Controversial Industries, Regional Differences, and Risk: Role of CSR

Hoje Jo
Santa Clara University
(hjo@scu.edu)

Hakkon Kim*
Southwest Jiaotong University
(kimhk@home.swjtu.edu.cn)

Kwangwoo Park
Korea Advanced Institute of Science and Technology (KAIST)
(kpark3@kaist.edu)

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Abstract. Controversial industry sectors, such as alcohol, gambling, tobacco, and firearms, have suffered organizational legitimacy problems for a long period of time. This paper examines whether corporate social responsibility (CSR) activities reduce the level of risk for firms in controversial industries over the long term in an attempt to seek organizational legitimacy around the world. Using data covering 32 countries, this study finds that both the systematic and total risk for firms in controversial industries are generally higher than those for firms in uncontroversial industries due to their inherent harmful image. We then show that controversial industry firms' engagement in CSR initiatives and policies has a substantial risk-decreasing effect, and that might increase the probability of obtaining and maintaining the social license to operate. The documented effect of CSR on firm risk, however, is more pronounced for firms in Europe and North America than in the Asia-Pacific region, suggesting differential CSR-risk association in different region. These results are significant and robust even after potential endogeneity problems are mitigated. Our results further show the long-term impact of controversial industry firms' CSR engagement on firm risk, which is more pronounced in firms under highly developed financial system for each region. We interpret that our results are supportive of the "harmful image", "social license to operate", "differential recognition", and "long-term risk reduction" explanations.

Keywords: Corporate social responsibility; Risk management; Controversial industry; Differential recognition; Social license to operate.

Introduction

In this study, we examine whether controversial industries[1] around the world engage in CSR activities in an attempt to decrease their systematic risk (and overall total risk) and obtain and maintain a "social license to operate" (hereafter, SLO).[2] This paper also investigates whether the risk effect of CSR in controversial industries lasts over the long term, varies in different regions, and varies under diversely developed financial system around the world.

Due to the sinful and/or controversial nature of their products, which harm consumers, the environment and society, we suspect that the business risk of controversial industries is relatively higher than the risk of uncontroversial industries, making it important for these controversial industries to actively engage in risk management. We maintain that the CSR initiatives and policies undertaken by controversial industries can mitigate their harmful image and help decrease their level of business risk. We further surmise that decreasing firm risk by engaging in society friendly programs through CSR engagement is positively related to increasing the probability of obtaining and maintaining the SLO because reducing firm business risk potentially reduces the tension between the firm and the community and society in which the controversial industry belong to. However, the documented relation between

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[1] We follow Hong and Kacperczyk's (2009) definition of "sinful" industries (e.g., the tobacco, gambling, weapons, alcohol and adult entertainment industries). In defining other controversial firms, such as environmental or ethics-related firms, we follow Cai et al. (2012) and include those industries that inherently entail persistent or emerging environmental, social, or ethical issues (e.g., nuclear, oil, cement, and biotech). In short, we define controversial industries as a combination of Hong and Kacperczyk's (2009) sinful and Cai et al.'s (2012) other controversial industries.

[2] It is generally accepted that corporations and industries pursue their own goals, but only to the extent that they do not do so at the expense of other legitimate interests. According to the theme of EBEN 2013 and its call for papers, "In a narrow sense the 'license to operate' means the stakeholders' approval of a particular business project that can affect their lives. The term could be understood differently, however. It could be applied to the acceptance or non-acceptance of the expansion of profit-seeking business into sectors... Or, more broadly, the 'license to operate' could refer to an implicit social contract between corporations and society at large."

controversial industry CSR and risk can be influenced by different regional recognition. Furthermore, because obtaining and maintaining the SLO is often a long-term process, we suspect that the risk-reduction effect of controversial industries is inherently a long-term phenomenon.

To the best of our knowledge, this study is the first to examine the relationship between CSR activities and firm risk in an international setting with different regional recognition and in the context of controversial industries seeking to obtain and maintain the SLO over the long term, both being distinct and understudied phenomena in academic literature. Specifically, we consider the question of whether and how certain industries, e.g. alcohol, gambling, tobacco, and other controversial industry firms around the world, use ideas of "corporate social responsibility" to improve their public image and gain long-term legitimacy, is yet to be further empirically examined.

Controversial industries typically fail to meet basic social rules or behavioral expectations, and can therefore be perceived as unethical or illegitimate around the world (Sethi 1975; Campbell 2007; Byrne 2010; Lindgreen et al. 2012; Reast et al. 2013). Nevertheless, the answers to an important question, "Does CSR help controversial industry firms to gain legitimacy from community and society in the world?" are yet to be given. The rationale behind the role of CSR often lacks in these controversial industries. While some scholarship (Reast et al. 2013) concerned with CSR has answered 'Yes. But for organizations operating in controversial industries, the standards of scrutiny are much higher than for those classified as uncontroversial.' to this question, other questions about 'How', and 'To what extent' controversial industry firms gain legitimacy via their CSR policies and practices remain largely overlooked.

Firms in controversial industries commit to corporate social responsibility (CSR) practices out of conviction. An organization's increased engagement in CSR-related policies and initiatives provides it a way to circumvent situations and practices that may be perceived as unethical or unsustainable or that "alienate the organization from the rest of society, resulting in reduced reputation, increased costs, and decreasing shareholder value through erosion of its license to operate" (Hill 2001, p. 32).

Originating in the extractive industries (oil, natural gas, and mining), the construct of SLO has increasingly been perceived as a concept that applies to companies in a variety of other industries and it has consequently drawn an increasing amount of attention from both practitioners and academics (Downing 2001; Klein 2012; Black 2013). While there is no universally accepted definition of the term "social license to operate" it is generally taken to refer to a society's acceptance or approval of a specific company project or of the entire company's ongoing operations in the society (O'Keefe 2009; Wilburn and Wilburn 2011; Yates and Horvath 2013; Black 2014).

If certain controversial industries are significantly detrimental to society, their licenses to operate are at risk. These industries can cause harm to other people and the environment, along with fundamental societal institutions such as a functioning market economy or the democratic rule of law. The general public wants to be sure that corporations and industries will not take advantage of their market power. As soon as industries grow and become powerful, suspicion arises over the excessive power of both competitors and political authorities.

The underlying idea is that companies that provided with society friendly initiatives are more likely to be accepted by the community and so more likely to be granted a SLO and/or

organizational legitimacy. The adoption of society friendly programs, of course, is not by itself sufficient to secure the SLO. As Black (2013, 2014) and others have argued, while providing good jobs may be necessary for the SLO, it is increasingly regarded as insufficient to earn the SLO because "more is expected of companies today." As the World Bank put it: "Social license to operate has traditionally referred to the conduct of firms with regard to the impact on local communities and the environment, but the definition has expanded in recent years to include issues related to worker and human rights" (World Bank 2013).

There is a remarkable lack of empirical research on the SLO, although there exist some research on related constructs such as the antecedents and consequences of stakeholder engagement (for example, Bowen et al. 2010) and of CSR (see Aguinis and Glavas 2012). Nevertheless, at least one study has provided empirical support for the claim that fair and favorable treatment of stakeholders increases the likelihood that a company will be able to acquire the SLO (Moffat and Zhang 2014). Similarly, in this paper, we assume that fair and favorable treatment of stakeholders increases the likelihood that a company will acquire the SLO, as Moffat and Zhang (2014) have shown, and we then ask the further question: What factors influence a company's decisions to deal fairly and favorably with stakeholders? In particular, we examine the linkage between CSR and firm-risk nexus that proxies a significant influence on the managerial decisions of controversial industries internationally. Black (2014) claims that the lower the level of risk, the higher the level of SLO. By understanding the factors that influence a company's decisions about its key stakeholder groups, i.e., its community and society, we believe that we can gain additional understanding of the external factors that can influence whether companies will achieve a social license to operate.

Can a firm in a controversial industry really decrease its level of risk by engaging in CSR activities around the world? Do international investors interpret the CSR engagement of these controversial industry firms as a risk-increasing activity? Or Do the relation between controversial industry CSR and risk can be affected by differential recognition of region? Although the empirical U.S. CSR literature has generally indicated a negative relationship between uncontroversial industry CSR and firm risk, the question of whether firms in controversial industries worldwide can further decrease firm risk by engaging in CSR activities remains less explored. In addition, no previous studies examine the combined effect of CSR and controversial industries on business risk in the long term, and the differential recognition around the world from the perspectives of SLO.

Using various econometric methods including fixed effect regressions, two- and three-stage least squares approaches, principal component analysis, weighted least square regressions and Granger causality tests, we empirically find that although firms in controversial industries experience higher systematic and total risk, firm risk is more significantly and negatively associated with CSR engagement in controversial industries compared with uncontroversial industries, especially for European and North American public firms but not for Asia-Pacific firms. This may reflect stakeholders' differential recognitions of the CSR activities around the world. Our findings also show the long-term impact of controversial industry firms' CSR engagement on firm risk, which is more pronounced in firms under highly developed financial system for each region. These results are significant and robust even after employing alternative measures of CSR and firm risk. This evidence suggests that firms in controversial industries engage in CSR initiatives and activities to decrease their relatively higher level of business risk in the long term to obtain and maintain their social license to

operate. Furthermore, we suggest that the documented effect of CSR varies in different regions due to stakeholders' differential recognitions of the CSR activities around the world.

This paper is organized as follows. First, we briefly review the literature on which we base our hypotheses. We then discuss measurement of CSR practices, sample construction, empirical model. Following this discussion, we present our empirical results. In the final sections, we discuss the significance and the limitations of this study, and state our overall conclusions.

Hypotheses Development

Firms in controversial industries are generally frowned upon and criticized for instigating "social taboos, moral debates, and political pressures" (Lindgreen et al. 2012, p. 393) either due to the significant effect of their operations on a myriad of stakeholders or the harmfulness and offensiveness of their products (Wilson and West 1981; Crane 2001; Byrne 2011). Consequently, gaining and maintaining broader societal acceptance are pivotal factors in controversial industries where an organization's failure to meet stakeholders' societal expectations results in it being perceived as unethical and illegitimate (Sethi 1975; Palazzo and Richter 2005; Campbell 2007). For instance, companies from the oil industry sector are the targets of persistent debate over their lack of respect for the natural environment (exemplified by the Exxon Valdez oil spill and oil drilling controversy in Nigeria) and the need for these organizations to notably diminish their carbon emissions by developing cleaner and more sustainable energy sources (Frynas 2005; De Roeck and Delobbe 2012). In such a context, CSR initiatives could be a useful tool for decreasing their harmful image and securing a license to operate by deflecting stakeholders' negative perceptions of activities that

may be perceived as unsustainable (Palazzo and Richter 2005; Yoon et al. 2006).

In their seminal work, Wilson and West (1981, p. 92) describe controversial industries as those related to "products, services or concepts that for reasons of delicacy, decency, morality, or even fear elicit reactions of distaste, disgust, offence or outrage when mentioned or when openly presented." Although attitudes toward such industries vary by culture (Waller et al. 2005), the organizations and their products or services often come under the close scrutiny of external actors who view them as exemplary of aberrant behavior (Budden and Griffin 1996), offensive (Fam and Waller 2003), morally corrupt (De Colle and York 2008) or unethical (Byrne 2010), perhaps regardless of the actual or latent harm they cause to society, the environment or individuals (Demont et al. 2004; Kindt 2006; Pratten 2007).

It has been suggested that controversial organizations must be conceptualized differently than uncontroversial industries due to their inherent negative images and consequences (Reast et al. 2013). Controversial organizations have more serious credibility, reputation, legitimacy and CSR reporting issues than their uncontroversial counterparts (Palazzo and Richter 2005). How can they harm or negatively affect different stakeholders (such as customers or employees) and the environment and still be considered responsible (Yani-de-Soriano et al. 2012)? Controversial industries have traditionally relied on public relations or additional CSR communication to soften their harmful public image, if not to spread disinformation wholesale (Kilian and Hennings 2014). We label this explanation the "harmful image" hypothesis. Consequently, we postulate that both the systematic and total risk of firms in controversial industries tend to be higher than those of firms in uncontroversial industries.

Hypothesis 1: Based on the "harmful image" hypothesis, firm risk is positively associated

with controversial industries.

Previous CSR risk literature has suggested that CSR engagement generally decreases firm risk (McGuire et al. 1988; Feldman et al. 1997; Orlitzky and Benjamin 2001; Husted 2005; Godfrey et al. 2009; Oikonomou et al. 2010; Salama et al. 2011; Albuquerque et al. 2014). Risk management can lower a firm's risk by decreasing the probabilities that expected financial, social or environmental crises will occur and adversely influence the firm's cash flows (Sharfman and Fernando 2008) and/or generate moral capital or goodwill that could provide the firm with "insurance-like" protection and preserve its financial performance (Godfrey 2005; Godfrey et al. 2009).[3] Although prior studies have examined the empirical association between CSR and firm risk, they have neither focused on controversial industries nor considered the international setting. Although Jo and Na (2012) examine the relationship between CSR and firm risk in controversial industries, they only focus on the controversial industry firms in U.S. and they do neither focus on the international context, the social license to operate, different regional recognition (hereafter, differential recognition), nor the long-term risk-reduction perspectives. In addition, they do not examine the combined effect of CSR and controversial industries on firm risk because other uncontroversial industry firms are not included in their study.

We argue, however, that the social license to operate (SLO) perspective is especially important for controversial industries because of their harmful image. In particular, the SLO

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[3] According to resource dependence theory, CSR activities can generally be viewed as a means through which a firm can decrease the risks associated with resource acquisition (Haley 1991; Berman et al. 1999). If CSR activities enhance the public image of a controversial industry, the industry's key stakeholders, including the related firm shareholders, employees, customers, suppliers and the community, are likely to feel more positive toward the industry and thereby provide critical resources to the industries that are controlled by these key stakeholders (Frooman 1999; Backhaus et al. 2002). In addition to helping the industries secure the acquisition of valuable resources, CSR activities may help them decrease the risk of losing the resources they already have (Godfrey 2005; Barnett and Salomon 2006).

has been related to several other constructs including CSR (Bansal 2005; Wilburn and Wilburn 2011; Rowe and Bansal 2013; Yates and Horvath 2013), and stakeholder engagement (Boutilier et al. 2012; Black 2014). Yates and Horvath (2013), for example, suggest that displaying a commitment to CSR is one way to achieve the SLO, while Wilburn and Wilburn (2011) point out that many companies position the SLO as part of their CSR strategy. Virtually every study of the SLO asserts or assumes that stakeholder engagement is a key to acquiring the SLO (Wilburn and Wilburn 2011). The early literature on the SLO suggested that a firm's SLO was contingent on how the firm negotiated acceptance of the various impacts its operations might have on the local community (Wilburn and Wilburn 2011). Later conceptual studies expanded this idea to include the firm's impacts on other stakeholder groups (Boutilier et al. 2012; Black 2014). Black (2014), for instance, asserts that when the firm is providing legitimate benefits to communities, maintaining good relationships with a wide range of well-connected stakeholders, and playing its part in the broader regional development, the firm may earn the highest level of SLO. Black (2014) further claims that a higher level of SLO is the result of effectively understanding and responding to social issues associated with risk. In particular, managing risk and reputation is generally why firms ponder how to protect their SLO: The lower the level of risk, the higher the level of SLO.

Managers of controversial industries, indeed, are increasingly aware that they need more than just a legal license for their activities. The concept of the social license is transforming power relationships with various stakeholders and explains how controversial industries can acquire or lose the organizational legitimacy in the eyes of society that they need to be able to operate effectively. A social license cannot be directly managed, but SLO is

the result of interactions between a number of factors – factors that Morrison (2014) shows business can manage, but which mainstream CSR often struggles to frame correctly.

In fact, the SLO literature is closely related to the old organizational legitimacy literature. Legitimacy is a central concept in organizational institutionalism. The term 'legitimacy' dates back to the dawn of organization theory; however, for most of the past century, research on legitimacy emerged only slowly and was fragmented across several distinct social science literatures. Since 1995, however, the body of relevant scholarship has grown rapidly and in a variety of directions. Suchman (1995) notes three aspects of legitimacy.[4] First, legitimacy is generalized – it "represents an umbrella evaluation that, to some extent, transcends specific adverse acts or occurrences" (p. 574). It is in this respect that we note that legitimacy is primarily long-term rather than short-term. While individual events or actions may impact actual or perceived legitimacy, legitimacy transcends the specific. Second, legitimacy is a perception or assumption as it "represents a reaction of observers to the organization as they see it" (p. 574). Third, legitimacy is socially constructed as it "reflects congruence between the behaviors of the legitimated entity and the shared (or assumedly shared) beliefs of some social group" (p. 547). Essential to these last two points is the social aspect of legitimacy; it involves social relations and business practices such as CSR initiatives.

Recently, Beddewela and Fairbrass (2015) address that gap by exploring interactions between external institutional pressures and firm-level CSR activities, which take the form of community initiatives, to examine how multinational enterprises (MNEs) develop their

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[4] Organizational legitimacy, which has its foundations in the works of Parsons and Weber (Parsons 1956, 1960; Weber, 1978; Suchman, 1995), is a vast area of investigation. Suchman (1995), who provides a review of the early literature, defines legitimacy as: "Legitimacy is a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions (Suchman 1995, p. 574)."

legitimacy-seeking policies and practices by focusing on a developing country, Sri Lanka. They discuss the extent to which MNEs engage in complex legitimacy-seeking relationships with Sri Lankan host institutions.

In an effort to seek for organizational legitimacy, Lindorff et al. (2012), Yani-de-Soriano et al. (2012), and Reast et al. (2013) argue that it is possible for firms in controversial industries, which are often characterized by social taboos and moral debates, to act in socially responsible ways. They further argue that controversial industries can be socially responsible even if they produce products that are harmful to society or individuals. Lindorff et al. (2012), Yani-de-Soriano et al. (2012), and Reast et al. (2013) further claim that managers in controversial industries commit to CSR initiatives and practices to prevent or minimize the harm associated with their products and activities.

Based on previous CSR-firm risk, social license and organizational legitimacy literature along with the harmful nature of firms in controversial industries, we postulate that the risk levels of firms in controversial industries could be further reduced more than uncontroversial firms if the firms were to engage in CSR activities. We maintain that risk reduction through CSR can prove to be an important legitimization mechanism by which controversial industries can gain recognition and potential support from various stakeholders. This further risk reduction could be useful for controversial industries seeking to gain and maintain societal acceptance of their businesses, i.e., seeking organizational legitimacy despite their harmful products. In addition, we believe that we may gain valuable insights about the possible influences underlying those corporate decisions of controversial industries that may help a company acquire the SLO, if we examine the association between combined effect of firm risk and controversial industries, and corporate decisions of controversial industries that

impact how the community and society is treated. Moreover, since the literature on CSR sees local community as a key stakeholder to which management ought to be responsive (e.g., Crane and Matten 2004; Faleye and Trahan 2010; Liu et al. 2013), learning how firm risk is affected by management decisions about corporate community involvement (CCI) will also have important implications for research on CSR, one of the constructs that previous literature has suggested is related to the SLO.[5] We refer to this as the "social license to operate" hypothesis.

Hypothesis 2: Under the "social license to operate" hypothesis, (a) CSR activities in which controversial industries engage could reduce firm risk beyond and above the documented negative CSR-risk association of uncontroversial industries; and (b) corporate community involvement (CCI) activities and society friendly programs that controversial industries engage could also decrease firm risk more than uncontroversial industries.

The null hypothesis predicts that CSR initiatives and firm risk have no relationship anywhere in the world. Because the CSR activities in which controversial industries engage are relatively easy for investors to understand and analyze, analysis should be reflected immediately in the current stock price, and no relation should be observed between the CSR activities and firm risk. Which of our mutually exclusive hypotheses is more valid?

In addition, it is possible that there exists some differential recognition of CSR-risk association by stakeholders around the world due to several reasons. First, European and North American stakeholders are likely to give more weight to firms' CSR activities than Asia-Pacific stakeholders. While their main focus was on corporate environmental

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[5] Corporate community involvement (CCI) refers to the provision of goods and services to nonprofit and civic organizations by corporations (Burke et al. 1986). The idea of CCI recognizes that business corporations serve the community that represents a diverse group of stakeholders, who live and exist within the large coverage boundary in which the business operates and are embedded in complex network structures and cultural systems (Etzioni 1993; Burke 1999; Liu et al. 2013).

responsibility rather than CSR, Hart and Ahuja (1996) and Konar and Cohen (2001) provide such evidence for the U.S., and that for Canada and Europe can be found in Makni et al. (2009) and Busch and Hoffmann (2011), respectively. Jo et al. (2015) also find that reducing environmental costs in Europe and North-America, has a more immediate and substantial positive effect on firm performance than in Asia-Pacific region because of the different regional recognition of corporate environmental responsibility.

Second, companies in highly developed financial system (or market) should have easy access to capital that facilitates obtaining large-scale funds to invest or engage in CSR activities. Investors in well-developed financial markets (i.e., Europe and North-America) also enjoy better availability of financial resources than investors in less-developed financial markets (i.e., Asia-Pacific region). Therefore, business activities such as CSR engagement may also be more common and larger in Europe and North-America than in Asia-Pacific region, leading to potentially differential impact of CSR engagement on firm risk.

Third, the role of NGOs and other civil society is important in CSR-risk linkage because NGOs and other civil society groups are not only pivotal stakeholders in corporate governance and CSR, but also a driving force behind greater international cooperation through the active mobilization of public support for international agreements. Enabling the constructive participation of civil society or NGOs in global governance is thus one of the most important tasks for policymakers concerned with the effectiveness of global governance (Gemmill et al. 2002). An immense literature has developed on the theme of global civil society. In most cases, such a literature identifies global civil society as a galaxy of groups and networks involved in struggles for global justice, sustainability, the empowerment of women, respect for human rights, and so on – in short, the same kind of movements that take

part in global fora (Falk 1995). Moreover, the genealogy of civil society and NGOs in Western modernity is extremely rich both in theoretical models and in concrete historical practices. Such richness should not be ignored, and some of its highlights may prove helpful for capturing many of the current transformations (Spini 2011).

In contrast, however, there is substantial debate within Asia-Pacific region about the role and nature of civil society and NGOs, but little agreement as to what it might actually signify in terms of governance structures and democratization. Alagappa (2004) notes that there have been many protests in the region, but to suggest that this reflects a build-up of civil society voices may be to overstate contemporary reality. Some scholars consider civil society as a Western concept that cannot be applied with ease to Asia-Pacific region, while others suggest that it has strong links with economic development and regard the growth of civil society mechanisms as a reflection of a maturing economy (Armstrong et al. 2004). More recent scholarship has introduced the concept of 'global civil society', most often characterized as a direct response to the socio-cultural, political, economic and institutional forces of globalization (Gilson 2011).

In short, we suspect there might be higher influence of the civil society or NGOs in Europe and North America compared to the Asia-Pacific region. Therefore, in Europe and North America, stakeholders, including customers, investors, civil society, and NGOs, may prefer the firms with a higher level of CSR, leading to differential recognition and impact of CSR on firm risk. We label the combined explanations as the "differential recognition" hypothesis.

Hypothesis 3: Under the "differential recognition" hypothesis, the CSR effect on risk in controversial industries is greater in Europe and North America than in the Asia-Pacific

region.

In addition, previous studies demonstrate that CSR initiatives are generally associated with lower levels of firm risk. This risk-reducing effect of CSR provides some alternative evidence to the tenacious premise of what we may call the ''shareholder wealth maximization'' (SWM) view. Because CSR initiatives typically require initial investments that do not have a short-term pay-off and are likely to have no positive pay-off even in the long run, managers do not invest in CSR initiatives unless legally required to do so. Contrary to the profit motive-based SWM intuition, we maintain that investors, financial managers, and other stakeholders, dealing with CSR initiatives, should continue to pursue CSR-oriented initiatives, given that firms with higher CSR initiatives show reduced firm risk over the long term.

Donaldson (2012), in particular, argues that investors, academics, and business leaders must focus on new reward and distribution schemes that reflect long-term firm risk rather than short-term firm risk. Thus, it is important to examine the impact of controversial industry firms' CSR engagement on firm risk over the long term. Based on the notion that firm risk is more of an issue for controversial firms over the long term, we further postulate whether the risk-reduction effect is more substantial in controversial industry firms than in noncontroversial firms over the long term because obtaining and maintaining "social license to operate" for controversial industries is often a long-term process due to their inherent harmful image.

Furthermore, dissimilar development of financial system around the world is likely to differently influence the long-term level of investments or business activities, including CSR engagement (Demirgüç-Kunt and Maksimovic 1998). Thus, we maintain that firms under

highly developed financial system should have easier access to finance to invest or engage in

CSR activities than firm under relatively less developed financial system. Combined together,

we expect the following,

Hypothesis 4: Under the "long-term risk reduction" hypothesis, (a) we expect the risk-reduction effect is more pronounced in controversial industry firms than in uncontroversial firms over the long term; and (b) the long-term risk-reduction effect is more pronounced in firms under highly developed financial system for each region.

We address these open empirical questions by examining the effect of CSR engagement

on firm risk in controversial industries using empirical data observations in the following

sections.

Research Design

Corporate Social Responsibility (CSR) Index

CSR index is a measure of CSR performance at the firm level obtained from Thomson

Reuters ASSET4. Thomson Reuters' team of 130 analysts collects CSR data from companies,

news sources, non-government organizations, and stock exchange filings for this database.

They provide the world's largest database of CSR information which is objective,

comparable, and auditable, and systematic index (McWilliams and Siegel 2001). The

Thomson Reuters ASSET4 strictly uses public available information such as sustainability

reports (CSR reports), company websites, annual reports, proxy filings, and NGO as well as

news of all major providers (Thomson Reuter's data collection and rating methodology,

2012).

The CSR index is the equally weighted index of three pillars, including corporate

governance, environmental, and society performances, which has been used in a number of

other studies (McWilliams and Siegel 2001; Cheng et al. 2014; Ioannou and Serafeim 2014; Roulet and Touboul 2014).[6] As subset of CSR index, the society performance (CSR_S) is comprised seven categories: (a) employment quality; (b) health and safety; (c) training and development; (d) diversity; (e) human rights; (f) corporate community involvement (CCI); and (g) product responsibility. The corporate governance performance is comprised five categories of board structure, compensation policy, board functions, shareholders rights, and vision and strategy. The environmental performance is composed of three categories, including resource reduction, emission reduction, and product innovation. The CSR index is *z*-scored and normalized to position the score between 0 and 1.[7] For more detail on CSR, corporate community involvement (CCI), and society performance (CSR_S) indices, see Appendix A.

Sample Construction

We use the following databases to test our hypotheses: (a) *Thomson Reuters ASSET4*, which reports CSR performance at the firm level, and (b) *S&P Capital IQ*, which provides information related to financial statements and systematic and total risk. The unbalanced panel data used in our paper comprises 17,438 firm-year observations from 32 countries, with 4,087 of these observations relating to 9 Asia-Pacific countries, 6,347 observations relating to 19 European countries and 7,004 observations relating to 4 countries in North America from

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[6] An online appendix with a detailed description of our CSR index is available at http://extranet.datastream.com/data/ASSET4%20ESG/documents/Thomson_Reuters_DS_ASSET4_ESG_Content_Fact_Sheet.pdf.

[7] The Z-Score (or standard score) is a relative measure which compares one company with a given the benchmark of ASSET4 company universe. The score means the value in units of standard deviation of that value from the mean value of all companies. It allows creating more distinction between values that otherwise might be very close together (Thomson Reuter's data collection and rating methodology, 2012 at: http://extranet.datastream.com/logon.aspx). To read more: http://en.wikipedia.org/wiki/Standard_score.

2002 to 2012. Panel A of Table 1 presents the countries of each region in further detail.

Panel B of Table 1 shows information related to the sample construction of controversial industries, which we mainly use as the key dummy variable in our empirical analysis. We follow the definition of controversial industries (i.e., sinful and other controversial industries) advanced by Hong and Kacperczyk (2009) and Cai et al. (2012). The controversial industries are composed of two types of industries, which are sinful industries, which include the alcohol, tobacco, and gambling industries and other controversial industries dealing with emerging environmental, social and ethical issues such as defense-related weapons, oil and gas, and hazardous waste. Panel B includes 1,850 firm-year observations for the controversial industries. Among these, 489 observations (26.43% of the controversial industries) are located in sinful industries. The remaining 1,361 observations (73.57% of the controversial industries) are located in other controversial industries.

Empirical Model and Variable Measurement

To examine the relationship between a firm's CSR engagement and its risk, we estimate Equations (1) and (2) as follows:

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\begin{aligned}
\text{Systematic Risk (or Total Risk)} = {} & \alpha_0 + \alpha_1 \text{CSR (CSR}_{t-2}, \text{CCI or CSR\_S)} + \alpha_2 \text{Leverage} + \\
& \alpha_3 \text{ROE} + \alpha_4 \text{Ln TA} + \alpha_5 \text{Market to Book} + \alpha_6 \text{CAPEX/TA} + \alpha_7 \text{R\&D/TA} + \alpha_8 \text{Ln} \\
& \text{GDP} + \alpha_9 \text{GDP Growth} + \text{Country, Industry, and Year fixed effects} + \varepsilon, \quad (1)
\end{aligned}
$$

$$
\begin{aligned}
\text{Systematic Risk (or Total Risk)} = {} & \beta_0 + \beta_1 \text{CONIND} + \beta_2 \text{CSR (CSR}_{t-2}, \text{CCI or} \\
& \text{CSR\_S)*CONIND} + \beta_3 \text{CSR (CSR}_{t-2}, \text{CCI or CSR\_S)} + \beta_4 \text{Leverage} + \beta_5 \text{ROE} + \beta_6 \text{Ln TA} + \\
& \beta_7 \text{Market to Book} + \beta_8 \text{CAPEX/TA} + \beta_9 \text{R\&D/TA} + \beta_{10} \text{Ln GDP} + \beta_{11} \text{GDP Growth} + \text{Country} \\
& \text{and Year fixed effects} + \varepsilon, \quad (2)
\end{aligned}
$$

where the dependent variable, the systematic risk is known as market risk, which cannot be eliminated by portfolio diversification. Following Sharpe (1964), Lintner (1965), and Mossin (1966), we define the systematic risk as a CAPM beta of the individual stocks in the current year based on the daily stock returns. We also use total risk as the alternative firm risk measure, defined as the standard deviation of daily stock returns over a one-year period. The explanatory variable, CSR is a measure of the firm level of CSR engagement obtained from Thomson Reuters' ASSET4 database. We also use the 2-year lagged CSR, corporate community involvement (CCI) and society performance (CSR_S) as our alternative explanatory variables to examine the long-term CSR effects on risk and more directly the impact of firm's community involvement as well as society friendly initiatives on firm risk.

Similar to studies by Hong and Kacperczyk (2009), our study uses CONIND as a dummy variable that takes a value of 1 if a firm belongs to a controversial industry and zero otherwise. Leverage refers to the book value of debt divided by the total assets. ROE is defined as the net income divided by the common equity. Ln TA is the logarithm of the firm's total assets. Market to Book is the ratio of the market value of assets over the book value of assets. We calculate CAPEX/TA as the capital expenditure expense divided by the total assets, and R&D/TA as the research and development expenditures divided by the total assets. Because our study has an international outlook, we further control for the logarithm of gross domestic product (GDP) and GDP growth similar to La Porta et al. (1997). Finally, we include industry-, year-, and country-level fixed effects as control variables with the robust standard errors used in a study by White (1980).[8] We provide more detailed variable

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[8] We include year, industry and country fixed effects in Equation (1). However, we control only for year and country fixed effects in Equation (2) because industry fixed effects would be perfectly correlated with the controversial industry dummy.

explanations in Appendix B.

Table 2 presents the descriptive statistics for the variables used in our empirical tests. Panel A of Table 2 shows that the mean (median) CSR is 0.539 (0.554), and that 0.969 is the highest 99th percentile CSR score for the full sample. Panel B of Table 2 shows a regional comparison of the variables used in our study. The European firms have the highest mean (median) CSR value at 0.633 (0.724), and the Asia-Pacific firms have the lowest mean (median) CSR value at 0.396 (0.358). All variables in our empirical analysis are winsorized at 1% and 99% levels to account for potential outliers or data errors.

Empirical Results

In this section, we examine whether CSR contributes to lowering firm risk (i.e., systematic and total risk) in 32 countries around the world. We also investigate the relationship between CSR activities and firm risk in controversial industries. We design our empirical analysis as follows. We split the firms into high and low CSR index groups, and conduct univariate tests to compare their levels of risk. In addition, we calculate effect sizes (Cohen's d) for comparing the mean differences because our large sample size may provide the power to detect even miniscule effects.[9] We then regress firm risk on the CSR index (or CSR_{t-2}, CCI and CSR_S indices) and its interaction with the controversial industry dummy. We also carry out various robustness tests to confirm the validity of our main hypotheses.

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[9] Cohen's *d* is an appropriate effect size for the comparison between two means, which is widely used in meta-analysis. It can be used, for example, to accompany reporting of *t*-test and ANOVA results. Cohen's *d* can be calculated as the difference between the means divided by the pooled standard deviation: d = mean difference / standard deviation or $(M_2 - M_1)$ / pooled standard deviation. Where we are reporting about differences between two means, then a standardized mean effect size (such as Cohen's *d*) would be an appropriate accompaniment to inferential testing. For each type of effect-size, a larger absolute value always indicates a stronger effect (Cohen 1992; Kelley and Preacher 2012).

Univariate Analysis

Table 3 presents that in total sample the mean values of systematic risk (total risk) are 0.916 (0.346) and 0.897 (0.344) for firms in controversial industries and uncontroversial industries, respectively. Similarly, the median values of systematic risk (total risk) are 0.858 (0.308) and 0.837 (0.306) for firms in controversial industries and uncontroversial industries, respectively. These results indicate that the mean and median firm risk levels of firms in controversial industries are higher than those of firms in uncontroversial industries, supporting our "harmful image" hypothesis.

In Table 3, we also show whether firms in controversial industries have a comparative advantage over firms in uncontroversial industries in terms of the positive role of CSR activities on firm risk. To do so, we estimate t-test, Wilcoxon rank-sum test, and Cohen's d test after splitting the full sample into high and low CSR index groups by the median of CSR index.

In low CSR index group, the mean and median systematic (or total) risk levels of firms in controversial industries are higher than those of firms in uncontroversial industries. However, in high CSR index group, firms in controversial industries have lower mean and median values of systematic (or total) risk than firms in uncontroversial industries. We also find that the firms in the high CSR index group have significantly lower systematic and total risk levels than the firms in the low CSR index group in both the controversial and uncontroversial industries. The differences of firm risk between the high and low CSR index groups are much greater for firms in controversial industries than for firms in uncontroversial industries. Our results of Cohen's d tests also consistently show that the effects of the mean differences are greater for firms in controversial industries than for firms in uncontroversial

industries.[10] We interpret the result as evidence that CSR engagements of firms in controversial industries are more helpful to reduce firm risk than those of firms in uncontroversial industries. These results support our "social license to operate (SLO)" hypothesis.

Baseline Multivariate Analysis

The Impact of Corporate Social Responsibility (CSR)

In this section, we examine whether firm risk is positively related to controversial industries, whether CSR activities in controversial industries could reduce firm risk beyond the documented negative CSR-risk association of uncontroversial industries, and whether there exists some differential recognition of CSR-risk linkage around the world. To test the associations, we regress systematic risk on the controversial industry dummy, CSR, an interaction term between controversial industry dummy and CSR, and other control variables with the robust standard errors used by White (1980). Column 1 of Table 4 also includes year, industry and country fixed effects.[11]

Columns 2-5 of Table 4 exhibit a significantly positive association between the controversial industry dummy (CONIND) and systematic risk. These results consistently indicate that the systematic risk of firms in controversial industries tends to be higher than that of uncontroversial industry firms, supporting the "harmful image" hypothesis. In Columns 1 and 2 of Table 4, the coefficients of CSR are -0.072 (p <0.01) and -0.033 (p

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[10] Irrespective of the significance of the tests, however, these results could be based merely on the large number of cases within the sample: 17,438 observations in total. The effect of the mean differences should also be examined by investigating the results via effect tests (Cohen's d) that take into account not only the differences in general but also the sample size effects (Cohen 1992; Kelley and Preacher 2012).

[11] We control only the year and country fixed effects in Columns 2-5, as industry fixed effects would be perfectly correlated with the controversial industry dummy.

<0.05), respectively, and the coefficient of the interaction term between CSR and the controversial industry dummy is -0.158 (p <0.01). The results show that CSR engagement of firms in controversial industries could reduce firm risk beyond the documented negative CSR-risk association of firm in uncontroversial industries, supporting the "social license to operate (SLO)" hypothesis.

Although previous studies examine the relationship between CSR engagement and firm risk using the U.S data, they have neither focus on controversial industries nor considered the international setting. Thus, the question naturally arises whether there are regional or international variations in the relationship between CSR activities and firm risk in controversial industries. Thus, we re-estimate the previous regressions after partitioning the full sample into three subsamples by region, including the Asia-Pacific region, Europe and North America.[12] Interestingly, we find that the coefficients of the interaction term between CSR and the controversial industry dummy (CONIND) are -0.188 and -0.126 (p <0.01 and p <0.1) in the Europe and North America subsamples, respectively. However, in the Asia-Pacific region subsample, the interaction term is insignificant in Column 3. These results indicate that there exist stakeholders' differential recognitions of the CSR activities around the world, supporting the "differential recognition" hypothesis.

The Long-term Effect of CSR on Firm Risk

A possible concern with our analysis is that CSR engagements of firms in controversial industries might have played a role in decreasing the level of risk in the long term because there can be an expectation that obtaining and maintaining "social license to operate" for

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[12] We exclude firm-year observations for South American countries from our analyses due to the small number of observations in the region.

controversial industries is often a long-term process due to their harmful image. Most of previous studies, however, have been based on short-time horizon effect of CSR. In this section, we look at the long-term effect of CSR on firm risk in controversial industries by using the 2-year lagged CSR.[13]

Consistent with the above empirical facts, in Columns 2-5 of Table 5, firms in controversial industries tend to have the higher level of systematic risk than firms in uncontroversial industries, supporting the "harmful image" hypothesis. More importantly, we still find significant and negative relation between the interaction term (CSR_{t-2} * CONIND) and systematic risk in Europe and North America, but not in Asia-Pacific region. This result indicates that CSR engagements of firms in controversial industries could decrease the level of risk more than in uncontroversial industries, especially in Europe and North America, supporting the "social license to operate (SLO)", "differential recognition", and the "long-term risk-reduction" hypotheses.

The Long-term CSR Effects and Financial Market Development

The development of financial system for each country and region is likely to differently impact or determine the level of (long-term) investments or business activities, including CSR engagement (Demirgüç-Kunt and Maksimovic 1998). Thus, we maintain that firms in highly developed financial system should have easy access to finance to invest or engage in CSR activities even if the firms are in Asia-Pacific region. Therefore, in this section, we re-conduct our prior regressions using sample which is in the world's top ten (or

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[13] In untabulated results, we re-estimate the same regressions with the 1-year lagged CSR and find that the combined effect of CSR and controversial industries on firm risk is consistent with our previous empirical evidence. However, when we use the 3-year lagged CSR, we cannot find the significant combined CSR effect on risk.

fifteen)-highest financial system development countries for each region, including Asia-Pacific region. As an indicator of the financial system development, we use a financial development index of "World Economic Forum" following Jo et al. (2015).[14]

In Table 6, we consistently find the positive controversial industry dummy (CONIND)-risk association. In Columns 1 and 2 of Table 6, we further present coefficients (CSR_{t-2} * CONIND) from the estimations of the above panel regression model using sample which is in the world's top ten or fifteen-highest financial system development countries in Asia-Pacific region. Interestingly, our results show that CSR engagement of Asia-Pacific firms in highly developed financial system and controversial industries plays a major role in reducing the firms' risk in the long term while that of Asia-Pacific firms in highly developed financial system but uncontroversial industries would rather increase firm risk.[15] The evidence suggests that in Asia-Pacific countries with highly developed financial system, CSR activities may construct "social license to operate" for controversial industries, but those can still be unnecessary costs for uncontroversial industries. Columns 3 and 6 of Table 6, in general, show that CSR activities of controversial industries could reduce firm risk in the long term beyond the documented negative CSR-risk association of uncontroversial industries in European and North American countries with highly developed financial system. Taken together, this provides evidence that supports the "long-term risk reduction" hypothesis.

The Impact of Corporate Community Involvement (CCI) and CSR from Society (CSR_S)

Because we use the aggregate CSR index computed from ASSET4 database that uses

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[14] An online report with detailed information for financial development index (2012) is available at the "World Economic Forum" web site (www.weforum.org).

[15] For robustness (untabulated), we re-estimate same regressions using a Japanese sample instead of Asia-Pacific firms in top 10 or 15 developed financial system, and CSR_t*CONIND instead of CSR_{t-2}*CONIND. We find that our results remain intact.

environmental, societal, and corporate governance dimensions, we are concerned about the possibility that our main results might be contaminated due to those aggregate usages of CSR index.[16] In addition, while previous scholarly attention on CCI and other CSR activities have been booming since the 1950s, the literature on CCI reflects an ongoing conceptual debate about the relationship of CCI with the broader CSR movement (Carroll 1999; Godfrey and Hatch 2007). Thus to examine more sharply the impact of corporate community involvement (CCI) and CSR only from society dimension (CSR_S), we repeat the same analysis based on CCI and CSR_S.

The results reported in Table 7 Panel A for CCI and Panel B for CSR_S support our previous main findings of the positive controversial industry dummy (CONIND)-risk association, negative CCI (or CSR_S)-risk association, and further negative CCI (or CSR_S)*CONIND-risk association. In addition, the above associations are only significant in Europe and North-America, but not in Asia-Pacific region. Combined together, our results continue to support our main hypotheses of the "harmful image", "social license to operate", especially hypothesis 2(b), and "differential recognition".

Additional Tests

We conduct various additional robustness tests to investigate whether our results remain intact under different empirical methodologies and variable proxies. In Tables 8 and 9, we use total risk instead of systematic risk and the first principle component of CSR index (denoted as PCA_CSR) instead of the CSR index, respectively. In Table 8, we perform weighted least squares (WLS) regression for adjusting sample composition bias. We use

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[16] Corporate governance and environmental dimensions included in the aggregate CSR index could influence CSR-risk association.

three-stage least squares (3SLS) and two-stage least squares (2SLS) approaches in Table 11 to mitigate concerns related to potential endogeneity problem caused by reverse causality. In Tables 12 and 13, we conduct Granger causality tests and further control for financial hedging variable.

Total Risk and Principal Components Analysis (PCA)

Some studies document that CSR engagement could affect idiosyncratic risk (Lee and Faff 2009; Luo and Bhattacharya 2009; Mishra and Modi 2013). Thus, in Table 8, we use total risk (systematic as well as idiosyncratic risk combined) instead of systematic risk. Consistent with the evidence presented earlier, the results of our robustness test indicate that the total risk of firms in controversial industries is likely to be higher than that of uncontroversial industry firms, and that the risk-reduction effects are greater on firms in controversial industries than firms in uncontroversial industries. Furthermore, Columns 3-5 of Table 8 suggest that the documented CSR effect of firms in controversial industries is significant in Europe and North America, but not in the Asia-Pacific region.[17]

In Table 9, we further investigate whether our main hypotheses are robust when the first principal component is used instead of the CSR index to decrease the original variables to a lower number of orthogonal synthesized variables.[18] Consistent with the earlier findings, the firms in controversial industries, in general, show a higher level of systematic risk than those in uncontroversial industries, and increased CSR engagement is associated with a decrease in

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[17] These results also remain intact when we examine only firms in sinful industries (unreported, but available from authors upon request).

[18] PCA_CSR is defined as the principal components of the corporate governance, environmental, and social indices.

systematic risk, especially in controversial industries. The documented relationship between CSR and systematic risk in controversial industries also is significant in Europe and North America, but not in the Asia-Pacific region. These findings support the "harmful image", "social license to operate", and "differential recognition" hypotheses.

Weighted Least Squares (WLS)

Heterogeneity in the number of observations across countries in our sample may influence the documented association between CSR engagement and firm risk. To address this concern, we conduct a WLS regression in Table 10, where the weight is the inverse of the number of firm-year observations per country.[19] Consistent with previous empirical results, we find a significant positive relationship between the uncontroversial industry dummy and systematic risk. In Columns 1-5 of Table 10, the coefficients of CSR are also significantly negative and the documented CSR effect on firm risk is significantly stronger for the firms in controversial industries than for those in uncontroversial industries, especially in Europe and North America.

Three-Stage Least Squares (3SLS) and Two-Stage Least Squares (2SLS) Regressions

In this section, we further address the potential endogeneity problems caused by reverse causality between CSR engagement and firm risk. The association between the firms' CSR involvement and risk could be overstated if the endogeneity problem is not addressed (Greene 1993). Hence, we perform 3SLS and 2SLS regressions, which are similar to the

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[19] In a weighted least squares regression (WLS), less weight is given to less-precise measurements and more weight to more-precise measurements when estimating the unknown parameters in the model. Using weights that are inversely proportional to the variance at each level of the explanatory variables yields the most precise parameter estimates possible. In doing so, WLS also handles potential heterogeneity better than OLS.

methods used by El Ghoul et al. (2011). In Panel A of Table 11, we conduct a 3SLS regression using several instruments, including the CSR index score at the initial firm level, the industry average CSR index score and a dummy variable indicating whether the previous year's earnings is negative (loss) following El Ghoul et al. (2011).[20]

Following Cai et al. (2015), we also conduct a 2SLS regression in Panel B, using the CSR index lagged by two years as an instrument. Consistent with the previous results, Panels A and B of Table 11 show that firm risk is positively associated with controversial industries. These results support the "harmful image" hypothesis, which argues that firms in controversial industries tend to have higher risk levels than those in uncontroversial industries. Table 11 also indicates that the coefficients of an interaction term between CSR and the controversial industry dummy are negative and significant in Europe and North America, but not in the Asia-Pacific region. These results support the "social license to operate" and "differential recognition" hypotheses, which argues that the CSR activities initiated by controversial industries are more inversely associated with firm risk than those initiated by uncontroversial industries, especially in Europe and North America, but not in the Asia-Pacific region.

Granger Causality Tests

Thus far, we have explored the relationship between controversial industries and firm risk and between CSR engagement and firm risk, especially for firms in controversial industries. In this section, following Jo et al. (2015), we test the causal relationships between

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[20] In other empirical results (untabulated), we conduct a 2SLS regression using several instruments, including the initial CSR index, the industry average CSR index and a dummy variable indicating whether the previous year's earnings were negative (loss). The results are consistent with Panel A of Table 11. In addition, all of our CCI-risk as well as CSR_S-risk associations remain qualitatively the same with our CSR-risk association (unreported).

the first difference in CSR and the change in systematic risk, along with the change in the principal component of the CSR index (PCA_CSR). According to Columns 1 and 3 of Table 12, there is no statistically significant association between the change in systematic risk measure and the change in CSR or PCA_CSR when the latter is used as a dependent variable. However, we find a statistically significant and negative relationship between the change in systematic risk and the change in CSR or PCA_CSR when the former is the dependent variable: the *t* value is -4.57 at time *t*-1 in Column 2 and -4.95 in Column 4. Hence, our results show a unidirectional and negative "Granger causal" relationship between CSR engagement and systematic risk, suggesting a lower probability of endogeneity problem due to reverse causality.

Hedging with Financial Derivatives

Companies, in general, use hedging strategy to reduce any substantial losses/gains suffered by the firm. As hedging strategy can be constructed from many types of financial instruments, such as financial derivatives, we examine whether CSR decreases risk even after we consider firm's hedging with derivatives. Because S&P Capital IQ provides 16 items of derivative usage, we use those as a proxy of financial hedging with derivatives (HEDGDERI).

Results reported in Table 13 suggest that the coefficients on HEDGDERI are negative and significant in Europe and North-America, and negative and insignificant in Asia-Pacific region. These results seem intuitive because the hedging with financial derivatives can reduce risk. More importantly, even after we control for financial hedging, we find that our main findings of the positive controversial industry dummy (CONIND)-risk association and negative CSR*CONIND-risk association remain intact. In addition, the above

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CSR*CONIND-risk association is only significant in Europe and North-America, but not in Asia-Pacific region. Thus, our results further support our main hypotheses (the "harmful image", "social license to operate", and "differential recognition" hypotheses) even after we consider potential financial hedging.

Discussion

This paper is motivated by an important question that CSR activities for firms in controversial industries can be justified by further reduced level of risk seeking for organizational legitimacy. We show this by making contributions in three research domains. First and most obviously, this paper attempts to provide a fresh view on the relationship between CSR activities and firm risk in the context of controversial industries seeking to obtain and maintain a social license to operate. Although some studies attempt to examine the relation between CSR and firm risk using the uncontroversial industries, despite the importance to date it has attracted relatively limited research attention on controversial industry CSR-firm risk linkage.

Second, to the best of our knowledge, this study is the first to use cross-country data to consider whether a negative relationship exists between controversial industry CSR and firm risk in the long run around the world, and find that it does so with regional variations. Firms in controversial industries in both Europe and North America are likely to experience lower levels of risk when they engage in CSR activities. However, the effect of lowering firm risk through CSR activities is negligible for firms in the Asia-Pacific region (except Asia-Pacific firms in highly developed financial system) regardless of which industries they belong to.

Third, our study extends the CSR literature via its use of Thomson Reuters' ASSET4

database in measuring international CSR engagement.[21] In contrast to the survey-based KLD database, the ASSET4 database is based on publicly available information. Thomson Reuters employs more than 130 analysts who scour through company reports and other public sources to collect objective, relevant and systematic CSR information. The data cover listed firms from the U.S., such as S&P 500 and Russell 1000 and 3000 firms, in addition to international firms from MSCI Europe, FTSE 250, ASX 300 and the MSCI World Index and the 250 MSCI emerging-market firms.

Our study, however, looks only at the influence of CSR as it relates to risk management decisions. Although we control for the logarithm of GDP, the growth rate of GDP, and country fixed effects, there can be other factors influencing these decisions, such as economic considerations including the availability of capital to fund CSR initiatives, social and political factors and of course legal considerations. All of these factors may exert some degree of influence on risk-management decisions, and some may even exert greater influence than CSR. Our study is therefore confined to a limited portion of the wide range of factors that influence and motivate a firm's risk-management decisions.

Despite this limitation, we consider our main empirical findings of an additional negative association between the CSR engagement and business risk of firms in controversial industries an important step toward understanding how the CSR-risk nexus affects these firms and their behavior toward to get organization legitimacy around the world. Both the CSR concerns and risk management of these firms are very much moving targets. What used to be

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[21] Although KLD data have been used extensively to study accounting, economics, finance and management in the CSR literature for a number of years, they have been criticized due to their binary and qualitative nature. In addition, KLD data have an unbalanced panel structure that may suffer from selection bias. Furthermore, the data over-represent large U.S. manufacturing firms. Mishra and Modi (2013) argue that this may dampen the generalizability of empirical findings generated by the use of the KLD database. To avoid the limitation of binary feature of KLD data, a number of recent studies including Jo et al. (2015) and Kim et al. (2015) use Trucost database which measures direct and indirect environmental costs of listed firms around the world.

acceptable behavior by organizations a few decades ago may not be no longer the case today. Future studies may find evidence that the relationship between CSR engagement, risk management and the social license to operate is subject to change over time.

Conclusion

Over the past three decades, CSR has drawn considerable attention from academics, practitioners, and policymakers as more managers incorporate CSR activities into their business operations. Thus, the demand for the amount of research related to measuring the economic consequences of risk and CSR in controversial industries has also increased.

In this paper, we examine the empirical association between firm risk of controversial industries and a firm's CSR initiatives in order to ascertain whether and how CSR of controversial industries might influence the conditions that make achievement of the "social license to operate" more likely around the world. Using a large and extensive sample of international data for the 2002-2012 period on firms' CSR engagement and the degree of systematic and total risk, we find a positive association between the business risk and controversial industry firms. Our results also show an inverse association between the combined effect of CSR-controversial industry dummy and firm risk after controlling for various firm and country characteristics. The findings imply that CSR engagement of controversial industries encourages the kind of corporate-stakeholder relations that facilitate achievement of the "social license to operate".

The documented effect of controversial industry CSR on firm risk, however, is more pronounced for firms in Europe and North America than in the Asia-Pacific region. This evidence, in general, demonstrates that in Europe and North America, CSR initiatives of

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firms in controversial industries are generally associated with additional risk reduction than those of firms in uncontroversial industries. Our empirical tests further provide evidence of the long-term impact of controversial industry firms' CSR engagement on firm risk, which is more pronounced in firms under highly developed financial system for each region.

The above associations we found between firm risk and CSR initiatives of controversial industries around the world remain robust under various econometric methods, including fixed effect regressions, principal component analysis, weighted least square regressions, two- and three-stage least squares regressions, and Granger causality tests, and even after employing alternative measures of CSR and firm risk. We believe that the robustness of our results clearly support the explanations of "harmful image", "social license to operate", "differential recognition", and "long-term risk reduction". Our study provides useful guidance for the managers of controversial industries around the world who seek to achieve the "social license to operate" for her/his company.

Appendix A CSR and corporate community involvement (CCI) composition

Corporate social responsibility (CSR) composition

	Pillars	Categories
CSR	Corporate governance performance (5 categories)	Board structure (11 items)
		Compensation policy (13 items)
		Board functions (13 items)
		Shareholders rights (34 items)
		Vision and strategy (10 items)
	Environmental performance (3 categories)	Resource reduction (32 items)
		Emission reduction (41 items)
		Product innovation (25 items)
	Society performance (CSR_S) (7 categories)	Employment quality (11 items)
		Health and safety (26 items)
		Training and development (8 items)
		Diversity (11 items)
		Human rights (13 items)
		Corporate community involvement (30 items)
		Product responsibility (41 items)

Corporate community involvement (CCI) composition

	30 Items	
CCI	Fair Competition	Anti-Competition Controversy
	Bribery and Corruption	Critical Countries Controversies
	Business Ethics (2 items)	List of Critical Countries related to the company
	Whistleblower Protection	Recent Public Health Controversies
	Community Involvement	Recent Business Ethics Controversies
	Fair Competition	Recent Tax Fraud Controversies
	OECD Guidelines for Multinational Enterprises	Recent Anti-Competition Controversy
	EITI Extractive Industries Transparency Initiative	Recent Critical Countries Controversies
	Donations Total	Recent Intellectual Property Controversies
	Community Lending and Investments	Corporate Responsibility Awards
	Political Contributions	Lobbying Contribution Amount
	Employee Engagement Voluntary Work	Public Health Controversies
	Product Sales at Discount to Emerging Markets	Business Ethics Controversies
	Intellectual Property Controversies	Crisis Management Systems
	Tax Fraud Controversies	

Appendix B Variable definitions and data sources

Variable	Definition	Source
CSR	The CSR index is a measure of the firm level of CSR performance obtained from Thomson Reuters' ASSET4 database. It is composed of three pillars, including environmental, social and corporate governance performance.	Thomson Reuters ASSET4
PCA_CSR	Principal component of environmental, social and corporate governance indices.	Authors' calculations
CCI	The CCI index is a measure of the firm level of corporate community involvement obtained from Thomson Reuters' ASSET4 database.	Thomson Reuters ASSET4
CSR_S	The CSR_S index is a measure of the firm level of society performance obtained from Thomson Reuters' ASSET4 database. It is comprised seven categories of employment quality, health and safety, training and development, diversity, human rights, corporate community involvement, and product responsibility.	Thomson Reuters ASSET4
CONIND	CONIND is a dummy variable that takes a value of 1 if a firm belongs to sinful and/or other controversial industries. Following the definitions of Hong and Kacperczyk (2009) and Cai et al. (2012), the sinful industries include the alcohol, tobacco and gambling industries, and the other controversial industries include defense-related weapons, oil and gas, and hazardous waste.	S&P Capital IQ
Systematic Risk	Systematic risk is a CAPM beta of the individual stocks in the current year, based on the daily stock returns.	S&P Capital IQ
Total Risk	Standard deviation of the daily stock returns over a one-year period.	S&P Capital IQ
Leverage	The ratio of book value of debt divided by total assets	S&P Capital IQ
ROE	The ratio of net income divided by the equity	S&P Capital IQ
Ln TA	The logarithm of total assets	S&P Capital IQ
Market to Book	The ratio of (book value of assets − book value of equity + market value of equity) divided by total assets	S&P Capital IQ
CAPEX/TA	The ratio of capital expenditure expense divided by total sales	S&P Capital IQ
R&D/TA	The ratio of R&D expense divided by the total assets	S&P Capital IQ
Ln GDP	The logarithm of gross domestic product	S&P Capital IQ
GDP Growth	The growth rate of gross domestic product	S&P Capital IQ

Notes This table presents the variable definitions and data sources.

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Table 1 Sample distribution

Panel A. Sample distribution across countries

Country	Number of firm years	Country	Number of firm years
Asia-Pacific Region		Italy	280
Hong Kong	404	Netherlands	266
Indonesia	69	New Zealand	70
Japan	2,564	Norway	147
Malaysia	107	Poland	49
Philippines	39	Portugal	65
Singapore	216	Spain	304
South Korea	293	Sweden	365
Taiwan	341	Switzerland	465
Thailand	54	Turkey	66
Total	4,087	United Kingdom	2,075
		Total	
Europe			
Austria	114	*North America (including South America)*	
Belgium	161	United States	6,647
Denmark	183	Mexico	86
Finland	216	Brazil	202
France	689	Chile	69
Germany	591	Total	7,004
Greece	109		
Ireland	132	Total Sample	17,438

Panel B. Controversial industry sample construction

Variable	Number of firm years	% of firm years in controversial industries
Sin Industries		
Alcohol	217	11.73
Tobacco	104	5.62
Gambling	168	9.08
Sin Total	489	26.43
Other Controversial Industries		
Military	291	15.73
Oil and Gas	1,007	54.43
Hazardous Waste	63	3.41
Others Total	1,361	73.57
Overall	1,850	100.00

Notes Panel A provides the number of observations from each country and region making up the sample. The total number of observations is 17,438 over 32 countries. Panel B reports the distribution of controversial industry in our sample.

Table 2 Summary statistics

Panel A. Descriptive statistics of firm characteristics

Variable	Obs.	Mean	SD	P(0.01)	P(0.25)	Median	P(0.75)	P(0.99)
CSR	17,438	0.539	0.301	0.036	0.262	0.554	0.827	0.969
CCI	17,438	0.501	0.102	0.000	0.437	0.511	0.571	0.679
CSR_S	17,438	0.536	0.305	0.049	0.240	0.552	0.836	0.973
Systematic risk	17,438	0.900	0.519	-0.077	0.532	0.840	1.196	2.497
Total Risk	17,438	0.345	0.176	0.000	0.230	0.306	0.419	1.047
Leverage	17,438	0.246	0.168	0.000	0.118	0.235	0.352	0.724
ROE	17,438	0.123	0.275	-1.259	0.058	0.120	0.198	1.312
Ln TA	17,438	8.690	1.347	5.723	7.759	8.584	9.560	12.149
Market to book	17,438	1.604	3.530	0.155	0.564	0.812	1.405	19.687
CAPEX/TA	17,438	0.091	0.158	0.001	0.025	0.045	0.092	0.912
R&D/TA	17,438	0.020	0.036	0.000	0.000	0.001	0.023	0.183
Ln GDP	17,438	15.199	1.627	11.678	13.859	16.383	16.516	17.011
GDP Growth	17,438	1.716	3.386	-9.224	0.912	1.960	3.274	10.495

Panel B. Regional comparison

Region	Asia-Pacific Region		Europe		North America	
Variable	Mean	Median	Mean	Median	Mean	Median
CSR	0.396	0.358	0.633	0.724	0.538	0.510
CCI	0.502	0.511	0.503	0.515	0.497	0.503
CSR_S	0.467	0.424	0.653	0.727	0.464	0.416
Systematic risk	0.688	0.665	0.796	0.745	1.140	1.078
Total Risk	0.333	0.308	0.341	0.297	0.357	0.315
Leverage	0.231	0.219	0.254	0.242	0.245	0.231
ROE	0.090	0.084	0.140	0.138	0.124	0.132
Ln TA	8.731	8.643	8.499	8.403	8.841	8.700
Market to book	2.251	0.581	1.095	0.780	1.733	1.253
CAPEX/TA	0.082	0.051	0.085	0.044	0.102	0.043
R&D/TA	0.018	0.005	0.017	0.000	0.024	0.000
Ln GDP	15.275	16.695	13.920	14.534	16.449	16.496
GDP Growth	2.283	2.596	1.357	1.941	1.614	1.591

Notes This table presents the distribution of our full sample of 17,438 firm-year observations from 32 countries over the period from 2002 to 2012. Panel A presents the mean, standard deviation, first percentile, top quarter, median, bottom quarter, and 99th percentiles. Panel B shows the mean and median for each region.

Table 3 Univariate tests for CSR and firm risk in controversial and uncontroversial industries

	Total sample (Obs.=17,438)		High CSR index group (Obs.=8,721)		Low CSR index group (Obs.=8,717)		Difference (T-*Stat*/Z-*Stat*)		Effect size
	(1) Mean	(2) Median	(3) Mean	(4) Median	(5) Mean	(6) Median	(3)-(5) Mean Diff	(4)-(6) Median Diff	Cohen's d
Controversial Industries									
Systematic risk	0.916	0.858	0.840	0.805	0.993	0.940	-0.153*** (-7.036)	-0.135*** (-6.116)	-0.293
Total risk	0.346	0.308	0.308	0.274	0.384	0.339	-0.076*** (-10.441)	-0.065*** (-11.017)	-0.435
Uncontroversial Industries									
Systematic risk	0.897	0.837	0.895	0.835	0.899	0.838	-0.004 (-0.507)	-0.003 (-0.700)	-0.008
Total risk	0.344	0.306	0.329	0.292	0.360	0.322	-0.031*** (-10.821)	-0.030*** (-12.175)	-0.175

Notes This table provides the mean and median differences and Cohen's d of systematic risk and total risk between high CSR index group and low CSR index group in controversial industries and uncontroversial industries. We split the sample into high CSR index group and low CSR index group, by median CSR index.

***, **, and * stand for statistical significance at the 1, 5, and 10% level, respectively.

Table 4 The impact of corporate social responsibility (CSR)

	Systematic risk				
	(1) Full Sample	(2) Full Sample	(3) Asia-Pacific Region	(4) Europe	(5) North America
CONIND		0.112***	0.095*	0.123***	0.122**
		(3.93)	(1.89)	(2.63)	(2.55)
CSR * CONIND		-0.158***	-0.134	-0.188***	-0.126*
		(-3.90)	(-1.44)	(-2.96)	(-1.87)
CSR	-0.072***	-0.033**	0.037	-0.054**	-0.080***
	(-4.86)	(-2.12)	(1.44)	(-2.01)	(-2.82)
Leverage	0.181***	-0.033	0.201***	-0.136***	-0.095**
	(7.16)	(-1.35)	(5.09)	(-3.43)	(-2.17)
ROE	-0.160***	-0.219***	-0.176***	-0.171***	-0.236***
	(-10.29)	(-12.82)	(-3.60)	(-7.36)	(-8.85)
Ln TA	0.012***	-0.004	-0.003	0.021***	-0.043***
	(3.24)	(-1.18)	(-0.50)	(4.08)	(-6.85)
Market to Book	-0.001	-0.004***	-0.002	-0.005	-0.019***
	(-1.20)	(-3.41)	(-1.58)	(-1.34)	(-4.88)
CAPEX/TA	0.029	0.054*	-0.049	-0.011	0.062
	(0.87)	(1.88)	(-0.63)	(-0.24)	(1.38)
R&D/TA	-0.032	0.571***	1.061***	-0.074	0.708***
	(-0.20)	(4.86)	(4.77)	(-0.41)	(4.01)
Ln GDP	-0.430***	-0.463***	-0.081	0.054	-0.687
	(-11.31)	(-10.90)	(-0.54)	(0.75)	(-0.77)
GDP Growth	0.008***	0.009***	-0.007*	-0.013***	-0.018
	(4.42)	(4.34)	(-1.67)	(-3.28)	(-0.35)
Intercept Term	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	No	No	No	No
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Robust Standard Error	Yes	Yes	Yes	Yes	Yes
R-squared	0.405	0.208	0.151	0.150	0.077
Number of Obs.	17,438	17,438	4,087	6,347	6,733

Notes This table presents estimation results from regressing systematic risk on CSR and its interaction term between CSR and controversial industry dummy (CONIND) over the period of 2002-2012. Systematic risk is a CAPM beta of individual stocks in current year, based on daily stock returns. CSR is a measure of the firm level of CSR performance obtained from Thomson Reuters ASSET4.

***, **, and * stand for statistical significance at the 1, 5, and 10% level, respectively.

Table 5 The long-term CSR effect on firm risk

			Systematic risk		
	(1) Full Sample	(2) Full Sample	(3) Asia-Pacific Region	(4) Europe	(5) North America
CONIND		0.170***	0.133**	0.141***	0.205***
		(4.82)	(2.16)	(2.86)	(3.32)
CSR $_{t-2}$ * CONIND		-0.203***	-0.167	-0.190***	-0.191**
		(-4.28)	(-1.45)	(-2.89)	(-2.34)
CSR $_{t-2}$	-0.086***	-0.052***	0.038	-0.070***	-0.080**
	(-5.27)	(-2.96)	(1.25)	(-2.67)	(-2.50)
Leverage	0.202***	-0.031	0.211***	-0.122***	-0.078
	(7.01)	(-1.08)	(4.25)	(-2.85)	(-1.56)
ROE	-0.149***	-0.212***	-0.184***	-0.190***	-0.218***
	(-8.50)	(-10.74)	(-3.04)	(-7.40)	(-6.97)
Ln TA	0.006	-0.009**	0.001	0.018***	-0.054***
	(1.53)	(-2.30)	(0.19)	(3.24)	(-7.44)
Market to Book	-0.004**	-0.008***	-0.005***	-0.004	-0.029***
	(-2.31)	(-4.33)	(-2.68)	(-0.53)	(-4.70)
CAPEX/TA	0.021	0.051	-0.073	0.030	0.041
	(0.57)	(1.50)	(-0.72)	(0.58)	(0.79)
R&D/TA	-0.212	0.203	1.501***	-0.719***	0.303
	(-1.18)	(1.61)	(5.51)	(-4.22)	(1.58)
Ln GDP	-0.359***	-0.408***	-0.733***	0.022	-5.204***
	(-8.00)	(-7.88)	(-2.90)	(0.28)	(-3.24)
GDP Growth	0.009***	0.009***	-0.014**	-0.009**	0.158**
	(4.21)	(3.94)	(-2.48)	(-2.06)	(2.03)
Intercept Term	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	No	No	No	No
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Robust Standard Error	Yes	Yes	Yes	Yes	Yes
R-squared	0.405	0.208	0.151	0.150	0.077
Number of Obs.	17,438	17,438	4,087	6,347	6,733

Notes This table presents estimation results from regressing systematic risk on the 2-year lagged CSR and its interaction term between the 2-year lagged CSR and controversial industry dummy (CONIND) over the period of 2002-2012. Systematic risk is a CAPM beta of individual stocks in current year, based on daily stock returns. CSR is a measure of the firm level of CSR performance obtained from Thomson Reuters ASSET4.

***, **, and * stand for statistical significance at the 1, 5, and 10% level, respectively.

Table 6 The long-term CSR effects and financial system development

	Systematic risk					
	Asia-Pacific Region		Europe		North America	
	Top 10 financial system development	Top 15 financial system development	Top 10 financial system development	Top 15 financial system development	Top 10 financial system development	Top 15 financial system development
CONIND	0.169***	0.183***	0.281***	0.212***	0.168***	0.168***
	(2.63)	(2.83)	(4.46)	(4.32)	(3.03)	(3.03)
CSR_{t-2} * CONIND	-0.273**	-0.378***	-0.469***	-0.330***	-0.138*	-0.138*
	(-2.07)	(-2.78)	(-5.62)	(-4.95)	(-1.79)	(-1.79)
CSR_{t-2}	0.092***	0.065*	-0.057	-0.056*	-0.070**	-0.070**
	(2.70)	(1.94)	(-1.52)	(-1.79)	(-2.12)	(-2.12)
Leverage	0.205***	0.200***	-0.159***	-0.168***	-0.069	-0.069
	(3.92)	(3.85)	(-2.84)	(-3.49)	(-1.40)	(-1.40)
ROE	-0.116*	-0.118*	-0.121***	-0.167***	-0.202***	-0.202***
	(-1.65)	(-1.74)	(-3.99)	(-6.04)	(-6.52)	(-6.52)
Ln TA	-0.005	-0.001	0.022***	0.019***	-0.062***	-0.062***
	(-0.62)	(-0.08)	(2.82)	(3.00)	(-8.43)	(-8.43)
Market to Book	-0.005	-0.004	-0.054***	-0.004	-0.072***	-0.072***
	(-1.23)	(-0.95)	(-2.77)	(-0.52)	(-7.36)	(-7.36)
CAPEX/TA	-0.04	-0.075	0.156*	0.115*	0.045	0.045
	(-0.35)	(-0.67)	(1.94)	(1.89)	(0.90)	(0.90)
R&D/TA	1.394***	1.385***	-0.513**	-0.710***	0.457**	0.457**
	(4.61)	(4.74)	(-2.22)	(-3.85)	(2.35)	(2.35)
Ln GDP	-0.505*	-0.745***	-0.043	0.036	-0.000	-0.000
	(-1.79)	(-2.85)	(-0.43)	(0.41)	(-0.02)	(-0.02)
GDP Growth	-0.014**	-0.014**	0.002	-0.005	0.002	0.002
	(-1.96)	(-1.99)	(0.21)	(-0.73)	(0.31)	(0.31)
Intercept Term	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Robust Standard Error	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.204	0.190	0.133	0.138	0.068	0.068
Number of Obs.	2,263	2,389	2,407	3,628	4,751	4,751

Notes This table presents estimation results from regressing systematic risk on the 2-year lagged CSR and its interaction term between the 2-year lagged CSR and controversial industry dummy (CONIND) by financial market development. As an indicator of the financial system development, we use a financial development index of World Economic Forum. Systematic risk is a CAPM beta of individual stocks in current year, based on daily stock returns. CSR is a measure of the firm level of CSR performance obtained from Thomson Reuters ASSET4. ***, **, and * stand for statistical significance at the 1, 5, and 10% level, respectively.

Table 7 The impact of corporate community involvement (CCI) and society (CSR_S) on firm risk

Panel A Regressions of systematic risk on corporate community involvement (CCI)

	Systematic risk				
	(1) Full Sample	(2) Full Sample	(3) Asia-Pacific Region	(4) Europe	(5) North America
CONIND		0.285***	-0.130	0.203*	0.393***
		(4.20)	(-0.82)	(1.85)	(4.09)
CCI * CONIND		-0.512***	0.314	-0.375*	-0.680***
		(-4.04)	(1.08)	(-1.83)	(-3.77)
CCI	-0.115***	-0.135***	0.032	-0.190***	-0.166**
	(-3.25)	(-3.42)	(0.42)	(-3.48)	(-2.15)
Leverage	0.187***	-0.032	0.200***	-0.139***	-0.090**
	(7.44)	(-1.30)	(5.05)	(-3.50)	(-2.06)
ROE	-0.165***	-0.220***	-0.174***	-0.172***	-0.240***
	(-10.61)	(-12.97)	(-3.59)	(-7.47)	(-9.09)
Ln TA	0.006*	-0.004	-0.001	0.018***	-0.045***
	(1.94)	(-1.43)	(-0.20)	(4.00)	(-7.92)
Market to Book	-0.001	-0.004***	-0.002	-0.005	-0.019***
	(-1.23)	(-3.32)	(-1.55)	(-1.32)	(-4.84)
CAPEX/TA	0.030	0.057**	-0.033	0.011	0.057
	(0.88)	(1.99)	(-0.43)	(0.26)	(1.31)
R&D/TA	-0.075	0.552***	1.139***	-0.112	0.651***
	(-0.46)	(4.74)	(5.26)	(-0.62)	(3.74)
Ln GDP	-0.424***	-0.461***	-0.091	0.056	-0.747
	(-11.15)	(-10.86)	(-0.61)	(0.77)	(-0.82)
GDP Growth	0.008***	0.009***	-0.007*	-0.013***	-0.014
	(4.51)	(4.36)	(-1.68)	(-3.33)	(-0.27)
Intercept Term	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	No	No	No	No
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Robust Standard Error	Yes	Yes	Yes	Yes	Yes
R-squared	0.404	0.208	0.151	0.150	0.079
Number of Obs.	17,438	17,438	4,087	6,347	6,733

Panel B Regressions of systematic risk on society (CSR_S)

	Systematic risk				
	(1) Full Sample	(2) Full Sample	(3) Asia-Pacific Region	(4) Europe	(5) North America
CONIND		0.115***	0.110**	0.129***	0.107***
		(4.13)	(2.03)	(2.59)	(2.63)
CSR_S * CONIND		-0.170***	-0.150	-0.192***	-0.119*
		(-4.21)	(-1.63)	(-2.85)	(-1.87)
CSR_S	-0.066***	-0.057***	0.017	-0.060**	-0.098***
	(-4.95)	(-3.89)	(0.80)	(-2.24)	(-3.59)
Leverage	0.187***	-0.031	0.198***	-0.132***	-0.088**
	(7.42)	(-1.26)	(5.00)	(-3.31)	(-2.02)
ROE	-0.164***	-0.220***	-0.171***	-0.174***	-0.238***
	(-10.58)	(-12.96)	(-3.53)	(-7.52)	(-9.01)
Ln TA	0.011***	-0.002	-0.001	0.021***	-0.040***
	(3.09)	(-0.45)	(-0.10)	(4.12)	(-6.48)
Market to Book	-0.001	-0.004***	-0.002	-0.005	-0.018***
	(-1.17)	(-3.30)	(-1.54)	(-1.31)	(-4.76)
CAPEX/TA	0.030	0.047	-0.048	-0.008	0.058
	(0.90)	(1.61)	(-0.63)	(-0.18)	(1.29)
R&D/TA	-0.035	0.601***	1.110***	-0.073	0.723***
	(-0.21)	(5.11)	(5.00)	(-0.41)	(4.11)
Ln GDP	-0.427***	-0.463***	-0.084	0.059	-0.703
	(-11.23)	(-10.91)	(-0.56)	(0.82)	(-0.79)
GDP Growth	0.008***	0.009***	-0.007*	-0.013***	-0.017
	(4.47)	(4.37)	(-1.67)	(-3.28)	(-0.31)
Intercept Term	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	No	No	No	No
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Robust Standard Error	Yes	Yes	Yes	Yes	Yes
R-squared	0.405	0.208	0.151	0.150	0.078
Number of Obs.	17,438	17,438	4,087	6,347	6,733

Notes Panels A and B present estimation results from regressing systematic risk on CCI and CSR_S, and its interaction term between CCI and controversial industry dummy (CONIND) and CSR_S and CONIND over the period of 2002-2012. Systematic risk is a CAPM beta of individual stocks in current year, based on daily stock returns. CCI is a measure of the firm level of corporate community involvement performance and CSR_S is the society index of firm obtained from Thomson Reuters ASSET4.

***, **, and * stand for statistical significance at the 1, 5, and 10% level, respectively.

Table 8 Alternative dependent variable: Total risk

			Total risk		
	(1) Full Sample	(2) Full Sample	(3) Asia-Pacific Region	(4) Europe	(5) North America
CONIND		0.039***	0.014	0.039***	0.044***
		(4.38)	(0.85)	(2.62)	(2.99)
CSR * CONIND		-0.051***	-0.019	-0.059***	-0.046**
		(-4.26)	(-0.69)	(-3.04)	(-2.38)
CSR	-0.043***	-0.038***	-0.009	-0.042***	-0.057***
	(-8.98)	(-7.70)	(-1.12)	(-4.63)	(-6.74)
Leverage	0.067***	0.067***	0.115***	0.069***	0.039***
	(7.70)	(7.67)	(9.31)	(4.36)	(2.73)
ROE	-0.105***	-0.105***	-0.149***	-0.114***	-0.083***
	(-15.01)	(-15.05)	(-6.67)	(-10.63)	(-8.42)
Ln TA	-0.017***	-0.017***	-0.023***	-0.014***	-0.020***
	(-16.46)	(-16.15)	(-11.91)	(-8.16)	(-10.96)
Market to Book	-0.002***	-0.002***	-0.001**	0.001	-0.009***
	(-6.01)	(-6.04)	(-2.40)	(-0.20)	(-5.99)
CAPEX/TA	0.029***	0.017*	0.003	-0.019	0.030**
	(3.14)	(1.71)	(0.09)	(-1.20)	(2.01)
R&D/TA	0.264***	0.270***	0.449***	0.183***	0.299***
	(7.88)	(8.03)	(6.39)	(3.07)	(6.19)
Ln GDP	-0.076***	-0.076***	0.028	-0.044*	-0.449
	(-5.37)	(-5.35)	(0.72)	(-1.82)	(-1.02)
GDP Growth	0.001	0.001	-0.001	-0.005***	0.001
	(0.93)	(0.93)	(-0.75)	(-3.25)	(0.03)
Intercept Term	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	No	No	No	No
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Robust Standard Error	Yes	Yes	Yes	Yes	Yes
R-squared	0.374	0.375	0.444	0.378	0.382
Number of Obs.	17,438	17,438	4,087	6,347	6,733

Notes This table shows estimation results from regressing total risk on CSR and its interaction term between CSR and controversial industry dummy (CONIND) over the period of 2002-2012. Total risk is the standard deviation of daily stock returns over a one-year period. CSR is a measure of the firm level of CSR performance obtained from Thomson Reuters ASSET4.

***, **, and * stand for statistical significance at the 1, 5, and 10% level, respectively.

Table 9 Principal components analysis (PCA)

			Systematic risk		
	(1) Full Sample	(2) Full Sample	(3) Asia-Pacific Region	(4) Europe	(5) North America
CONIND		0.028**	0.029	0.020	0.080***
		(-4.29)	(0.99)	(1.00)	(3.65)
PCA_CSR * CONIND		-0.024***	-0.020	-0.029**	-0.022*
		(2.15)	(-1.08)	(-2.49)	(-1.70)
PCA_CSR	-0.014***	-0.012***	0.001	-0.013***	-0.020***
	(-5.47)	(-3.11)	(0.00)	(-2.65)	(-3.73)
Leverage	0.178***	-0.039	0.197***	-0.139***	-0.134***
	(7.04)	(-1.58)	(4.97)	(-3.50)	(-3.22)
ROE	-0.158***	-0.214***	-0.170***	-0.168***	-0.157***
	(-10.15)	(-12.53)	(-3.47)	(-7.21)	(-10.67)
Ln TA	0.012***	-0.001	0.001	0.022***	-0.054***
	(3.52)	(-0.25)	(0.22)	(4.33)	(-8.37)
Market to Book	-0.001	-0.004***	-0.002	-0.005	-0.009**
	(-1.15)	(-3.33)	(-1.54)	(-1.30)	(-2.49)
CAPEX/TA	0.029	0.056*	-0.046	-0.007	0.010
	(0.86)	(1.95)	(-0.60)	(-0.16)	(0.21)
R&D/TA	-0.027	0.597***	1.168***	-0.071	0.515***
	(-0.16)	(5.09)	(5.28)	(-0.39)	(3.01)
Ln GDP	-0.430***	-0.466***	-0.085	0.054	-0.539
	(-11.31)	(-10.97)	(-0.57)	(0.74)	(-0.65)
GDP Growth	0.008***	0.008***	-0.007*	-0.013***	-0.015
	(4.38)	(4.26)	(-1.69)	(-3.28)	(-0.29)
Intercept Term	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	No	No	No	No
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Robust Standard Error	Yes	Yes	Yes	Yes	Yes
R-squared	0.405	0.208	0.151	0.150	0.089
Number of Obs.	17,438	17,438	4,087	6,347	6,733

Notes This table presents principal components analysis (PCA) results for 17,438 firm-year observations over the period of 2002-2012. Systematic risk is a CAPM beta of individual stocks in current year, based on daily stock returns. PCA_CSR is principal component of the corporate governance, environmental, and social indices.

***, **, and * stand for statistical significance at the 1, 5, and 10% level, respectively.

Table 10 Weighted least squares (WLS) for sample composition bias

			Systematic risk		
	(1) Full Sample	(2) Full Sample	(3) Asia-Pacific Region	(4) Europe	(5) North America
CONIND		0.097***	0.088*	0.118***	0.136***
		(3.83)	(1.92)	(2.85)	(3.18)
CSR * CONIND		-0.147***	-0.089	-0.182***	-0.137**
		(-3.79)	(-1.05)	(-3.06)	(-2.03)
CSR	-0.072***	-0.038**	-0.007	-0.054**	-0.068**
	(-5.05)	(-2.53)	(-0.29)	(-2.15)	(-2.46)
Leverage	0.173***	-0.041*	0.180***	-0.134***	-0.085**
	(7.83)	(-1.80)	(4.58)	(-3.69)	(-2.18)
ROE	-0.161***	-0.219***	-0.192***	-0.175***	-0.234***
	(-13.67)	(-16.54)	(-5.14)	(-8.97)	(-11.12)
Ln TA	0.014***	0.001	0.003	0.021***	-0.045***
	(4.22)	(0.26)	(0.43)	(4.12)	(-7.45)
Market to Book	-0.001	-0.003**	-0.002*	-0.005*	-0.023***
	(-0.71)	(-2.49)	(-1.66)	(-1.65)	(-6.01)
CAPEX/TA	0.026	0.051**	-0.032	-0.019	0.055
	(0.98)	(2.06)	(-0.63)	(-0.45)	(1.45)
R&D/TA	-0.012	0.579***	1.094***	-0.068	0.639***
	(-0.09)	(5.47)	(4.41)	(-0.40)	(3.88)
Ln GDP	-0.419***	-0.442***	-0.098	0.048	-0.002
	(-11.30)	(-10.61)	(-0.88)	(0.65)	(-0.01)
GDP Growth	0.007***	0.007***	-0.008**	-0.013***	-0.001
	(3.69)	(3.38)	(-2.07)	(-3.28)	(-0.22)
Intercept Term	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	No	No	No	No
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Robust Standard Error	Yes	Yes	Yes	Yes	Yes
R-squared	0.399	0.204	0.148	0.151	0.071
Number of Obs.	17,438	17,438	4,087	6,347	6,733

Notes This table presents weighted least squares (WLS) results for 17,438 firm-year observations over the period of 2002-2012. Systematic risk is a CAPM beta of individual stocks in current year, based on daily stock returns. CSR is a measure of the firm level of CSR performance obtained from Thomson Reuters ASSET4. ***, **, and * stand for statistical significance at the 1, 5, and 10% level, respectively.

Table 11 Three-stage least squares (3SLS) and two-stage least squares (2SLS)

Panel A. Three-stage least squares (3SLS)

	Systematic risk				
	(1) Full Sample	(2) Full Sample	(3) Asia-Pacific Region	(4) Europe	(5) North America
CONIND		0.108***	0.099**	0.096**	0.122***
		(4.09)	(2.05)	(2.23)	(2.86)
CSR * CONIND		-0.151***	-0.140	-0.151**	-0.126*
		(-3.70)	(-1.56)	(-2.44)	(-1.87)
CSR	-0.201***	-0.046*	0.040	-0.122***	-0.080***
	(-7.45)	(-1.91)	(1.58)	(-3.00)	(-2.90)
Leverage	0.160***	-0.035	0.198***	-0.145***	-0.095**
	(7.17)	(-1.54)	(5.05)	(-4.00)	(-2.42)
ROE	-0.149***	-0.217***	-0.167***	-0.166***	-0.235***
	(-12.52)	(-16.32)	(-4.29)	(-8.59)	(-11.21)
Ln TA	0.028***	-0.003	-0.002	0.028***	-0.043***
	(6.20)	(-0.69)	(-0.32)	(4.70)	(-6.99)
Market to Book	-0.001	-0.004***	-0.002**	-0.005*	-0.019***
	(-1.00)	(-3.18)	(-1.97)	(-1.68)	(-5.01)
CAPEX/TA	0.019	0.054**	-0.059	-0.014	0.062
	(0.70)	(2.22)	(-1.06)	(-0.35)	(1.64)
R&D/TA	0.098	0.584***	1.030***	-0.047	0.709***
	(0.69)	(5.48)	(4.26)	(-0.28)	(4.30)
Ln GDP	-0.444***	-0.464***	-0.083	0.052	-0.687
	(-11.63)	(-10.60)	(-0.66)	(0.71)	(-0.77)
GDP Growth	0.007***	0.009***	-0.007*	-0.013***	-0.018
	(3.87)	(3.99)	(-1.74)	(-3.20)	(-0.33)
Intercept Term	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	No	No	No	No
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
First-Stage F-stat	0.000	0.000	0.000	0.000	0.000
R-squared	0.402	0.207	0.147	0.149	0.077
Number of Obs.	17,438	17,438	4,087	6,347	6,733

Panel B. Two-stage least squares (2SLS)

	(1) Full Sample	(2) Full Sample	(3) Asia-Pacific Region	(4) Europe	(5) North America
			Systematic risk		
CONIND		0.155***	0.139**	0.113**	0.178***
		(4.60)	(2.16)	(2.15)	(3.13)
CSR * CONIND		-0.179***	-0.179	-0.149**	-0.149*
		(-3.69)	(-1.61)	(-2.10)	(-1.78)
CSR	-0.135***	-0.077***	0.049	-0.117***	-0.112**
	(-5.42)	(-3.01)	(1.27)	(-2.71)	(-2.49)
Leverage	0.194***	-0.033	0.211***	-0.133***	-0.073
	(7.64)	(-1.25)	(4.44)	(-3.37)	(-1.59)
ROE	-0.141***	-0.208***	-0.192***	-0.184***	-0.218***
	(-10.64)	(-13.45)	(-3.94)	(-8.93)	(-8.62)
Ln TA	0.011**	-0.007*	0.001	0.022***	-0.052***
	(2.52)	(-1.69)	(0.00)	(3.50)	(-6.74)
Market to Book	-0.004**	-0.008***	-0.006***	-0.004	-0.025***
	(-2.20)	(-4.13)	(-2.76)	(-0.71)	(-5.03)
CAPEX/TA	0.016	0.052*	-0.073	0.034	0.044
	(0.48)	(1.71)	(-1.01)	(0.69)	(0.92)
R&D/TA	-0.174	0.226*	1.470***	-0.712***	0.325*
	(-1.06)	(1.86)	(5.07)	(-4.01)	(1.67)
Ln GDP	-0.362***	-0.409***	-0.734***	0.018	-0.810
	(-7.69)	(-7.30)	(-3.56)	(0.23)	(-1.31)
GDP Growth	0.008***	0.009***	-0.014**	-0.009**	-0.009
	(3.76)	(3.54)	(-2.54)	(-2.08)	(-0.56)
Intercept Term	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	No	No	No	No
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
First-Stage F-stat	0.000	0.000	0.000	0.000	0.000
R-squared	0.447	0.212	0.204	0.155	0.073
Number of Obs.	12,208	12,208	2,612	4,685	4,796

Notes Panels A and B present 3SLS and 2SLS results from regressing systematic risk on CSR and its interaction term between CSR and controversial industry dummy (CONIND) over the period of 2002-2012. Systematic risk is a CAPM beta of individual stocks in current year, based on daily stock returns. CSR is a measure of the firm level of CSR performance obtained from Thomson Reuters ASSET4.

***, **, and * stand for statistical significance at the 1, 5, and 10% level, respectively.

Table 12 Granger causality between the change in CSR (PCA_CSR) and the changes in systematic risk

Dependent Variable	$\triangle CSR_t$	$\triangle$Systematic risk$_t$	$\triangle$ PCA_CSR$_t$	$\triangle$Systematic risk$_t$
Equations	(1)	(2)	(3)	(4)
$\triangle$Systematic risk$_{t-1}$	0.005	-0.382***	0.022	-0.383***
	(1.61)	(-41.18)	(1.16)	(-41.21)
$\triangle$Systematic risk$_{t-2}$	0.004	-0.172***	0.028	-0.172***
	(1.50)	(-19.87)	(1.59)	(-19.87)
$\triangle CSR_{t-1}$	-0.205***	**-0.117***		
	(-22.71)	**(-4.57)**		
$\triangle CSR_{t-2}$	-0.039***	**0.013**		
	(-4.48)	**(0.53)**		
$\triangle$ PCA_CSR$_{t-1}$			-0.237***	**-0.022***
			(-26.00)	**(-4.95)**
$\triangle$ PCA_CSR$_{t-2}$			-0.053***	**0.001**
			(-5.97)	**(0.26)**
$\triangle$ Leverage	-0.194***	0.015	-1.384***	0.014
	(-9.09)	(0.25)	(-11.25)	(0.23)
$\triangle$ ROE	0.031***	-0.018	0.243***	-0.019
	(7.20)	(-1.46)	(9.64)	(-1.55)
$\triangle$ Ln TA	0.072***	0.055***	0.447***	0.056***
	(10.45)	(2.78)	(11.21)	(2.82)
$\triangle$ Market to Book	-0.001	-0.002	-0.003	-0.002
	(-0.21)	(-1.34)	(-0.98)	(-1.37)
$\triangle$ CAPEX/TA	-0.032*	-0.177***	-0.155	-0.174***
	(-1.75)	(-3.36)	(-1.45)	(-3.30)
$\triangle$ R&D/TA	-0.131	0.129	-0.593	0.129
	(-0.90)	(0.31)	(-0.70)	(0.31)
$\triangle$ Ln GDP	0.069***	0.089**	0.431***	0.092**
	(4.92)	(2.25)	(5.34)	(2.30)
$\triangle$ GDP Growth	-0.002***	-0.002**	-0.012***	-0.002**
	(-6.78)	(-2.11)	(-6.73)	(-2.13)
R-squared	0.077	0.153	0.101	0.154
Number of Obs.	9,830	9,830	9,830	9,830

Notes The first difference approach is used to estimate the model.
The figures are in bold type if Granger causality test is statistically significant at the 5% level or lower.
***, **, and * stand for statistical significance at the 1, 5, and 10% level, respectively.

Table 13 Additional control variable: Hedging with derivatives (HEDGDERI)

			Systematic risk		
	(1) Full Sample	(2) Full Sample	(3) Asia-Pacific Region	(4) Europe	(5) North America
CONIND		0.108***	0.095*	0.111**	0.123**
		(3.77)	(1.89)	(2.38)	(2.56)
CSR* CONIND		-0.147***	-0.137	-0.157**	-0.133**
		(-3.62)	(-1.47)	(-2.48)	(-1.97)
CSR	-0.071***	-0.034**	0.038	-0.060**	-0.073***
	(-4.84)	(-2.16)	(1.48)	(-2.26)	(-2.59)
Leverage	0.182***	-0.032	0.201***	-0.135***	-0.087**
	(7.17)	(-1.29)	(5.08)	(-3.39)	(-1.99)
ROE	-0.161***	-0.218***	-0.176***	-0.168***	-0.235***
	(-10.31)	(-12.76)	(-3.60)	(-7.25)	(-8.82)
Ln TA	0.011***	0.001	-0.003	0.031***	-0.039***
	(2.96)	(0.11)	(-0.39)	(5.56)	(-6.23)
Market to Book	-0.001	-0.004***	-0.002	-0.005	-0.020***
	(-1.19)	(-3.44)	(-1.59)	(-1.15)	(-5.18)
CAPEX/TA	0.030	0.062**	-0.050	-0.006	0.080*
	(0.88)	(2.12)	(-0.64)	(-0.14)	(1.76)
R&D/TA	-0.032	0.572***	1.053***	-0.070	0.702***
	(-0.19)	(4.86)	(4.74)	(-0.39)	(3.97)
HEDGDERI	0.005	-0.025***	-0.012	-0.031***	-0.039***
	(1.40)	(-5.90)	(-0.64)	(-6.01)	(-4.47)
Ln GDP	-0.430***	-0.463***	-0.081	0.040	-0.662
	(-11.30)	(-10.92)	(-0.54)	(0.55)	(-0.74)
GDP Growth	0.008***	0.009***	-0.007	-0.013***	-0.021
	(4.41)	(4.39)	(-1.63)	(-3.22)	(-0.39)
Intercept Term	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	No	No	No	No
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Robust Standard Error	Yes	Yes	Yes	Yes	Yes
R-squared	0.405	0.209	0.151	0.154	0.080
Number of Obs.	17,438	17,438	4,087	6,347	6,733

Notes This table presents regression results after including hedging with derivatives (HEDGDERI) as additional control variables. Systematic risk is a CAPM beta of individual stocks in current year, based on daily stock returns. CSR is a measure of the firm level of CSR performance obtained from Thomson Reuters ASSET4. ***, **, and * stand for statistical significance at the 1, 5, and 10% level, respectively.

Referee only table 1 (but not in the main text): Regressions of systematic risk and total risk of sinful industries on CSR

	Systematic risk		Total risk	
	(1)	(2)	(3)	(4)
SININD		0.104*		0.066***
		(1.65)		(3.61)
CSR * SININD		-0.539***		-0.159***
		(-5.89)		(-6.03)
CSR	-0.072***	-0.041***	-0.037***	-0.040***
	(-4.86)	(-2.66)	(-7.60)	(-8.42)
Leverage	0.181***	-0.021	0.134***	0.068***
	(7.16)	(-0.85)	(14.53)	(7.82)
ROE	-0.160***	-0.213***	-0.090***	-0.104***
	(-10.29)	(-12.57)	(-13.51)	(-14.91)
Ln TA	0.012***	-0.005	-0.015***	-0.017***
	(3.24)	(-1.32)	(-13.14)	(-16.42)
Market to Book	-0.001	-0.004***	-0.002***	-0.002***
	(-1.20)	(-3.29)	(-5.06)	(-6.01)
CAPEX/TA	0.029	0.082***	0.009	0.027***
	(0.87)	(3.03)	(0.72)	(2.99)
R&D/TA	-0.032	0.541***	0.050	0.261***
	(-0.20)	(4.60)	(0.97)	(7.79)
Ln GDP	-0.430***	-0.466***	-0.067***	-0.077***
	(-11.31)	(-11.00)	(-4.97)	(-5.42)
GDP Growth	0.008***	0.009***	0.001	0.001
	(4.42)	(4.36)	(0.87)	(0.94)
Intercept Term	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	No	Yes	No
Year Fixed Effects	Yes	Yes	Yes	Yes
Robust SE	Yes	Yes	Yes	Yes
R-squared	0.405	0.210	0.468	0.376
Number of Obs.	17,438	17,438	17,438	17,438

Notes This table presents estimation results from regressing systematic risk or total risk on CSR and its interaction term between CSR and sinful industry dummy over the period of 2002-2012. Systematic risk is a CAPM beta of individual stocks in current year, based on daily stock returns. Total risk is the standard deviation of daily stock returns over a one-year period. Sinful industries include alcohol, tobacco, and gambling. CSR is a measure of the firm level of CSR performance obtained from Thomson Reuters ASSET4.

***, **, and * stand for statistical significance at the 1, 5, and 10% level, respectively.

Referee only table 2 (but not in the main text): Financial system development

	Systematic risk					
	Asia-Pacific Region		Europe		North America	
	Top 10 financial system development	Top 15 financial system development	Top 10 financial system development	Top 15 financial system development	Top 10 financial system development	Top 15 financial system development
CONIND	0.134**	0.118**	0.153**	0.129**	0.118**	0.118**
	(2.34)	(2.06)	(2.33)	(2.44)	(2.46)	(2.46)
CSR * CONIND	-0.215*	-0.285**	-0.278***	-0.199***	-0.120*	-0.120*
	(-1.91)	(-2.52)	(-3.19)	(-2.83)	(-1.78)	(-1.78)
CSR	0.095***	0.068**	-0.119***	-0.066**	-0.071**	-0.071**
	(3.11)	(2.36)	(-2.96)	(-2.01)	(-2.47)	(-2.47)
Leverage	0.202***	0.191***	-0.133**	-0.203***	-0.097**	-0.097**
	(4.49)	(4.37)	(-2.49)	(-4.38)	(-2.21)	(-2.21)
ROE	-0.147**	-0.158***	-0.113***	-0.153***	-0.221***	-0.221***
	(-2.39)	(-2.74)	(-4.13)	(-6.02)	(-8.32)	(-8.32)
Ln TA	-0.01	-0.001	0.029***	0.022***	-0.050***	-0.050***
	(-1.34)	(-0.13)	(3.93)	(3.65)	(-7.95)	(-7.95)
Market to Book	0.001	0.005	-0.023**	-0.010*	-0.055***	-0.055***
	(0.13)	(1.36)	(-2.30)	(-1.94)	(-7.54)	(-7.54)
CAPEX/TA	-0.018	-0.047	0.075	0.063	0.061	0.061
	(-0.19)	(-0.50)	(1.09)	(1.16)	(1.33)	(1.33)
R&D/TA	1.125***	1.036***	0.076	-0.073	0.871***	0.871***
	(4.30)	(4.12)	(0.31)	(-0.37)	(4.87)	(4.87)
Ln GDP	0.207	-0.099	-0.128	-0.032	-0.001	-0.001
	(1.19)	(-0.62)	(-1.33)	(-0.38)	(-0.03)	(-0.03)
GDP Growth	-0.007	-0.003	-0.003	-0.007	-0.039***	-0.039***
	(-0.95)	(-0.44)	(-0.27)	(-1.06)	(-6.09)	(-6.09)
Intercept Term	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Robust Standard Error	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.161	0.144	0.133	0.139	0.070	0.070
Number of Obs.	3,184	3,477	3,285	4,895	6,647	6,647

Notes This table presents estimation results from regressing systematic risk on CSR and its interaction term between CSR and controversial industry dummy (CONIND) by financial market development. Systematic risk is a CAPM beta of individual stocks in current year, based on daily stock returns. CSR is a measure of the firm level of CSR performance obtained from Thomson Reuters ASSET4. ***, **, and * stand for statistical significance at the 1, 5, and 10% level, respectively.

Referee only table 3 (but not in the main text)

Panel A Regressions of total risk on corporate community involvement (CCI)

			Total risk		
	(1) Full Sample	(2) Full Sample	(3) Asia-Pacific Region	(4) Europe	(5) North America
CONIND		0.100***	-0.049	0.108***	0.109***
		(4.92)	(-0.97)	(3.11)	(3.76)
CCI * CONIND		-0.175***	0.104	-0.199***	-0.181***
		(-4.67)	(1.15)	(-3.12)	(-3.41)
CCI	-0.119***	-0.104***	-0.056***	-0.107***	-0.135***
	(-9.69)	(-8.26)	(-2.65)	(-5.25)	(-6.04)
Leverage	0.068***	0.068***	0.116***	0.068***	0.044***
	(7.87)	(7.89)	(9.34)	(4.33)	(3.05)
ROE	-0.106***	-0.107***	-0.149***	-0.116***	-0.086***
	(-15.31)	(-15.38)	(-6.71)	(-10.85)	(-8.76)
Ln TA	-0.019***	-0.019***	-0.022***	-0.016***	-0.022***
	(-19.51)	(-19.24)	(-11.94)	(-10.92)	(-13.34)
Market to Book	-0.002***	-0.002***	-0.001**	-0.001	-0.009***
	(-5.93)	(-5.92)	(-2.34)	(-0.12)	(-6.03)
CAPEX/TA	0.031***	0.019*	0.005	-0.011	0.032**
	(3.35)	(1.91)	(0.19)	(-0.71)	(2.18)
R&D/TA	0.240***	0.246***	0.466***	0.162***	0.258***
	(7.24)	(7.39)	(6.85)	(2.70)	(5.44)
Ln GDP	-0.074***	-0.074***	0.025	-0.042*	-0.500
	(-5.17)	(-5.17)	(0.65)	(-1.77)	(-1.14)
GDP Growth	0.001	0.001	-0.001	-0.005***	0.004
	(1.00)	(1.01)	(-0.77)	(-3.31)	(0.16)
Intercept Term	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	No	No	No	No
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Robust Standard Error	Yes	Yes	Yes	Yes	Yes
R-squared	0.374	0.375	0.444	0.378	0.382
Number of Obs.	17,438	17,438	4,087	6,347	6,733

Panel B Regressions of total risk on society (CSR_S)

			Total risk		
	(1) Full Sample	(2) Full Sample	(3) Asia-Pacific Region	(4) Europe	(5) North America
CONIND		0.044***	0.017	0.040**	0.043***
		(5.28)	(1.05)	(2.54)	(3.49)
CSRC * CONIND		-0.063***	-0.024	-0.059***	-0.053***
		(-5.25)	(-0.92)	(-2.81)	(-2.92)
CSRC	-0.037***	-0.031***	-0.006	-0.039***	-0.044***
	(-8.34)	(-6.90)	(-0.92)	(-4.36)	(-5.54)
Leverage	0.070***	0.070***	0.116***	0.072***	0.044***
	(8.05)	(8.04)	(9.36)	(4.56)	(3.09)
ROE	-0.107***	-0.107***	-0.150***	-0.117***	-0.087***
	(-15.36)	(-15.42)	(-6.80)	(-10.83)	(-8.79)
Ln TA	-0.018***	-0.018***	-0.023***	-0.015***	-0.021***
	(-17.68)	(-17.27)	(-12.45)	(-8.86)	(-11.55)
Market to Book	-0.002***	-0.002***	-0.001**	-0.001	-0.009***
	(-5.94)	(-5.93)	(-2.40)	(-0.11)	(-5.89)
CAPEX/TA	0.029***	0.015	0.002	-0.017	0.030**
	(3.19)	(1.50)	(0.08)	(-1.06)	(1.99)
R&D/TA	0.259***	0.265***	0.443***	0.182***	0.285***
	(7.72)	(7.87)	(6.35)	(3.03)	(5.90)
Ln GDP	-0.074***	-0.074***	0.028	-0.040*	-0.466
	(-5.21)	(-5.21)	(0.71)	(-1.69)	(-1.07)
GDP Growth	0.001	0.001	-0.001	-0.005***	0.002
	(1.02)	(1.06)	(-0.75)	(-3.26)	(0.09)
Intercept Term	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	No	No	No	No
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Robust Standard Error	Yes	Yes	Yes	Yes	Yes
R-squared	0.374	0.375	0.444	0.377	0.380
Number of Obs.	17,438	17,438	4,087	6,347	6,733

Notes Panel A and B present estimation results from regressing total risk on CCI (CSR_S) and its interaction term between CCI (CSR_S) and controversial industry dummy (CONIND) over the period of 2002-2012. Total risk is the standard deviation of daily stock returns over a one-year period. CCI is a measure of the firm level of corporate community involvement performance and CSR_S is the society index of firm obtained from Thomson Reuters ASSET4.

***, **, and * stand for statistical significance at the 1, 5, and 10% level, respectively.

Referee only table 4 (but not in the main text): Regressions of total risk on CSR after including hedging with derivatives (HEDGDERI)

	Total risk				
	(1) Full Sample	(2) Full Sample	(3) Asia-Pacific Region	(4) Europe	(5) North America
CONIND		0.039***	0.014	0.037**	0.044***
		(4.34)	(0.86)	(2.52)	(2.99)
CSR* CONIND		-0.051***	-0.020	-0.055***	-0.047**
		(-4.18)	(-0.74)	(-2.84)	(-2.40)
CSR	-0.043***	-0.038***	-0.008	-0.043***	-0.057***
	(-8.97)	(-7.70)	(-1.05)	(-4.70)	(-6.69)
Leverage	0.067***	0.067***	0.115***	0.069***	0.039***
	(7.71)	(7.68)	(9.29)	(4.37)	(2.75)
ROE	-0.104***	-0.105***	-0.149***	-0.114***	-0.083***
	(-14.99)	(-15.04)	(-6.68)	(-10.59)	(-8.42)
Ln TA	-0.017***	-0.017***	-0.022***	-0.013***	-0.020***
	(-15.50)	(-15.30)	(-11.56)	(-7.00)	(-10.77)
Market to Book	-0.002***	-0.002***	-0.001**	0.001	-0.009***
	(-6.01)	(-6.04)	(-2.43)	(-0.09)	(-6.02)
CAPEX/TA	0.029***	0.017*	0.002	-0.018	0.031**
	(3.19)	(1.75)	(0.08)	(-1.16)	(2.03)
R&D/TA	0.264***	0.270***	0.444***	0.184***	0.298***
	(7.88)	(8.03)	(6.32)	(3.07)	(6.18)
HEDGDERI	-0.002	-0.002	-0.008	-0.004**	-0.002
	(-1.31)	(-1.17)	(-1.43)	(-2.37)	(-0.49)
Ln GDP	-0.076***	-0.076***	0.028	-0.045*	-0.448
	(-5.37)	(-5.35)	(0.72)	(-1.89)	(-1.02)
GDP Growth	0.001	0.001	-0.001	-0.005***	0.001
	(0.94)	(0.94)	(-0.69)	(-3.22)	(0.02)
Intercept Term	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	No	No	No	No
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Robust Standard Error	Yes	Yes	Yes	Yes	Yes
R-squared	0.405	0.209	0.151	0.154	0.080
Number of Obs.	17,438	17,438	4,087	6,347	6,733

Notes This table presents regression results after including hedging with derivatives (HEDGDERI) as additional control variables. Total risk is the standard deviation of daily stock returns over a one-year period. CSR is a measure of the firm level of CSR performance obtained from Thomson Reuters ASSET4.

***, **, and * stand for statistical significance at the 1, 5, and 10% level, respectively.