not only can fill the void in CSR literature, more important it can be easily generalized to other emerging markets.

The remainder of this paper is organized as follows. The following section reviews related literature and develop hypotheses. The data and methodology are described in the subsequent section. The empirical results are presented and discussed in the penultimate section, whereas the last section offers our concluding remarks.

Literature Review and Hypothesis Development

CSR in China

China has experienced a remarkable economic growth since 1980, but the growth comes with social and environmental costs. For instance, China is confronting with severe environment pollution problem.⁴ After the accession to the World Trade Organization (WTO) in 2001, China not only has become more integrated with the global economy, but also it orients itself to the market. The anti-sweatshop movement and environmental movement have caused multinational companies to adopt social and

⁴ Due to the severe situation of social irresponsible behavior of business happened in China, such as the abysmal working conditions in Apple's main supplier, Foxconn and the case of Sanlu Dairy (the melamine contamination) incidents, many criticisms came from overseas. Governments and businesses in China have looked to CSR to re-build their social responsibility legitimacy.

environmental standards in selecting their suppliers. Two factors have brought CSR to China. Externally, as China has engaged in the global economy through trade and institutional participation (e.g., the membership of the WTO), it has imported global social norms, as it becomes the factory of the world (Zhang, 2006). CSR was taken seriously in China due to the severe situation of social irresponsible behavior of business in China and criticism from overseas. China has to respond to the CSR demand in the global market in order to retain economic growth at the macro-level. Also, Chinese suppliers have to prove that they meet the social and environmental standards in the production process in order to gain business from western-based multinational companies at the micro level. Internally, government also recognizes the need for the economic, social and environmental changes and has looked to CSR to re-build their social legitimacy. CSR has gained growing awareness among Chinese entrepreneurs since large pressures come from the public, media and Chinese government.

Government plays an important role to encourage and decide to incorporate CSR into the company law for the development of CSR at a quicker pace in China. In the year of 2006, Chinese Company Law requires firms to undertake social responsibility in the course of business. Two Chinese stock exchanges, the Shenzhen and Shanghai Stock Exchanges, recently also have taken actions in promoting CSR disclosure. In 2006 the Shenzhen Stock Exchange released the Guide on listed companies' social responsibility. Later, The Shanghai Stock Exchange also launched CSR disclosure initiatives in 2008. The number of public companies that voluntarily report their CSR activities has been growing (Kolk & Tulder, 2010). In January 2008 the State-Owned Assets Supervision and Administration Commission of the State Council (SASAC) released the guide opinion on the social responsibility implementation for the State-owned enterprises controlled by the central government. See (2009) find that CSR in China is largely concentrated in SOEs as firms respond to incentives or directive from the government to initiate CSR activities. Li and Zhang (2010) also find that controlling right of the largest

shareholder is positively related with the level of CSR for SOEs, which support the dominance of political interference. The top executives in SOEs are appointed by Chinese government, the political interference creates severe agency problems between controlling and non-controlling shareholders than non-SOEs does (Mi & Wang, 2000).

CSR activity receives attention not only in developed countries, but also in emerging markets. For example, Muller and Kolk (2008) examine the CSR performance in Mexico and show that local firms do engage in the type of CSR activities commonly associated with CSR in developed countries. Shen and Chang (2009) examine the effect of corporate social responsibility (CSR) on firms' financial performance in Taiwan, and find that firms engaging in CSR activities tend to obtain significantly higher financial performance, suggesting that adopting CSR have a positive impact on firm performance. Cheung, Tan, Ahn, and Zhang (2010) assess CSR performance of firms in Asian emerging markets (AEMs), including China, India, Indonesia, Malaysia, Philippines, Taiwan, Thailand etc., and find there is an improvement in CSR performance in AEMs, with the exception of Malaysia. They show a positive and significant relation between CR and market valuation among Asian firms. Khan, Muttakin, and Siddiqui (2013) examine the relationship between corporate governance and CSR disclosures in another emerging market, Bangladeshi, and find that public ownership, foreign ownership, board independence and presence of audit committee to have positive significant impacts on CSR disclosures.

China has a distinctive economic system consisting of the state-owned enterprises (SOEs) and non-state-owned enterprises. The different ownership structure in China provides us a good opportunity to figure out whether different ownership structures play an important role in the CSR engagement. Some studies have examined CSR engagement in China. Moon and Shen (2010) investigates the development of research in the field of CSR in China, showing that overall the Ethical and Environmental focuses account for over 70% of the CSR in China research, prior studies based on stakeholder

perspective to examine CSR in China are very few. Wang, Qiu, and Kong (2011) and Zhang, Wang, and Fung (2014) use an event study methodology to examine how CSR engagement affects the stock market in China, and find that market returns are significantly positive influenced by CSR, especially in the post-event periods, supporting the stakeholder theory. But they did not consider unique ownership structure in China to examine the different impacts of CSR on SOEs and non-SOEs. More recent, Kao, Fung, and Li (2014) examine China CSR issue based on agency theory and stakeholder theory, they find that managers in SOEs will over-invest in CSR for the political reasons or private reputation building and supports the over-investment hypothesis for SOEs; in contrast, the CSR engagements appear to mitigate conflicts among stakeholders and associate with higher firms' value and supports the conflict-resolution hypothesis for non-SOEs. In practice, managers will not only be concerned with possible consequences of financial performance but also of firm risk from managerial perspective, especially after experiencing financial tsunami during 2008-2009. Risk issue becomes even more pivotal. On average, investor's risk aversion increases and pays more attention toward the avoidance of high risk rather than the reaping of great returns. Hence, contrast with previous studies, this study focuses on the relation between CSR engagement and firm risk in China.

Link between CSR and firm risk / utility

In the literature, two main opposite theories have been proposed to explain the relation between CSR and financial performance, including **stakeholder theory** (Freeman, 1984) and **agency cost theory** (Friedman, 1970). However, investigation into how CSR involvement affects firms risk has been largely overlooked. Oikonomou et al. (2012) suggest that CSR can influence firm performance through a front door mechanism, and CSR also can influence financial risk through a back door mechanism. Thus, this study focuses on wealth protective effect instead of wealth-enhancing effect to fill up the gap of limited CSR studies based upon risk management viewpoint. We propose two arguments of risk-reducing

and window-dressing to link CSR and firm risk as follows.

The risk-reducing view

Freeman (1984) suggests a positive effect of CSR on corporate financial performance from the stakeholders' perspective. As firms increase their social spending, their relationships with stakeholders can be improved and thereby in turn reducing social cost and increasing market opportunities. This would lead to higher financial performance. Thus, high CSR may be considered to be a sign of superior management skills, so called "good management hypothesis" (Waddock & Graves, 1997).

Relative to the link between CSR and firm performance, firm risk is alternative pathways in the relation between CSR and firm performance. Benefits of CSR engagement could increase stakeholder wealth and reduce firm risk coming from various sources, including "insurance-like" protection, improved risk management, improved information transparency, investor preferences, and easier access to financial market with lower cost of capital.

First, Godfrey (2005) proposed that CSR programs may generate positive moral capital among communities and stakeholders, and that moral capital can provide shareholders with insurance-like protection for many of firms' idiosyncratic intangible assets. Building on the Godfrey's theoretical points, Godfrey et al. (2009) investigate whether CSR carries insurance-like properties, and find that managers of firms who engage in CSR activity can create value at times for their shareholders through the creation of insurance-like protection. Firms engage in CSR activities create a form of goodwill or moral capital for the firms. When unexpected negative impacts happened, the firm with CSR activity will signal to investors the presence of moral capital that may temper potential sanction. In contrast, firms with no CSR activity lack this form of buffering goodwill and stand exposed to potentially greater impacts. That is, engagement in CSR may be perceived as insurance payment for negative events. Consistent with the "insurance-like" benefit, some evidences provide empirical results. For example, Minor and Morgan (2011) argued that CSR provides a contingent

benefit, since expenditure on CSR engagement is very similar to paying premiums, thereby reflecting a cost to the firm, and suggest that firm is insured to the extent that its past CSR engagements tip the scale toward perceiving it as due to bad luck rather than bad management. Jo and Na (2012) find that the effect of risk reduction through CSR engagement is more economically and statistically in controversial industry firms. Chih, Miao, and Chuang (2014) examine the CSR engagement on global 500 firms and find that CSR program provide a latent insurance value to firms against negative events.

Second, good managers see the value of CSR as a tool to manage risk (Waddock & Graves, 1997). At this point, firms choosing to act irresponsibly are externalizing a portion of the cost of production. Lee and Faff (2009) shows that high CSR firms have lower idiosyncratic risk and lower returns along with higher market to book ratio. Luo and Bhattacharya (2006; 2009) argue that better CSR rating improve customer satisfaction, which leads to decreased volatility in firms' future cash flows and find the evidence of a negative related CSR and firm-idiosyncratic risk. Oikonomou et al. (2012) examine the relation between CSR and systematic risk, and find that CSR strength is negatively but weakly related to systematic firm risk and the CSR concern is positively and strongly related to systematic risk. Mishra and Modi (2013) show that CSR has a significant effect on idiosyncratic risk of firm over time and observe that positive CSR helps lower idiosyncratic risk, whereas negative CSR increase it. Kim et al. (2014) investigate whether CSR can mitigate to stock price crash risk, and find that CSR is negatively associated with firm crash risk. Some studies suggest that CSR engagement can decrease firm's cost of equity capital (El Ghoul, Guedhami, Kwok, & Mishra, 2011) and cost of debt (Goss & Roberts, 2011). Because reduced cost of capital might be the outcome of reduced risk, these findings help build better theory regarding the outcomes of strategic improvement in risk management (Jo & Na, 2012).

Third, moral managers can take CSR engagement as a strategy to improve information transparency. Firm with CSR engagement are more likely to disclose their CSR

activities (Dhaliwal, Li, Tsang, & Yang, 2011) and these firms project their positive image as a responsible corporate citizen to investor and other stakeholders. Thus, the high levels of transparency not only reduce the information asymmetries between firm and investors, but also report news about high CSR firms as "good" firms, thus mitigating perceived firm risk.

Fourth, the capital market equilibrium model of Merton (1987) suggest that increasing the relative size of a firm's investor base will result in lower cost of capital and higher market value for the firm. Based on investor preferences, social conscious investors often prefer not to include low CSR firms in their investment portfolios. Heinkel, Kraus, and Zechner (2001) argue that exclusionary investing by green investors leads polluting firms to be held by fewer investors. As a result, polluting firms have to offer higher expected returns to compensate their investors for lack of risk sharing. In contrast, social conscious investors often pay more attention to high CSR firms, the large size investor base would result in lower cost of capital (or lower risk).

Fifth, extending stakeholder theory, Chiu and Sharfman (2011) suggest that the demand by the stakeholders for CSR may be explained from the resource-based view (RBV) perspective. Engaging in CSR may help the firms develop new competencies and resources in areas such as human capital, better community relations, employee relations, or external funding, which should lead to higher shareholder wealth in the long run. Thus, CSR engagement might make financial constraint less serious and makes access to financial markets easier. Consistent with the view, Cheng, Ioannou, and Serafeim (2014) propose that firms with superior CSR performance will face lower idiosyncratic capital constraints because of two mechanisms: (1) reduced agency costs and revenue/profit-generating potential resulting from more effective stakeholder engagement; (2) reduced informational asymmetry resulting from ore extended and more credible CSR disclosure practices and transparency. Based on the above discussion, firms engage in CSR can reduce firm risk through several channels. Thus, we expect the following hypotheses.

Hypothesis 1: Under risk-reducing hypothesis, we expect a negative relation between CSR engagement and firm risk.

The window-dressing view

Friedman (1970) suggests that CSR does not align with the primary objective of managers to maximize shareholder value. Aligned with Friedman's view, researchers have taken an agency theory perspective (Jensen & Meckling, 1976) to argue that deploying managerial attention toward social consequences represents an agency problem, where the interests of managers, who are the agents appointed by shareholders to manage the firm, work toward their personal social agendas rather than the interests of shareholders (Brammer & Millington, 2008). Under agency problem, firm's managers may seek to overinvest CSR for their private benefit to the extent that doing so improves their reputations as good global citizens and increases managers' career opportunity. Such self-interest initiatives are a waste of valuable resources and potentially destroy firm value (Barnea & Rubin, 2010). CSR also would reduce current and futures cash flows, particularly when CSR goes beyond mere rhetoric and window dressing.

Orlitzky (2013) clearly points out that CSR may have a harmful impact for two main reasons. First, CSR is not systematically correlated with firms' economic fundamentals. CSR may increase firm's costs more than its counterbalancing and largely uncertain economic payoffs when CSR goes beyond mere rhetoric and window dressing. Second, opportunistic managers are incentivized to distort information provided to market participants about their firms' CSR. The greater noise in financial markets typically invite more noise trading, which in turn leads to excess market volatility and excess market valuation of firms that are widely perceived as CSR. Taken together, CSR investments represent a costly diversion of scarce resources. For the firms with severe agency problem, the opportunistic manager has more incentive to pursue their own private benefits to the detriment of both shareholders and stakeholders. CSR becomes an agency problem in managing the firms

(Brown et al., 2006; Borghesi, et al., 2014).

Some studies provide evidences that the cost associated with CSR can be so high that they put a firm at risk (Munk, 1999). Barnea and Rubin (2010) suggest that firms may overinvest in CSR to satisfy the desire of managers to burnish their reputations as responsible stewards of industry at the expense of shareholders. Recently, Goss and Roberts (2011) also based on risk management perspective to examine the link between CSR and bank debt, and find that lenders are more sensitive to CSR concerns in the absence of security. When lenders extend loans to low-quality borrowers, agency risk are likely to be high and lenders punished investment in CSR in accordance with the agency theory perspective.

CSR opponents argue that CSR activities sometimes taken by firm are not fully trustworthy. Hill (2001) present that increased CSR engagement of controversial firms might be perceived as unethical or unsustainable, resulting in reduced reputation, increased costs and decreasing shareholders value through erosion of its license to operate. Palazzo and Richter (2005) argue that although tobacco firms position themselves as good social citizens, the CSR of tobacco industry may be a whitewash or a strategic approach to hide what they really produce in their business. El Ghouli et al. (2011) find that CSR in two sinful industries including tobacco and nuclear power increase cost of equity capital. Controversial firms may neither have true intention of using CSR as long-term strategies to adapt their core business, nor using CSR as continuous efforts to reduce their negative impact and unfavorable public perception. The attempts by controversial industry to counter their sinfulness by CSR may backfire because the public and consumers see the CSR behavior as an intention of window dressing.

In sum, firms with severe agency problems are less likely to transform CSR activities for stakeholder maximization. Most of social responsible actions are self-serving or simply dismiss them as "greenwashing", which are not credible. We label that if investors eventually realize firms' untruly CSR actions as intentions of window dressing, they penalized those firms. Therefore, CSR engagement will increase firm risk.

Hypothesis 2: Under window-dressing hypothesis, we expect a positive relation between CSR engagement and firm risk.

CSR activity has been taken seriously in China after joining WTO. Under the huge pressure from government and the criticism from overseas, many firms begin to engage in CSR activities, such as philanthropic donation, pollution control, energy saving, and so on. Different from western countries, CSR in China shows two important characters. First, most socially responsible behaviors of firms are government oriented due to over-whelming impact of government on China economy. Second, economic responsibility should be regarded as the first social responsibility by firm because economic construction is the central aim of government and the state (Gao, 2009). Some evidences consistent with the arguments. Chinese firms have large government stake and associated more concentrated shareholding structure (Tian & Estrin, 2008). See (2009) find that CSR in China is largely concentrated in SOEs as firms respond to incentives or directive from the government to initiate CSR activities. Li and Zhang (2010) present that controlling right of the largest shareholder is positively related with the level of CSR for SOEs, which support the dominance of political interference. For SOEs, the top executives are appointed by the Chinese government. Although political interference might make CSR investment inefficiency, it satisfies the government shareholder's political interests and committed a high level of CSR. More, government in China is the main controller and formulates all decisions about the distribution of resources. Following government policy to engage CSR activities could maintain good relationships with government and at least has two advantages. One is SOE's managers appointed by government might build their self-reputation and save their career positions for their self-private benefits; on the other hand, SOEs' firms might be easier to get more resources from government distributions if they follow government policy. Both of reasons let SOEs' managers like to invest CSR regardless of self-interest or getting more resources for firms.

Accordingly, we propose the following hypothesis.

Hypothesis 3: The association between CSR and firm risk/ certainty equivalent is expected to be stronger for SOEs in China.

Firms with proactive CSR engagement like environmental assessment and stakeholder management tends to reduce potential sources of business risk such as potential governmental regulation, labor unrest, or environmental damage (Orlitzky & Benjamin, 2001). McGuire et al. (1988) point that high levels of CSR can be associated with low firm risk through lower probability of suffering legal prosecutions and fines, less stringent regulatory controls, more stable relations with the government, customer loyalty and a supportive environment on the parts of employees and communities especially during times of crisis. Godfrey et al. (2009) suggest that CSR mitigates the impact of negative events and creates value at times for their shareholders through the creation of insurance-like protection. Sun and Cui (2014) confirm that CSR has a strong effect on risk reduction, and this relationship is stronger on firms in high dynamism environment than in low dynamism environments. Firms experienced a high dramatic and uncertain environment during financial crisis of 2007-2008. We expect that the effect of CSR on firm risk should be particularly stronger. Thus, we propose following hypothesis.

Hypothesis 4: The relation between CSR and firm risk/ is expected to be stronger during financial crisis.

In addition, investors' expected return is a function of the risks associated with the investment. The certainty equivalent for investors is equal to expected return minus risk premium. When CSR engagements lower firm's risk, the required risk premium for risk-averse investors would also decrease. In the meanwhile, the lower risk would result in lower expected return. The certainty equivalent value of the alleged risk-reduction effects of CSR is thus ambiguous. As risk aversion increases, the required risk premium effect tends to prevail over mean return effect.

Thus, we expect that the risk-reducing effect of CSR should be stronger for higher risk aversion investors. Thus, we propose:

Hypothesis 5: The relation between CSR engagement and firm risk will be more pronounced as investors risk aversion increases.

Data and Methodology

Data

We use both the CSR scores and ranking compiled by Southern Weekend Journal, a leading weekly newspaper in China. The *Southern Weekend Journal* ranks CSR engagements for SOEs and non-SOEs respectively. The *Overall Ranking of Listed State-owned Enterprises* is for SOEs and *Overall Ranking of Chinese Private Enterprises* is for non-SOEs.

CSR ranking system includes four indexes: operating performance, social responsibility, social contribution and public image. Table 1 lists the assessment items and associated weights for each index. A weighted score is calculated for each firm. The firm with the best social performance receives a score of 100, and the rest receive scores based on their performance relative to the best-performed firm. The weighted average of the combined scores compiled by *Southern Weekend* is greater than zero. *Southern Weekend Journal* has announced each of Top 100 CSR firms for SOEs and non-SOEs every year since 2008. We exclude firms in financial industry and delete the firms which are not listed in China stock markets. The number of CSR firms (including SOEs and non-SOEs) for each year is 125 and the total number of observations for CSR firms from 2008 to 2012 is 625 (=125×5yrs).

Table 1 *Southern Weekend Journal* CSR ranking system

Index	weight	Assessment items	weight
Operating performance	30%	sales	10%
		equity	10%
		net profit	10%
Social responsibility	40%	product safety and services quality	10%
		environmental protection	10%
		labor relations	10%
		communication relations	10%
Social contribution	20%	taxation	10%
		employee benefits	5%
		R&D expenses	5%
Public image	10%	public online poll support	10%

Source: China Corporate Social Responsibility (CSR) Research Center

Figure 1 shows the mean value of CSR scores for SOEs and non-SOEs and their number during period of 2008-2012. There has been an upward trend in CSR score over the analysis period. Over 80% of the CSR firms in our sample are SOEs. We find that non-SOEs have higher CSR scores than SOEs. However, the number of SOEs included in the dataset is much higher than that of SOEs. Taken together, these findings suggest that the level of

CSR engagement for non-SOEs that are included in the *Southern Weekend Journal* CSR ranking system is higher than that for SOEs, while most CSR firms in China are SOEs. This is possibly because SOEs engage in CSR activity due to political pressure or interference. On the contrary, non-SOEs are less likely to engage in CSR activity because of political reasons.



Figure 1 Mean CSR score and number of SOEs and non-SOEs

Firms' market and financial data are obtained from China Securities Market and Accounting Research (CSMAR) and Taiwan Economic Journal (TEJ) databases. We identify matched firms by industry type and size as non-CSR firms. The number of these matched firms is also 125 for each year and the total number is 625 for the sample period. The CSR scores of these matched or non-CSR firms are set to zero. Combining the CSR firms and matched sample firms (non-CSR) span from 2008 to 2012, the resulting sample consists of 1,250 firm-year observations. All of them are listed on the Chinese stock Exchanges.

Dependent variables of various risks and utility measures

Previous studies emphasize on the CSR-CFP relation. A negative CSR-CFP relation might not necessarily indicate a destruction of shareholder value, but demonstrate a price premium (i.e. return discount) afforded to leading CSR firms. An investor's expected return is a function of the risks associated with that investment, so lower risk equates to lower expected returns. If we are willing to pay comparatively more for firms with lower risk due to their superior CSR performance, then the future income streams derived from

these firms are expected to be comparatively lower than their riskier counterparts.

Traditional asset pricing model often employs the beta of the stock return as risk measure, which is widely used measure of systematic risk (Oikonomou et al, 2012). In this asset pricing model, that only proposes systematic risk matters---expected return is an exclusive function of this risk and idiosyncratic risk is not priced. However, Lee and Faff (2009) suggest that the activities of leading (high) CSR firms are likely to have a downward influence on their unsystematic (idiosyncratic) risk. We use another commonly risk of standard deviation of stock return as risk measure to involve the unsystematic (idiosyncratic) risk. In addition, losses and disadvantages have greater impact on preferences than gains and advantages based upon loss aversion utility theory. These two standard risk measures (CAPM beta and standard deviation) might underestimate risk because they underestimate the proportion of extreme negative deviations from expectations, which are the true source of anxiety for the investor. Investors are more sensitives towards downside risk, implying that downside risk should be a more appropriate risk proxy (Oikonomou et al, 2012). Thus, we include the downside risk measure Value-at-Risk in this study.

Furthermore, to enrich the analysis by allowing a more in-depth assessment of the nature of the CSR effect on firm risk, we also consider higher moments of the distribution of stock returns. Referring to Oikonomou et al (2012), we add the mean return in a utility measure, which is a fourth order approximation of certainty equivalent utility, may provide hints regarding the extent to which the magnitude of the alleged risk-reduction effects of CSR is offset by a proportionate reduction in stock returns⁵.

In sum, to complete the picture that whether CSR engagement influences firm risk, we use four various risk measures in this study. The definitions for various risk measures are discussed as follows.

Beta

According to stakeholder theory, a firm which is consistently socially and environmentally responsible should obtain the fruit of this strategic posture by experiencing fewer downward adjustments and less volatility in its share price, thus, would be exposed a lower degree of stock market risk. The beta calculation is given by:

$$\beta_i = \frac{E[(R_{it} - \mu_i)(R_{mt} - \mu_m)]}{E[(R_{mt} - \mu_m)]^2} \quad (1)$$

where β_i is the beta of firm i when the market proxy is m , μ_i is the average value of the returns of firm i , R_{mt} is the market return (Shanghai or Shenzhen composite index) at time t , and μ_m is the mean market returns.

Standard deviation (SD)

Standard asset pricing models might not be able to capture a CSR-induced lower risk price premium, and in such circumstances CSR investment researchers could erroneously interpret a negative alpha as evidence of underperformance. Thus, to include firm idiosyncratic risk into risk measure, we use standard deviation of stock return as follows.

$$\sigma_i = \sqrt{\frac{1}{T-1} \sum_{t=1}^T (R_{it} - \mu_i)^2} \quad (2)$$

⁵ We are grateful to an anonymous reviewer for pointing out the issue of using a certainty-equivalent utility function measure.

Value at Risk (VaR)

In this study, we use the historical simulation approach to estimating value at risk (VaR) as the measurement of firm's downside risk. The VaR represents the maximum amount return that a firm may lose at the given confidence level of $1-\alpha$ over a specific time horizon. The 95% confidence level is used in this study. The $VaR_{i,t}$ is estimated by the negative of the $(1-\alpha)^{th}$ quantile of the return distribution which is constructed by the daily returns of firm i over a four-year period that is prior to time t . For example, $\alpha=0.05$ and $VaR=0.04$ indicate that we have 95% confidence that the worst return will not exceed 4%. If CSR engagement could help to decrease firm's volatility, we expect the worst of loss (VaR) would decrease.

$$prob(R_{i,t} > VaR_{i,t}) = (1 - \alpha) \quad (3)$$

Certainty equivalent utility measure (CE)

Following Oikonomou et al (2012), the certainty equivalent utility measure that is associated with the negative exponential utility function is given by following formula.

$$CE \approx \mu - \frac{1}{2}\gamma\sigma^2 + \frac{\tau}{6}\gamma^2\sigma^3 - \frac{\kappa}{24}\gamma^3\sigma^4 \quad (4)$$

μ is the mean; σ is the standard deviation; τ is the skewness; κ is the kurtosis of stock return and γ is the investor's absolute risk aversion.

It is worthwhile to note that in the finance doctrine expected return is positively related to risk. If CSR engagement can reduce a firm's risk, CSR firms would probably have low return. Thus, the impact of CSR engagement on CE is an empirical question.⁶

Model Specification

In general, firms perform well and its risk may tend to be lower, those firms have more resources to engage in CSR. That implies the name-listed of Top 100 on the SWJ are simply of higher performance or lower risk, regardless of whether they choose to invest CSR or not. Under this

⁶ We thank an anonymous referee for pointing out the possible relation between CSR engagement and CE.

situation, the coefficient between CSR dummy variable and risk-reducing might become spurious. If we do not conduct the endogeneity correction for the treatment effects, the CSR involvement's contribution to risk measures could be overstated. To control the endogeneity problem, we employ the Heckman (1979) sample selection model to correct sample self-selection bias using maximum likelihood estimation.

$$\begin{aligned} CSR_DUMMY_{i,t} = & \alpha_0 + \alpha_1 SOE_{i,t} + \alpha_2 SIZE_{i,t} \\ & + \alpha_3 FINSUB_{i,t} + \alpha_4 R \& D_{i,t} + \alpha_5 AGE_{i,t} \\ & + \alpha_6 CONS_{i,t} + \alpha_7 INS_{i,t} + \alpha_8 CONCR_{i,t} + u_{i,t} \end{aligned} \quad (5)$$

$$\begin{aligned} RM_{i,t} = & \beta_0 + \beta_1^1 CSR_SCORE_{i,t} + \beta_1^2 CSR_SCORE_{i,t} \\ & \times SOE_{i,t} + \beta_1^3 CSR_SCORE_{i,t} \times FC_{i,t} + \beta_2 SIZE_{i,t} \\ & + \beta_3 LEVER_{i,t} + \beta_4 R \& D + \beta_5 ROA_{i,t} + \beta_6 AGE_{i,t} \\ & + \rho \sigma_\varepsilon \lambda_i(\mathbf{X}) + \varepsilon \end{aligned} \quad (6)$$

In the Heckman's two-step estimation, the first selection equation is a probit model where the dependent variable is the CSR dummy as presented in Eq (5). In the second equation presented in Eq (6), we correct the specification for sample selection bias and examine whether CSR engagement decreases firm risk or influences investor's utility. $\lambda_i(\mathbf{X})$ is inverse miller ratio. If the $CSR_DUMMY=1$, $(u_i, \varepsilon_i) \sim$ bivariate normal $[0,0,1, \sigma_\varepsilon, \rho]$.

In the first equation, the dependent variable is CSR_DUMMY , which is a dummy variable that equals to 1 if the firm has been included in the *Southern Weekend Journal* CSR system during our sample period and zero otherwise. Following prior research such as Wang, Song, and Yao (2013), we include relevant variables that are related to CSR engagement in the CSR equation. They are SOEs dummy variable (SOE), firm size (SIZE), government subsidies (FINSUB), R&D expenditures (R&D), firm age (AGE), consumer proximity (CONS), institutional shareholding percentage (INS) and ownership concentration (CONCR).

In the second equation, the dependent variable is risk measures (RM). RM is the risk measure including CAPM beta (BETA), standard deviation of daily stock return (SD), Value at Risk to measure downside risk (VaR) or investor certainty equivalent utility measures (CE).

CSR_SCORE is the CSR score. We use this variable to measure a firm's CSR engagement. SOE is a dummy variable, which equals to one if the firm is state-owned enterprises and zero otherwise. FC is a dummy variable, which equals to one for the years from 2008 to 2009 financial crisis and zero otherwise.

Following prior studies (e.g., Luo & Bhattacharya, 2009; El Ghoul et al, 2011; Jo & Na, 2012; Goss & Roberts, 2011; Sun & Cui, 2014), we also include the variables that may have an impact on a firm's risk. $SIZE$ is measured by log of total assets. For instance, large firms are better able to withstand negative shock to cash flows and have less likely to default. Also, the reputation effects increase with firm size. Hence, larger firms are viewed as less risky by investors (Luo & Bhattacharya, 2009; Goss & Roberts, 2011). $LEVER$ is measured by long-term debt divided by total assets. Both theory and empirical result has been demonstrated that firms with higher leverage are expected to pay higher interest payments. Firms with high leverage expected have higher risk (El Ghoul et al., 2011; Goss & Roberts, 2011). $R\&D$ is measured as R&D expenditure divided by total asset. Brown and Dacin (1997) suggest that higher levels of both CSR and firm innovative ability are important in affecting stakeholder's perceptions. For firms with high R&D can more effectively facilitate process and produce innovation, both of which make it easier for CSR to generate insurance-like protection, in turn, to lower firm risk (Luo & Bhattacharya, 2009). $FINSUB$ is the natural logarithm of government subsidy, measured by various subsidies received by a firm such as subsidy for loss due to government policies and refund of value-added tax. Lin, Tan, Zhao, and Karim (2015) find that firms that spend more resource to engage CSR can build political networks with government can receive higher level of government subsidies. Thus, we expect that the good networks and subsidies from government can improve firm performance and decrease firm risk. ROA represents returns on asset and is the proxy for firm profitability. Because profitability has information content for firm's future cash flow stream, it has a significant impact on firm risk (Luo & Bhattacharya, 2009). In addition, prior studies also find that a firm with

higher profitability often has more resources to invest in CSR activities. Finally, older firm are likely to have less

risk for organizational inertia (Cheng, 2008). All of variables and their definitions are presented in Table 2.

Table 2 Variable definitions and measures

Variable	[Name]	Variable definitions
CSR (1, 0)	[CSR_DUMMY]	A dummy variable that equals to 1 if the firms has been rated by <i>Southern Weekend Journal</i> during our sample period, otherwise is zero.
CSR combined score	[CSR_SCORE]	The weighted average of the combined scores of Social responsibility, Operating performance, Social contribution, and Public image dimensions compiled by <i>Southern Weekend</i> (i.e. CSR firms) is larger than zero. The CSR combined score for matched sample (i.e. non-CSR firm) are set to zero.
Beta	[BETA]	Beta of individual stocks calculated based on daily stock return.
Standard deviation	[SD]	Standard deviation of daily stock return.
Value at Risk	[VaR]	VaR is estimated by the negative of the 95% confidence of the return distribution which is constructed by the daily returns of firm i over a four-year period that is prior to the time t .
Certainty equivalent utility ($\gamma=2, 5, 20$)	[CE(γ)]	The fourth order approximation of the certainty equivalent that is associated with the negative exponential utility function. γ is the investor's absolute risk aversion. We use γ values of 2, 5, 20 to capture a very wide range of investor preferences.
SOE (1, 0)	[SOE]	A dummy variable that equals to 1 if the firm is a state-owned enterprise, and 0 otherwise.
FC (1, 0)	[FC]	A dummy variable that equals to 1 for the financial crisis years from 2008 through 2009, and 0 otherwise.
Log (total asset)	[SIZE]	Total asset in logarithmic form (source: CSMAR)
Ln (subsidiaries)	[FINSUB]	Various subsidies received by a company such as subsidy for loss due to government policies, and refund of value-added tax in logarithmic form (source: TEJ).
R&D expenditure intensity ratio	[R&D]	Research and development expenses divided by total sales (source: CSMAR)
Return of Asset	[ROA]	Operating performance before depreciation divided by total assets (source: TEJ).
Debt/total asset	[LEVER]	Long-term debt divided by total asset (source: CSMAR)
Firm age	[AGE]	The number of years from when firms are listed on the stock exchange to the reporting year. (source: CSMAR)
consumer proximity	[CONS]	A dummy variable and take 1 if the firm belongs to a high-profile consumer proximity industry and 0 otherwise. (source: CSMAR)
Institutional shareholding	[INS]	The ratio of shares held by institutional investors as a proportion of all the shares listed on the stock market. (source: CSMAR)
Ownership concentration	[CONCR]	The ratio of shared held by the largest shareholder as a proportion of the total number of shares listed on stock exchange. (source: CSMAR)

Empirical Results

Univariate results

Table 3 presents descriptive statistics and difference test results for CSR and non-CSR firms. The means and medians of standard firm risk variables (BETA and SD) for CSR firms are statistically smaller than those for non-CSR firms at conventional levels, but the downside risk of VaR is insignificant. This preliminary result suggests a

negative relation between a firm's CSR engagement and its risk. For utility measures (CE), we find the mean of certainty equivalent are lower as risk aversion increases, but we do not find the result that CSR firms have consistently higher CE value. For the differences of firm characteristics, we find that CSR firms generally are larger firms, highly leverage firms, higher government subsidies, slightly lower profitability, less firm age and higher ownership concentration rate.

Table 3 Descriptive statistics and difference test results for CSR and non-CSR firms

Variables	Total Obs	CSR firms					Non-CSR firms					Difference Test	
		Mean	Median	Max.	Min.	S.D.	Mean	Median	Max.	Min.	S.D.	Mean Diff.	Median Diff.
CSR_SCORE	1250	34.601	33.354	79.572	24.786	7.606	---	---	---	---	---	---	---
BETA	1235	1.116	1.120	2.021	0.075	0.271	1.202	1.193	2.079	0.421	0.271	-0.086*** (0.00)	-0.073*** (0.00)
SD	1235	2.789	2.633	5.268	0.800	0.944	3.040	2.913	7.541	0.000	0.957	-0.251*** (0.00)	-0.280*** (0.00)
VaR	1222	0.921	0.950	2.000	-0.220	0.383	0.904	0.880	2.150	-0.660	0.404	-0.017 (0.46)	-0.070 (0.29)
CE($\gamma=2$)	1237	0.048	0.001	0.241	-0.002	0.097	-0.001	0.000	0.002	-0.007	0.003	0.050*** (0.00)	0.001*** (0.00)
CE($\gamma=5$)	1237	-0.005	-0.001	0.001	-0.023	0.009	-0.003	-0.001	0.001	-0.010	0.004	-0.002*** (0.00)	0.000*** (0.00)
CE($\gamma=20$)	1237	-0.321	-0.006	-0.002	-1.588	0.634	-0.013	-0.010	-0.004	-0.031	0.010	-0.309*** (0.000)	0.004*** (0.000)
SIZE	1239	22.832	23.693	28.282	13.572	2.911	21.491	22.522	25.810	13.385	2.759	1.341*** (0.00)	1.171*** (0.00)
LEVER	1246	0.628	0.648	0.956	0.006	0.152	0.546	0.562	0.9934	0.007	0.187	0.082*** (0.00)	0.086*** (0.00)
FINSUB	1249	10.379	10.898	17.745	0.000	2.869	9.098	9.673	14.574	0.000	2.718	1.281*** (0.00)	1.225*** (0.00)
R&D	1249	0.006	0.000	0.064	0.000	0.011	0.007	0.000	0.157	0.000	0.015	-0.002** (0.05)	0.000 (-0.39)
ROA	1248	4.703	4.020	24.190	-25.090	5.226	5.303	4.440	37.680	-60.410	6.685	-0.601* (0.08)	-0.420* (0.07)
AGE	1240	12.842	13.000	28.000	1.000	4.511	13.959	14.000	27.000	1.000	4.074	-1.117*** (0.00)	-1.000*** (0.00)
CONS	1238	0.721	1.000	1.000	0.000	0.449	0.677	1.000	1.000	0.000	0.467	0.044* (0.07)	0.000 (0.15)
INS	1245	0.014	0.000	0.675	0.000	0.072	0.014	0.000	0.726	0.000	0.062	0.000 (0.91)	0.000 (0.56)
CONCR	1238	0.456	0.466	0.864	0.079	0.169	0.417	0.422	0.837	0.103	0.148	0.037*** (0.00)	0.044*** (0.00)

Note: The p-values reported in parentheses. ***, **, * are statistically significant at the 1%, 5% and 10% levels, respectively.

Table 4 presents the descriptive statistics of SOEs and non-SOEs, all of which are CSR firms (whose descriptive statistics along with non-CSR firms' are presented in Table

3). The mean (median) of CSR scores for SOEs is 34.049 (32.087) and the mean (median) for non-SOEs is 37.749 (36.307). The mean (median) difference test statistics are

negative and significant at 10% (1%) levels, indicating that non-SOE firms engage more in CSR activity than SOE firms. However, it is worthwhile to note that CSR in China is largely concentrated in SOEs as these firms respond to incentives or directives from the government to initiate CSR activity (See, 2009). Li and Zhang (2010) suggest that the government intervention plays a role on CSR engagement in China. In contrast with SOEs, CSR investment is an optional strategy for non-SOEs. The result of higher level of CSR engagement for non-SOEs might indicate that non-SOEs might be more enthusiastic on CSR activities than SOEs once they truly decide to

engage in CSR activity. On average, the market risk (BETA) and total risk (standard deviation) for SOEs are significantly lower than non-SOEs. The result shows that CSR engagement decreases SOEs' risk to a greater extent than non-SOEs' risk. However, the VaR and utility measures are no significant difference between SOEs and non-SOEs. As regards firm characteristics, SOEs generally are larger size, higher leverage, getting more government subsidies, less firm age, fewer institutional shareholding percentage and higher ownership concentration than non-SOEs.

Table 4 Descriptive statistics and difference test results for SOE and non-SOE firms

Variables	Total Obs	SOE firms					Non-SOE firms					Difference Test	
		Mean	Median	Max.	Min.	S.D.	Mean	Median	Max.	Min.	S.D.	Mean Diff.	Median Diff.
CSR_SC	625	34.049	32.870	79.572	24.786	7.390	37.749	36.307	58.592	25.561	8.109	-3.700***	-3.437***
ORE												(0.00)	(0.00)
BETA	621	1.102	1.107	2.021	0.075	0.274	1.198	1.164	1.816	0.675	0.238	-0.096***	-0.057***
												(0.00)	(0.00)
SD	622	2.745	2.581	5.268	0.800	0.945	3.045	2.854	5.122	1.613	0.906	-0.300***	-0.272***
												(0.00)	(0.00)
VaR	615	0.923	0.965	2.000	-0.220	0.379	0.906	0.921	1.895	-0.095	0.408	0.017	0.044
												(0.69)	(0.49)
CE($\gamma=2$)	622	-0.001	-0.001	0.241	-0.010	0.011	-0.001	-0.001	0.004	-0.010	0.003	0.001	0.000
												(0.63)	(0.87)
CE($\gamma=5$)	622	-0.003	-0.002	0.030	-0.023	0.004	-0.003	-0.002	0.002	-0.014	0.004	0.000	0.000
												(0.44)	(0.34)
CE($\gamma=20$)	622	-0.013	-0.007	-0.002	-1.588	0.069	-0.012	-0.009	-0.002	-0.037	0.009	-0.001	0.002
												(0.91)	(0.39)
SIZE	625	23.038	23.934	28.282	15.154	2.875	21.618	22.615	24.814	13.572	2.839	1.420***	1.319***
												(0.00)	(0.00)
LEVER	624	0.630	0.658	0.956	0.006	0.160	0.615	0.616	0.833	0.350	0.108	0.014	0.042*
												(0.41)	(0.09)
FINSUB	625	10.550	11.088	17.745	0.000	2.861	9.362	9.655	14.732	0.000	2.717	1.188***	1.433***
												(0.00)	(0.00)
R&D	625	0.006	0.000	0.064	0.000	0.011	0.005	0.000	0.054	0.000	0.012	0.001	0.000
												(0.67)	(0.36)
ROA	623	4.640	3.920	24.190	-20.050	5.122	5.075	4.770	22.140	-25.090	5.817	-0.436	-0.850
												(-0.47)	(-0.25)
AGE	622	12.468	13.000	28.000	1.000	4.614	14.000	14.000	20.000	7.000	3.474	-1.532***	-1.000***
												(0.00)	(0.00)
CONS	623	0.713	1.000	1.000	0.000	0.453	0.656	1.000	1.000	0.000	0.479	0.057	0.000
												(0.97)	(0.99)
INS	621	0.003	0.000	0.150	0.000	0.156	0.095	0.000	0.675	0.000	0.196	-0.092***	0.000***
												(0.00)	(0.00)
CONCR	621	0.484	0.501	0.864	0.079	0.165	0.376	0.362	0.675	0.114	0.134	0.108***	0.139***
												(0.00)	(0.00)

Note: The p-values reported in parentheses. ***, **, * are statistically significant at the 1%, 5% and 10% levels, respectively.

Table 5 presents the Pearson correlation coefficient matrix. Both CSR measures (CSR_DUMMY and CSR_SCORE) are negatively correlated with BETA and SD, statistically significant at the 1% level. But the correlations between CSR measures and VaR and the correlations between CE under different risk aversion levels are insignificant. Other control variables (SIZE, LEVER, FINSUB, SOE, AGE and CONCR) are significantly correlated with CSR variable as we expected. The univariate result is consistent the notion that CSR engagement reduce firm's systematic risk and total risk, consistent with the risk-reducing view, although the "insurance-like" effect of CSR through alleviating firm's downside risk and enhancing investor's certainty equivalent utility are not found.

Main results

To correct the potential sample selection bias problem, we apply Heckman selection model to examine the whether CSR engagements have significantly impacts on firm risk or investor's utility. We report the Heckman estimated results of CSR impact on various risk metrics in Tables 6-8. The results of beta risk (BETA) are presented in Table 6, standard deviation (SD) in Table 7 and downside risk (VaR) in Table 8, respectively. Table 9 presents the Heckman model results of investor's certainty equivalent utility (CE) with absolute risk aversion (γ) of 2, 5, 20 in order to capture a wide range of investor preferences.

Firm risk measures

Table 6 shows the Heckman selection regression results with dependent variable of beta risk. The first stage equation is a probit model where the dependent variable is CSR_DUMMY. Following El Ghouli et al. (2011), Jo and Na (2012), Goss and Roberts (2011) and Wang et al. (2013), we include SOE dummy (SOE), firm size (SIZE), government subsidy (FINSUB), research and development expenses (R&D) and return of assets (ROA), firm age (AGE), consumer proximity (CONS), institutional shareholding percentage (INS) and ownership concentration (CONCR) as explanatory variables. We then calculate the inverse Mills ratio (λ) from the

selection equation and include it in the risk equation to correct the specification for the selection bias and examine whether CSR engagement decrease firm beta risk.

In model 1 of Table 6, we find CSR engagement positively affects firm beta risk after correcting for endogenous treatment effect. A one unit increase of CSR_SCORE is followed by a decrease of 0.0046 times of beta risk at 1% significantly level, supporting the risk-reducing hypothesis as opposite to the window dressing hypothesis. Next, in model 2 of Table 6, we add the interaction terms of CSR_SCORE \times SOE to examine whether the CSR-risk linked is stronger for SOEs, but the coefficient of interaction terms is insignificant. The result shows that the argument of risk-reducing effect of CSR engagement stronger for SOEs is not supported, although most CSR firms in China are SOEs. The result supports the findings obtained from Table 4 that the CSR_SCORE of non-SOEs are higher than SOEs. A possible explanation is that some SOEs engage in CSR activity for political pressure or interference, thus having a smaller risk-reducing effect. In model 3 of Table 6, we use the interaction term of CSR_SCORE \times FC to examine whether the risk-reducing effect is stronger in financial crisis period. However, the coefficient of the interaction terms is significantly positive ($\beta^2=0.0021$, $p<0.05$), suggesting that within the crisis period investors have less faith in firms and are skeptical about their CSR engagement.

Table 7 shows the Heckman selection regression results with dependent variable of standard deviation. In model 1, the variable CSR_SCORE is negative and significant ($\beta_1^1=-0.0227$; $p<0.01$), suggesting that CSR engagement can effectively decrease a firm's volatility, supporting risk-reducing hypothesis. Similarly results with beta risk metric are found in Table 6. We find that the coefficient of CSR_SCORE \times SOE is insignificant in model 2 of Table 7. In model 3, the coefficient of the interaction terms is significantly positive ($\beta^2=0.0179$, $p<0.05$). That is, the effect of standard deviation risk reducing by CSR engagement is $-0.0241(\beta_1^1)$ during non-financial crisis, and the net risk-reducing effect by CSR engagement decreases to -0.0062 ($\beta_1^1 + \beta^2 = -0.0062$) during financial crisis period.

Table 5 Pearson correlation matrix

Variables	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	
1.CSR_DUMMY	1.000																			
2.CSR_SCORE	0.966 ^a	1.000																		
3.BETA	-0.129 ^a	-0.143 ^a	1.000																	
4.SD	-0.142	-0.155 ^a	0.319 ^a	1.000																
5.VaR	0.017	0.016	0.281 ^a	-0.163 ^a	1.000															
6.CE($\gamma=2$)	-0.032	-0.030	-0.080	-0.040	-0.031	1.000														
7.CE($\gamma=5$)	-0.020	-0.020	0.019	0.017	-0.026	-0.001	1.000													
8.CE($\gamma=20$)	-0.039	-0.039	0.013	0.291 ^a	-0.043	-0.007	-0.001	1.000												
9.SIZE	0.220 ^a	0.234 ^a	-0.172 ^a	-0.181 ^a	-0.021	-0.028	-0.018	0.016	1.000											
10.LEVER	0.152 ^a	0.130 ^a	0.107 ^a	0.007	0.124 ^a	-0.075 ^a	-0.034	-0.027	0.050 ^b	1.000										
11.FINSUB	0.216 ^a	0.256 ^a	-0.069 ^a	-0.290 ^a	0.048 ^c	-0.033	-0.020	-0.136 ^a	0.050 ^c	0.145 ^a	1.000									
12.RD	-0.022	-0.026	0.052	-0.206 ^a	-0.052 ^c	0.016	-0.014	-0.048	-0.310 ^a	-0.045 ^c	0.136 ^a	1.000								
13.ROA	-0.044 ^b	-0.027	-0.123 ^a	0.005	-0.176 ^a	0.186 ^a	0.003	0.040	0.077	-0.389 ^a	-0.017	0.005	1.000							
14.SOE	0.605 ^a	0.565 ^a	-0.177 ^a	-0.157 ^a	0.023	-0.038	-0.025	-0.046	0.251 ^a	0.198 ^a	0.233 ^a	-0.047	-0.044 ^a	1.000						
15.FC	-0.018	-0.017	-0.057 ^b	0.732 ^a	-0.215 ^a	-0.035	0.036	0.137 ^a	0.297 ^a	-0.064 ^b	-0.194 ^a	-0.239 ^a	0.037 ^c	-0.002	1.000					
16.AGE	-0.140 ^a	-0.154 ^a	-0.034	-0.199 ^a	0.147 ^a	-0.009	0.010	-0.024	-0.268 ^a	0.043 ^c	-0.001	-0.006	-0.137 ^a	-0.160 ^a	-0.250 ^a	1.000				
17. CONS	0.028	0.033	-0.008	0.067 ^b	-0.049	-0.009	-0.006	0.003	-0.025	0.021	-0.030	-0.018	0.013	-0.135 ^a	0.035	0.023	1.000			
18.INS	0.007	-0.027	0.003	0.021	0.079 ^a	0.020	0.019	0.023	-0.087 ^a	-0.103 ^a	0.101 ^a	0.144 ^a	0.015	0.047	0.004	0.096 ^a	-0.061 ^a	1.000		
19.CONCR	0.140 ^a	0.180 ^a	-0.068 ^a	-0.093 ^a	0.013	0.039	-0.057 ^a	0.001	0.162 ^a	-0.056 ^b	0.048 ^b	-0.015	0.019	0.192 ^a	0.010	-0.381 ^a	-0.014	-0.073 ^a	1.000	

Note: "a" represents significant at 1% level, "b" at 5% and "c" at 10%.

Table 6 CSR and beta risks based on Heckman Selection model

Dependent Variable	BETA		
	Model 1	Model 2	Model 3
Response equation (2st)			
CSR_SCORE	-0.0046 ^{***} (-2.72)	-0.0051 ^{**} (-2.39)	-0.0053 ^{***} (-3.15)
CSR_SCORE×SOE		0.0009 (0.41)	
CSR_SCORE×FC			0.0021 ^{**} (2.50)
Control variables			
SIZE	-0.0050 (-1.03)	-0.0046 (-0.92)	-0.0089 [*] (-1.75)
LEVER	0.2746 ^{**} (2.71)	0.2821 ^{***} (2.74)	0.3182 ^{***} (3.12)
R&D	1.403 (1.23)	1.453 (1.26)	1.659 (1.46)
ROA	0.0032 (0.86)	0.0035 (0.92)	0.0040 (1.09)
AGE	-0.010 ^{***} (-3.82)	-0.0105 ^{***} (-3.80)	-0.0130 ^{***} (-4.50)
CONSTANT	1.271 ^{***} (8.23)	1.234 ^{***} (6.91)	1.365 ^{***} (8.65)
Selection equation (1 st)		CSR_DUMMY	
SOE	1.710 ^{***} (18.05)	1.710 ^{***} (18.05)	1.710 ^{***} (18.05)
SIZE	0.0411 ^{**} (2.45)	0.0411 ^{**} (2.45)	0.0411 ^{**} (2.45)
FINSUB	0.0536 ^{***} (3.15)	0.0536 ^{***} (3.15)	0.0536 ^{***} (3.15)
R&D	1.304 (0.35)	1.304 (0.35)	1.304 (0.35)
AGE	-0.0181 (-1.60)	-0.0181 (-1.60)	-0.0181 (-1.60)
CONS	-0.191 [*] (-1.96)	-0.191 [*] (-1.96)	-0.191 [*] (-1.96)
INS	2.556 ^{***} (4.30)	2.556 ^{***} (4.30)	2.556 ^{***} (4.30)
CONCR	-0.0798 (-0.27)	-0.0798 (-0.27)	-0.0798 (-0.27)
CONSTANT	-2.430 ^{***} (-5.06)	-2.430 ^{***} (-5.06)	-2.430 ^{***} (-5.06)
Lambda	0.0727 ^{**} (2.50)	0.0958 [*] (1.65)	0.0656 ^{**} (2.26)
Wald Chi-square (p-value)	36.78 (0.00)	36.57 (0.00)	43.69 (0.00)
N	1238	1238	1238

Z statistics in parentheses. * p<0.1, ** p<0.05, *** p<0.01.

Table 7 CSR and SD risk based on Heckman Selection model

Dependent Variable	SD		
	Model 1	Model 2	Model 3
Response equation (2st)			
CSR_SCORE	-0.0227*** (-3.85)	-0.0229*** (-2.84)	-0.0241*** (-4.76)
CSR_SCORE×SOE		0.0080 (1.09)	
CSR_SCORE×FC			0.0179** (2.31)
Control variables			
SIZE	-0.288*** (-6.97)	-0.263*** (-5.98)	-0.254*** (-6.72)
LEVER	0.565** (2.35)	0.704*** (2.83)	0.839*** (3.90)
R&D	-7.895** (-2.01)	-7.431* (-1.83)	-2.866 (-1.04)
ROA	0.0010 (0.07)	0.0035 (0.28)	0.0173** (1.98)
AGE	0.0077 (1.09)	0.0080 (1.14)	-0.0135** (-2.03)
CONSTANT	0.769 (1.45)	0.432 (0.69)	2.623*** (20.61)
Selection equation (1 st)		CSR_DUMMY	
SOE	1.710*** (18.05)	1.710*** (18.05)	1.710*** (18.05)
SIZE	0.0411** (2.45)	0.0411** (2.45)	0.0411** (2.45)
FINSUB	0.0536*** (3.15)	0.0536*** (3.15)	0.0536*** (3.15)
R&D	1.304 (0.35)	1.304 (0.35)	1.304 (0.35)
AGE	-0.0181 (-1.60)	-0.0181 (-1.60)	-0.0181 (-1.60)
CONS	-0.191* (-1.96)	-0.191* (-1.96)	-0.191* (-1.96)
INS	2.556*** (4.30)	2.556*** (4.30)	2.556*** (4.30)
CONCR	-0.0798 (-0.27)	-0.0798 (-0.27)	-0.0798 (-0.27)
CONSTANT	-2.430*** (-5.06)	-2.430*** (-5.06)	-2.430*** (-5.06)
Lambda	0.424*** (4.32)	0.638*** (2.91)	0.284*** (4.12)
Wald Chi-square	66.27 (0.00)	63.21 (0.00)	561.24 (0.00)
N	1238	1238	1238

Z statistics in parentheses. * p<0.1, ** p<0.05, *** p<0.01.

In addition to the use of conventional risk metrics, we use downside risk measure (VaR) and report the result in Table 8. The coefficients of CSR_SCORE in models 1 and 2 are negative though insignificant. However, in model 3, the coefficient of CSR_SCORE×FC is significantly negative ($\beta^3 = -0.0064$) at the 1% level. The result is different from the positive coefficients of the interaction terms (β^1) we have found for risk metrics of BETA in Table 6 and SD in Table 7. These different results of β^1 results are probably due to the fundamental difference

between standard deviation and VaR. The former assumes a bell-shaped distribution, while the latter focuses on the tail risk. Table 8 shows that downside risk metric (VaR) is more appropriate and sensitive to capture the reducing effect of the possibility of loss by CSR engagement especially during financial crisis. The findings is consistent with the argument of DeFusco, Karels, and Muralidhar (1996) that the downside price fluctuations will have a dominating effect over standard risk measures if the distribution of returns is negatively skewed.

Table 8 CSR and VaR risk based on Heckman Selection model

Dependent Variable	VaR		
	Model 1	Model 2	Model 3
Response equation (2st)			
CSR_SCORE	-0.0003 (-0.11)	-0.0012 (-0.36)	0.0002 (0.81)
CSR_SCORE×SOE		0.0014 (0.43)	
CSR_SCORE×FC			-0.0064*** (-5.09)
Control variables			
SIZE	-0.0036 (-0.49)	-0.0030 (-0.40)	0.0082 (1.09)
LEVER	-0.106 (-0.68)	-0.0927 (-0.59)	-0.239 (-1.57)
R&D	-2.475 (-1.43)	-2.395 (-1.37)	-3.251* (-1.93)
ROA	-0.0090 (-1.56)	-0.0085 (-1.48)	-0.0115** (-2.09)
AGE	-0.0087** (-2.11)	-0.0089** (-2.15)	-0.0010 (-0.17)
CONSTANT	1.232*** (5.26)	1.174*** (4.35)	0.946*** (4.04)
Selection equation (1 st)		CSR_DUMMY	
SOE	1.710*** (18.05)	1.710*** (18.05)	1.710*** (18.05)
SIZE	0.0411** (2.45)	0.0411** (2.45)	0.0411** (2.45)
FINSUB	0.0536*** (3.15)	0.0536*** (3.15)	0.0536*** (3.15)
R&D	1.304 (0.35)	1.304 (0.35)	1.304 (0.35)
AGE	-0.0181 (-1.60)	-0.0181 (-1.60)	-0.0181 (-1.60)
CONS	-0.191* (-1.96)	-0.191* (-1.96)	-0.191* (-1.96)

Table 8 CSR and VaR risk based on Heckman Selection model (continue)

Dependent Variable	VaR		
	Model 1	Model 2	Model 3
Selection equation (1 st)	CSR_DUMMY		
INS	2.556*** (4.30)	2.556*** (4.30)	2.556*** (4.30)
CONCR	-0.0798 (-0.27)	-0.0798 (-0.27)	-0.0798 (-0.27)
CONSTANT	-2.430*** (-5.06)	-2.430*** (-5.06)	-2.430*** (-5.06)
Lambda	0.0422 (0.95)	0.0789 (0.83)	0.0638 (1.48)
Wald Chi-square	8.32 (0.22)	8.47 (0.29)	24.79 (0.00)
N	1238	1238	1238

Z statistics in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Utility measures

Focusing CSR effect on investor's utility measures, we report the results of investor's risk aversion (γ) of 2, 5, 20 in order in Table 9. First, we find that CSR engagement (CSR_SCORE) does not significantly influence investor's utility regardless of the levels of risk aversion. This result is similar to the result reported in Oikonomou et al. (2012). While we add the interaction terms of CSR_SCORE \times SOE in model 2, the relation between CSR-investor's utility is also insignificant except at the highest investor's aversion level ($\gamma=20$). The coefficient of CSR_SCORE is significantly negative at the 10% level for the most conservative investor ($\gamma=20$), indicating that risk-averse investors may consider CSR engagement excessively costly thus decreasing their utility.

Further, while we control the CSR effect on investor utility during financial crisis period in model 3, we find that the coefficients of CSR_SCORE become significantly negative and the coefficients of CSR_SCORE \times FC are significantly positive for different levels of risk aversion. That implies CSR engagement leads to decreased level of investor utility during non-financial crisis, but increases investor utility during financial crisis period (bad times). The net effect of CSR on utility during financial crisis is

0.0052 for $\gamma=2$, 0.0069 for $\gamma=5$ and 0.0135 for $\gamma=20$. The levels of utility change induced by CSR are more pronounced as investor risk aversion increases, supporting the argument of Hypothesis 5. According to the findings of downside risk (VaR) and investor utility (CE), we suggest that CSR investment creates insurance-like effect to alleviate uncertainty for firm and increase investor's utility during highly dramatic volatile environment, confirming Hypothesis 4.

In sum, our results generally support that CSR engagement have risk-reducing effect on firm risk. We find that total risk (SD) and systematic risk (BETA) capture that risk-reducing effect better than downside risk (VaR) and investor utility (CE). However, the risk-reducing effect is attenuated while we use BETA and SD as risk metrics during financial crisis period. We find that CSR can effectively decrease firm's downside risk and increase investor utility during financial crisis. Contributing to the CSR literatures, the results of decreasing downside risk and increasing certainty equivalent utility during financial crisis provide additional evidence supporting that CSR engagement serves as insurance to firms and has wealth-protective effect during bad times.

Table 9 CSR and certain equivalent (CE) based on Heckman Selection model

Dependent Variable	CE($\gamma=2$)			CE($\gamma=5$)			CE($\gamma=20$)		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Response equation (2st)									
CSR_SCORE	0.0001 (0.02)	-0.0009 (-0.51)	-0.0030*** (-2.77)	0.0013 (0.66)	-0.0001 (-0.03)	-0.0019 (-1.09)	-0.0058 (-1.11)	-0.0112* (-1.67)	-0.0172*** (-4.04)
CSR_SCORE×SOE		0.0014 (0.85)			0.0022 (0.89)			0.0085 (1.29)	
CSR_SCORE×FC			0.0082*** (15.34)			0.0088*** (9.94)			0.0307*** (14.74)
Control variables									
SIZE	0.0209*** (5.34)	0.0215*** (5.33)	0.0054* (1.66)	0.0208*** (3.61)	0.0218*** (3.67)	0.0047 (0.77)	0.0600*** (3.93)	0.0638*** (3.97)	0.0019 (0.15)
LEVER	-0.1091 (-1.34)	-0.0953 (-1.15)	0.0065 (0.99)	-0.114 (-0.95)	-0.0932 (-0.76)	0.0735 (0.67)	-0.274 (-0.87)	-0.193 (-0.61)	0.379 (1.48)
R&D	-2.009** (-2.20)	-1.925** (-2.08)	-0.999 (-1.38)	-3.237** (-2.41)	-3.108** (-2.27)	-2.146* (-1.78)	-9.594*** (-2.70)	-9.099*** (-2.48)	-5.796** (-2.02)
ROA	-0.0035 (-1.18)	-0.0030 (-1.01)	-0.0002 (-0.08)	-0.0052 (-1.18)	-0.0045 (-1.01)	-0.0016 (0.42)	-0.0143 (-1.25)	-0.015 (-0.99)	-0.0019 (-0.20)
AGE	0.0066*** (3.06)	0.0063*** (2.85)	-0.0037** (-2.00)	0.0056* (1.74)	0.0051 (1.56)	-0.0056* (-1.81)	0.0224*** (2.64)	0.0207** (2.32)	-0.0163** (-2.24)
CONSTANT	-0.253** (-2.05)	-0.313** (-2.19)	0.120 (1.19)	-0.213 (-1.17)	-0.306 (-1.45)	0.189 (1.12)	-0.374 (0.78)	-0.733 (-1.30)	1.026** (2.58)
Lambda	0.0432* (1.85)	0.0815 (1.61)	0.0150 (0.81)	0.0541 (1.57)	0.113 (1.52)	0.0237 (0.76)	0.297*** (3.30)	0.525*** (2.64)	0.191*** (2.62)
Wald Chi-square	58.52 (0.00)	57.67 (0.00)	328.55 (0.00)	33.72 (0.00)	33.70 (0.00)	141.05 (0.00)	43.35 (0.00)	43.00 (0.00)	42.30 (0.00)
N	1238	1238	1238	1238	1238	1238	1238	1238	1238

Note 1: Z statistics in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Note 2: We only report the result of response equation (2st) for brevity.

Conclusion

CSR engagement in China has gradually been a topic of great interest in recent years for investors, policy makers and academic researchers. Unlike most of prior CSR studies that examine the relation between CSR engagement and firm performance in the developed markets, this paper employs data on Chinese firms to investigate the CSR effect from a risk management viewpoint. Several findings are obtained as follows.

First, distinct from most of prior studies often focused on CSR impact on firm performance, we find that CSR engagement is significantly negative with firm risk measured by systematic risk and standard deviation after controlling for various firm characteristics and correct sample selection bias. Our results provide evidence supporting that CSR has risk-reducing effect on firm values. Second, although over 80% of CSR firms in China are SOEs, we do not find the evidence of risk-reducing effect of CSR engagement stronger for SOEs. Third, during financial crisis period, our results show that the risk-reducing effects measured by systematic risk (BETA) and standard deviation (SD) are attenuated, but only downside risk (VaR) can significantly capture the risk-reducing effect. The findings support that VaR is a more appropriate risk metric if the return distribution is negatively skewed, such as during the financial crisis period. Finally, we find that CSR engagement significantly increases investor utility during financial crisis and the magnitude of utility change are more pronounced as investor risk aversion increases.

Overall, this study focuses on risk management viewpoint related to the CSR engagement in an emerging and transitional economy. Our results support the notion that CSR engagement can reduce firm risk. Further, we find that CSR can strongly lower downside risk and increase investor utility during financial crisis period. Thus, we propose that risk measures and negative shock period can significantly influence the relation between CSR and firm risk/ utility. The findings contribute some new evidences in CSR literatures.

Our study also has important implications for

managers. First, CSR activities provide risk-reducing effect on firm values and the CSR investment can produce insurance-like effect to decrease firm downside risk and increase investor utility during bad times (financial crisis period). Thus, managers can use CSR engagement as a tool for risk-management to stabilized firm value and increase investor utility. Second, the benefits of being socially responsible are contingent upon awareness and beliefs among stakeholders. Managers should plan CSR engagement as a long term investment and consistently the CSR strategy to successfully build stakeholder relations and investor trust. Future research may explore whether CSR engagement would affect the volatility of ROA or ROE.⁷ A further interesting avenue for future research would be to examine and compare the *ex post* as well as *ex ante* risk management benefits arising from CSR activity.

In addition, we use Heckman selection model to control selection bias and endogeneity problems in this study. However, it is worthwhile to note the assumption and limitation of this approach.⁸ Firstly, the Heckman two-step approach needs to satisfy an identification requirement. That is, we must have at least one variable in the probit model that is not included in the response equation. But it is difficult to find good instrumental variables that only affect the first step choice model but does not have partial effects on the second step response model. Moreover, the nonexperiential estimates may vary widely, become sensitive to model specifications, and differ greatly from the experimental estimates (LaLonde, 1986). Secondly, the Heckman selection method can resolve sample selection bias, if the assumption of Heckman model for the normal distribution and the independent and identical of residual are valid. However, it is difficult to justify in the real-world data.

To alleviate the endogeneity issue, we suggest future research may apply other methods to explore the relation between CSR and risk. For example, the propensity score matching (PSM) method might alleviate the first

⁷ We are grateful to an anonymous reviewer for pointing out the issue of using ROA or ROE volatility as risk measures.

⁸ We are once again grateful to an anonymous reviewer's suggestion for more discussions of limitations of Heckman's approach used in this study.

limitation. The PSM method does not require the identification restriction, and it can estimate the treatment effect by simulating a randomized experiment to avoid the nonrandom sample problems (Shen & Chang, 2009; Elston et al, 2011). In addition, the multinomial logit model which extends the Heckman's two step model approach can provide good correction for outcome equation even when independent and identical assumption are violated (Bourguignon, Fournier, & Gurgand, 2007; Wu & Shen, 2013).

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公司從事企業社會責任能降低公司風險嗎？ 以中國上市公司為例

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本文研究的目的，在於：檢視中國上市公司從事企業社會責任相關活動，是否能夠降低公司風險。研究期間為 2008-2012 年，資料則來自南方週報 (Southern Weekend Journal)、國泰安系列研究數據庫 (CSMAR) 和台灣經濟新報 (TEJ)。實證結果顯示：公司從事企業社會責任和公司總風險有顯著負向關係，此結果支持「風險降低假說」。我們亦發現從事企業社會責任活動在金融海嘯期間能有效降低公司之下檔風險並提高投資人效用，且此效用變動幅度會因投資人風險趨避程度高而更加明顯。此實證結果與 Godfrey's 所提出之 CSR 對公司價值有近似保險效果的觀念一致，公司從事企業社會責任，可以作為風險管理之工具。

關鍵字：企業社會責任、風險降低假說、窗飾假說、國有企業、投資人效用。
