# CORPORATE SOCIAL RESPONSIBILITY AS A DEFENSE AGAINST KNOWLEDGE SPILLOVERS: EVIDENCE FROM THE INEVITABLE DISCLOSURE DOCTRINE

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September 2018

## ABSTRACT

We examine whether companies respond to the threat of knowledge spillovers by strategically increasing their engagement in corporate social responsibility (CSR). To obtain exogenous variation in the threat of knowledge spillovers, we exploit a natural experiment provided by the rejection of the inevitable disclosure doctrine (IDD) by several U.S. states. Using a difference-in-differences methodology we find that, following the rejection of the IDD, companies significantly increase their CSR. Our proposed rationale is that CSR helps mitigate knowledge spillovers by i) reducing employees' propensity to join a rival firm, and ii) reducing employees' propensity to disclose the firm's valuable knowledge *even if* they join a rival firm. Evidence from a laboratory experiment, an online experiment, and a survey of knowledge workers is supportive of these arguments.

Keywords: knowledge spillovers; corporate social responsibility; inevitable disclosure doctrine; difference-in-differences.

**INTRODUCTION**

A firm's ability to innovate and adapt to changes in the business environment is essential for firm survival and for sustaining a competitive advantage (e.g., Eisenhardt and Martin, 2000; Flammer and Ioannou, 2018; Helfat *et al*., 2007; Teece, Pisano, and Shuen, 1997). As such, employee know-how is a key source of sustainable competitive advantage (e.g., Barney, 1991; Hall, 1993). Yet, it also represents a major managerial challenge, as employees with valuable knowledge are the most likely ones to walk out the door (Coff, 1997; Ganco, Ziedonis, and Agarwal, 2015; Kacperczyk, 2012), taking their valuable knowledge with them to join rival firms or create new ventures. This may lead to inter-firm knowledge spillovers, resulting in a potential loss of a firm's proprietary knowledge to rivals (Agarwal, Ganco, and Ziedonis, 2009; Almeida and Kogut, 1999; Rosenkopf and Almeida, 2003). Given that these spillovers may undermine a firm's competitive advantage (Campbell *et al*., 2012), understanding how firms respond to such threats is of central importance to strategic management, innovation, and entrepreneurship (for a review, see Agarwal, Gambardella, and Olson, 2014).

Despite its importance, the relationship between the risk of losing knowledge to rivals and firm strategy is not well understood. The focus of scholarly attention has been on legal barriers and financial incentives (e.g., Agarwal *et al.*, 2009; Carnahan, Agarwal, and Campbell, 2012; Ganco *et al.*, 2015; Gilson, 1999; Kim and Marschke, 2005; Marx, 2011; Marx, Strumsky, and Fleming, 2009), but much less is known about non-pecuniary incentives and their role in mitigating the threat of knowledge appropriation by competitors. This study advances the extant literature by identifying one such strategic response: a firm's engagement in corporate social responsibility

(CSR), defined as attention to the interests of non-financial stakeholders (Freeman, 1984).[1]

We propose that firms counter the threat of knowledge spillovers by strategically increasing their engagement in CSR. The underlying arguments are that CSR helps mitigate knowledge spillovers in two ways: i) by reducing knowledge workers' propensity to join a rival firm (i.e., they are less likely to "walk" out the door), and ii) by reducing knowledge workers' propensity to disclose the firm's valuable knowledge *even if they join* a rival firm (i.e., they are less likely to "talk").

We substantiate these arguments by conducting a large-scale survey of knowledge workers. The majority of respondents agreed that CSR helps retain valuable knowledge in these two ways— that is, i) CSR practices decrease knowledge workers' willingness to join a rival firm, and ii) *even if they do*, CSR practices decrease the risk that they disclose the firm's valuable knowledge to the new employer. Overall, this survey provides supportive evidence for the arguments underlying our prediction that firms use CSR as a strategic tool to counter the threat of knowledge appropriation by rivals.

We then examine whether companies increase their CSR in response to the threat of knowledge spillovers. From an empirical perspective, it is difficult to establish a causal link between the threat of knowledge spillovers and firms' strategic use of CSR. For example, a negative relationship between firms' CSR practices and the risk of knowledge spillovers may be spurious if such a relationship is driven by unobserved firm characteristics that affect both a firm's propensity to increase CSR and its exposure to knowledge spillovers. This concern is especially

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[1] As such, CSR includes any corporate initiative pertaining to the firm's stakeholders, that is, "any group or individual who can affect or is affected by the achievement of an organization's purpose" (Freeman, 1984, p. 53)—such as employees, customers, the environment, and the community at large—and hence is not limited to philanthropic initiatives. For a similar definition see, e.g., Barnett and Salomon (2006), Flammer and Bansal (2017), and Graves and Waddock (2000).

acute as firm-level attributes such as managerial talent, while difficult to observe, are likely to drive both a firm's investments in stakeholder initiatives and knowledge workers' propensity to disclose proprietary knowledge to rivals. Accordingly, leveraging a research design that provides a clean causal estimate is central to ruling out alternative explanations.

To overcome this empirical challenge, we exploit a quasi-natural experiment provided by the staggered rejection of the inevitable disclosure doctrine by several U.S. states between 1991 and 2013. This doctrine prevents employees with valuable know-how from working for a competitor in the immediate future, as they would inevitably disclose their current employer's trade secrets. As such, the inevitable disclosure doctrine provides employers with a strong mechanism to reduce knowledge spillovers by decreasing inter-firm mobility of knowledge workers (e.g., Gilson, 1999; Png and Samila, 2015), as the mere possibility of trade secret disclosure is sufficient for this doctrine to apply (i.e., no actual disclosure needs to have occurred). By focusing on the *rejection* of the inevitable disclosure doctrine—which weakens the protection of a firm's proprietary knowledge—we are able to test whether companies strategically react to an increased threat of knowledge spillovers by increasing their CSR.

Using a difference-in-differences methodology, we find that following the rejection of the inevitable disclosure doctrine, companies significantly increased their CSR, as measured by the Kinder, Lydenberg, and Domini (KLD) index of CSR performance. This result holds for various types of CSR—including employee-related CSR, as well as CSR related to the environment and society at large. These findings withstand a large number of robustness checks. Overall, our results are consistent with the argument that CSR is used as a strategic tool to counter the threat of knowledge spillovers.

Finally, we supplement our findings with evidence obtained from two experimental

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vignette studies, one conducted in a laboratory setting, and another conducted on the online labor-sourcing platform Amazon Mechanical Turk. In both experiments, we randomly assigned subjects to hypothetical employers that either engaged or did not engage in CSR practices. Subjects were then told that they moved to a rival firm and faced the decision of whether to disclose their previous employer's valuable knowledge (in the form of a client list). We find that subjects exposed to the CSR treatment (i.e., their previous employer engaged in CSR) were significantly less likely to disclose proprietary knowledge to their new employer. This lends additional support to our argument that CSR reduces employees' propensity to disclose the firm's valuable knowledge upon joining a rival firm.

This study integrates and contributes to several streams of literature. In particular, it highlights a novel mechanism—corporate social responsible practices—that firms use as a defense against knowledge spillovers. Moreover, by documenting that the threat of knowledge spillovers induces firms to increase their CSR, our study sheds light on an unexplored antecedent of CSR. In the following, we develop the theoretical arguments, describe the methodology, present the results, and conclude.

**HYPOTHESIS DEVELOPMENT**

**Strategic importance of preventing knowledge spillovers**

The strategy literature has long argued that the ability to innovate and adapt to changes in the business environment is critical for firm survival and for sustaining a competitive advantage (e.g., Eisenhardt and Martin, 2000; Flammer and Ioannou, 2018; Helfat *et al.,* 2007; Teece *et al.,* 1997). Moreover, and in the spirit of the resource-based view of the firm, achieving and sustaining a competitive advantage critically depends on the firm's ability to protect its valuable and rare resources from imitation by competing firms (e.g., Barney, 1991; Mahoney and Pandian, 1992;

Rumelt, 1984). As such, a firm's employee know-how is a key source of sustained competitive advantage (e.g., Hall, 1993). This know-how is particularly valuable if it is firm-specific as it is not tradable or applicable outside the focal firm, making it difficult for competing firms to imitate (Coff, 1997; Dierickx and Cool, 1989; Grant, 1996; Kogut and Zander, 1992).

Yet, employee know-how that is also of value to competing companies offers no such protective shield, as employees with valuable knowledge can walk out the door to join a rival firm or create a new venture (Coff, 1997; Ganco *et al*., 2015; Kacperczyk, 2012, 2013; Starr, Balasubramanian, and Sakakibara, 2018), taking their knowledge away from the focal firm to the new employer. Moreover, competing firms may actively poach employees with valuable knowledge to gain access to the focal firm's knowledge sources and technological expertise (*Businessweek,* 2000; Rao and Drazin, 2002; Stern and James, 2016). Both can have dire consequences for the focal firm as they facilitate technological knowledge transfer (e.g., Agarwal *et al.*, 2014; Almeida and Kogut, 1999; Rosenkopf and Almeida, 2003; Song, Almeida, and Wu, 2003) and enhance the rival firm's product innovation (Rao and Drazin, 2002). In sum, the departure of employees whose know-how is also valuable to competing companies—whether rival established firms or entrepreneurial ventures—increases the risk of knowledge spillovers and represents a significant threat to the company's competitiveness (Campbell *et al*., 2012; Phillips, 2002; Wezel, Cattani, and Pennings, 2006).[2] Accordingly, understanding how firms respond to the threat of knowledge spillovers lies at the core of strategic management.

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[2] This detrimental effect of inter-firm knowledge spillovers on the focal firm is in sharp contrast to the positive effect knowledge spillovers can have on entrepreneurial activity (e.g., Agarwal, Audretsch, and Sarkar, 2010; Agarwal *et al*., 2004; Burton, Sørensen, and Beckman, 2002; Chatterji, 2009; Gambardella and Giarratana, 2010), geographic clustering of industries (e.g., Audretsch and Feldman, 1996; Berchicci, King, and Tucci, 2011), and growth in industries, regions, and economies (e.g., Agarwal, Audretsch, and Sarkar, 2007; Grossman and Helpman, 1991).

**Companies' strategic responses to the threat of knowledge spillovers**

The managerial challenge of countering the threat of knowledge spillovers has spurred a large literature in management, economics, and psychology. But despite this long research inquiry, little is known about whether firms engage in CSR to counter the risk of knowledge spillovers. First, the majority of studies have focused on institutional factors—such as the inevitable disclosure doctrine, non-compete covenants, and patent enforcement. This line of research suggests that institutional barriers play an important role in reducing the risk of knowledge appropriation by rival firms (e.g., Agarwal *et al.*, 2009; Ganco *et al.*, 2015; Gilson, 1999; Kim and Marschke, 2005; Marx, 2011; Marx *et al.*, 2009; Png and Samila, 2015).

Another line of research focuses on firm's use of pecuniary incentives to prevent the loss of valuable knowledge (e.g., Bloom and Michel, 2002; Carnahan *et al.*, 2012).[3] Finally, a burgeoning literature suggests that firms use non-pecuniary incentives in order to manage knowledge workers. In particular, Gambardella, Kashabi, and Panico (2015) and Gambardella, Panico, and Valentini (2015) highlight the role of autonomy in incentivizing knowledge workers. Relatedly, Stern (2004) shows that scientists are less sensitive to monetary incentives, and are even willing to forgo monetary benefits for the discretion in choosing which research projects to pursue.

We complement this body of literature by examining the role of relationship-based initiatives—such as social responsible practices—and propose that firms strategically engage in CSR as a defense against the risk of knowledge appropriation by rival firms. Specifically, we argue that firms respond to an increased threat of knowledge spillovers by improving their CSR practices, as such practices are likely to influence knowledge workers' loyalty and their propensity to

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[3] For a discussion of the limitations of pecuniary incentives, see Akerlof and Kranton (2005), Gibbons (1998), Larkin and Pierce (2015), Prendergast (1999).

disclose valuable knowledge *even if* they move to a rival firm. In the following, we elaborate on these arguments.

**The two-fold effect of CSR on knowledge workers: decrease in 'walking' and 'talking'**

In this section, we argue that CSR can mitigate the risk of knowledge spillovers by reducing knowledge workers' propensity to i) join a rival firm (i.e., they are less likely to "walk" out the door), and ii) disclose the firm's valuable knowledge even if they join a rival firm (i.e., they are less likely to "talk").

*CSR and knowledge workers' propensity to 'walk'*

We first turn our attention to the effect of CSR on the risk that knowledge workers leave for a competitor. There is accumulated evidence by now that, by engaging in CSR, firms can reduce employees' concerns and improve the overall reputation of the firm as a workplace. Indeed, recent surveys suggest that the perception of a firm's CSR practices—such as higher environmental management and product standards, philanthropic activities, global citizenship, etc.—is a key driver of how individuals feel about a company and strongly influences their willingness to work for it (*Forbes,* 2013; McKinsey, 2009; Reputation Institute, 2015; World Economic Forum, 2003).[4] Moreover, stakeholder orientation is found to spur knowledge creation and innovation as it promotes a secure work environment that is conducive to experimentation and enhances the satisfaction of employees and other stakeholders (Flammer and Kacperczyk, 2016). This likely further augments the firm's attractiveness as innovative workplace for knowledge workers, and

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[4] Several senior executives commented on the growing interest that top graduates are showing in their company's social practices and values. For example, Vernon Ellis of Accenture stated that "young people increasingly want to be associated with an organization that is making a difference in the wider world. And many also want to use their skills in making a contribution themselves." Jim Copeland, former CEO of Deloitte, further comments that "[a]ttracting and retaining high calibre professionals is imperative, making our responsibility to our people even more important. The best professionals in the world want to work in organizations in which they can thrive. And, they want to work for companies that exhibit good corporate citizenship" (World Economic Forum, 2003, p. 19).

attenuates competitors' ability to poach employees and appropriate valuable know-how.

Relatedly, CSR practices can improve the attractiveness of the work content, thereby enhancing knowledge workers' propensity to stay with their current employer. In line with this argument, Bode, Singh, and Rogan (2015) and Carnahan, Kryscynski, and Olson (2017) show that firms that engage their employees in social initiatives are better able to retain them.[5] More generally, corporate social commitment—such as engaging knowledge workers in pro bono work, encouraging employee participation in philanthropic endeavors, and producing environmental-friendly and fair-trade products—allows employees to have (direct or indirect) social and environmental impact. In turn, this may positively influence knowledge workers' decision to stay with the firm, thereby decreasing the risk of knowledge spillovers.

*CSR and knowledge workers' propensity to 'talk'*

The previous arguments suggest that CSR can mitigate knowledge spillovers by reducing knowledge workers' propensity to "walk." In addition, CSR might reduce knowledge workers' propensity to "talk"—that is, *even if* they choose to join a rival firm, knowledge workers might be less inclined to disclose their previous employer's valuable knowledge. The rationale is that CSR practices might enhance knowledge workers' social ties and identification with the firm, thereby reducing their willingness to undermine the previous employer.[6]

The argument that CSR may strengthen employees' identification with the firm echoes well with the extant literature. In particular, prior work argues that employees infer from firms'

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[5] Moreover, evidence from the previous literature suggests that firms that engage employees in philanthropic activities and are perceived as being fair and caring are better able to attract (e.g., Albinger and Freeman, 2000; Greening and Turban, 2000; Turban and Greening, 1996) and promote talented employees (e.g., Burbano, Mamer, and Snyder, 2018).

[6] Note that the arguments provided in this section are interrelated, as the previous two arguments—CSR improving i) the firm's reputation and ii) attractiveness of the work content—can contribute to employees' identification with the firm (thereby decreasing the propensity to 'talk'). Similarly, stronger identification with the firm can enhance knowledge workers' propensity to stay at their current employer (thereby decreasing the propensity to 'walk').

CSR engagement whether the managers and the organization are fair-minded on an individual, group, and universal level (Aguilera *et al*., 2007) and evaluate whether the firm's attitudes fit with individuals' identity (Kim *et al*., 2010). If they fit, then employees develop a sense of belonging and their actions align with organizational interests as reflected in, e.g., stronger organizational commitment and improved citizenship behavior (Flammer and Luo, 2017; Rupp *et al*., 2006). Conversely, if they do not fit, then employees may separate from their employer and sort into firms that match with their own identity. In this vein, empirical evidence suggests that by managing employee relations and group demography, companies are able to foster social integration and job satisfaction (Dimarco, 1975; Jackson *et al*., 1991; O'Reilly, Caldwell, and Barnett, 1989; O'Reilly and Chatman, 1986). Moreover, in controversial industries, employees show greater organizational trust and identification with their company if it engages in environmental-friendly efforts (De Roeck and Delobbe, 2012). Overall, these studies suggest that CSR practices can strengthen employees' social ties and identification with the firm. Accordingly, we expect that, when firms engage in CSR, knowledge workers are less likely to disclose the firm's valuable knowledge *even if* they join a rival firm.

**Survey evidence**

To substantiate the above arguments, we conduct a large-scale survey of knowledge workers. See Appendix A for details on the survey design and precise wording of the questions.

For all survey questions, we asked respondents to agree or disagree with the proposed statements, using a standard 6-point Likert scale ranging from *Strongly Disagree* (= 1) to *Strongly Agree* (= 6). Table 1 summarizes the responses to our questions.[7] Panel (A) provides the responses to the preliminary questions. First, nearly all survey respondents (83%) stated that they

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[7] Respondent characteristics are provided in Table A1.

are currently working or have previously worked as employees with access to a firm's trade secrets.[8] Moreover, 98% of respondents agreed that it is important for a firm to put in place practices that aim to retain workers with access to a firm's trade secrets, with a mean response of 5.3 out of 6. The mean is statistically different from the neutral mid-point response of 3.5 at all conventional significance levels ($p = 0.000$).

------Insert Table 1 about here------

Panel (B) then reports the answers to the questions about the use of CSR as a means of reducing knowledge spillovers. First, 95% agreed that socially-responsible practices can enhance knowledge workers' appreciation of their current employment (with a mean response of 5.0 out of 6), and 93% agreed that socially responsible practices can improve the firm's ability to retain knowledge workers (with a mean response of 4.9 out of 6). Moreover, respondents generally agreed that CSR practices help differentiate the company from other firms (91% with a mean response of 4.6); improve the overall reputation of the company (97% with a mean response of 5.0); allow employees to have a positive impact on society and the natural environment (92% with a mean response of 4.9); and help strengthen workers' loyalty to the company (89% with a mean response of 4.7). Importantly, the majority of participants (64% with a mean response of 3.9) agreed that CSR practices decrease the risk that knowledge workers disclose a firm's unique and valuable knowledge *even if* they choose to leave the company and work for the rival firm. For all these responses the mean was statistically different from the neutral mid-point response of 3.5 at all conventional significance levels ($p = 0.000$).

Finally, Panel (C) reports the answers to questions pertaining to a hypothetical scenario, in which respondents were told that a legislative change was about to increase the threat of knowledge

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[8] For this reason, we refer to this survey as a survey of "knowledge workers." The results are similar if we exclude the 17% respondents who reported not having access to trade secrets.

spillovers. The respondents agreed that, in order to counter the threat of knowledge spillovers, they would a) increase non-salary work/life benefits (91% with a mean response of 4.7); b) offer more authority and employee involvement (93% with a mean response of 4.9); c) improve the firm's policies to support minorities (75% with a mean response of 4.1); d) improve the work environment in terms of health safety, recreational facilities, sports, and wellness offerings (88% with a mean response of 4.6); e) provide employees with the opportunity to devote some of their work time to environmental/social initiatives (74% with a mean response of 4.1); f) increase the firm's engagement in local communities (70% with a mean response of 4.0); g) increase the firm's efforts to be eco-friendly (69% with a mean response of 3.9); and h) improve the firm's relations with customers (86%; with a mean response of 4.6). Again, we note that for all these responses, the mean was statistically different from the neutral mid-point response of 3.5 at all conventional significance levels ($p = 0.000$).

Overall, the survey evidence is consistent with the arguments proposed above: CSR practices are perceived to mitigate the threat of knowledge spillovers in two ways—knowledge workers are less inclined to join rival firms and, *even if they do*, they are less likely to disclose the firm's valuable knowledge to their new employer.[9] The evidence further indicates that a broad set of CSR policies (not just employee-related CSR programs) are perceived to be effective.

**Corporate social responsibility as strategic response to the threat of knowledge spillovers**

The above arguments—along with the survey evidence—suggest that CSR practices mitigate the risk of knowledge spillovers in two ways: i) knowledge workers are less likely to join a rival firm (i.e., they are less likely to "walk"), and ii) *even if they do*, they are less likely to disclose the firm's

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[9] All results are similar if we restrict the sample to respondents who indicated that they currently work in a managing role (CEO, executive, or manager—about 59% of the respondents) and hence have the actual ability to implement CSR policies.

valuable knowledge to their new employer (i.e., they are less likely to "talk"). Hence, when the risk of knowledge spillovers increases, we expect companies to strategically increase their engagement in CSR practices.

It is this two-fold effect on knowledge workers' loyalty that sets CSR apart from other management practices, which also aim to prevent knowledge spillover. Numerous practices—such as increasing the legal protection of intellectual property through patenting (Kim and Marschke, 2005), establishing a reputation for toughness in patent enforcement (Agarwal *et al.*, 2009), signing non-compete agreements (Marx, 2011; Marx *et al.*, 2009), and enhancing pecuniary incentives (e.g., Carnahan *et al.*, 2012)—allow firms to reduce knowledge spillovers through decreased mobility of knowledge workers. Yet, many knowledge workers still leave for rival firms, and inter-firm mobility tends to be higher amongst those whose know-how is also valuable to competing companies (e.g., Ganco *et al.*, 2015; Marx *et al.*, 2009). Therefore, shielding against knowledge spillovers also requires that firms reduce employees' propensity to disclose valuable knowledge in case they do join a competitor. Unlike other tools, CSR practices mitigate such disclosure risk by enhancing knowledge workers' social ties and identification with the firm, thereby decreasing the risk that they would disclose the firm's valuable knowledge upon joining a competitor. Moreover, CSR programs are firm-specific and arguably less easily imitable by other companies than pecuniary incentives, thus allowing the focal firm to align employees' interests with organizational goals without directly allocating rents to their employees. Accordingly, firms are likely to consider social responsible practices as a way to counteract the threat of losing valuable knowledge. We thus expect companies to strategically increase their CSR when faced with an increased threat of knowledge spillovers.

> *Hypothesis 1: Companies respond to an increase in the threat of knowledge spillovers by increasing their corporate social engagement.*

**DATA AND METHODOLOGY**

**Data and variable definitions**

*Inevitable disclosure doctrine*

Empirically, it is difficult to estimate how the threat of knowledge spillovers affects companies' decisions to invest in CSR. For instance, one could regress companies' CSR on some measure of exposure to knowledge spillovers. Yet, such regression is subject to a classic endogeneity problem, i.e. unobservable firm characteristics may drive a spurious relationship between the two. For example, it could be that management quality—which is difficult to observe—drives both CSR decisions *and* knowledge workers' propensity to disclose valuable firm knowledge. To rule out such alternative explanations, it is necessary to leverage a research design that provides exogenous shifts in the threat of knowledge spillovers—such exogenous shifts would allow us to estimate the causal effect of the threat of knowledge spillovers on firms' strategic use of CSR. The specific source of exogenous variation we exploit in this paper is the rejection of the inevitable disclosure doctrine.

The inevitable disclosure doctrine prevents employees with valuable know-how from working for a competitor in the immediate future as they would "inevitably disclose" their current employer's trade secrets. A "trade secret" is information or knowledge—which may include a formula, pattern, compilation, program, device, method, technique, or process—that is i) not generally known; ii) cannot be easily figured out by those who want to know it; iii) derives actual or potential economic value (because it is not broadly known); and iv) requires reasonable efforts to keep it from becoming broadly known (see, e.g., Kahnke and Bundy, 2013).[10] Trade secrets can

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[10] See Uniform Trade Secrets Act §1(4), 14 U.L.A. 619 (1985) for the legal definition of a trade secret.

range from high-tech information (such as chemical formulas, manufacturing techniques, product design, and technical data) to relatively low-tech information (such as client lists, business leads, marketing strategies, pricing schedules, and sales techniques) and account for a substantive part of firms' intangible assets (Thomas, 2014). On average, trade secrets are estimated to make up two-thirds of the value of firms' intangible assets, and up to 80% for companies in knowledge-intensive sectors. In absolute terms, this translates into an estimated $5 trillion worth of trade secrets for publicly traded U.S. companies (U.S. Chamber of Commerce, 2014). Precisely because of their value, trade secrets are prone to misappropriation, which most often involves insiders—typically employees or contractors—who are given access to sensitive information (*The Economist*, 2013). The rise of computer technology, ubiquity of cell phones, and the Internet have made misappropriating trade secrets easier and, conversely, increased the managerial difficulty of keeping trade secrets safe (Thomas, 2014). Indeed, researchers have found that the value of trade secrets is particularly high in industries where the rate of inter-firm mobility is high (Castellaneta, Conti, and Kacperczyk, 2017).

A number of legal tools aim to mitigate the risk of trade secret disclosure and imitation by rival firms: U.S. patent law, the Uniform Trade Secret Act, non-compete covenants, and the doctrine of inevitable disclosure.[11] The latter, much like a non-compete covenant, severely restricts the mobility of employees in order to protect companies from unintended knowledge spillovers and economic losses. Yet, unlike non-compete covenants and other legal tools, the inevitable disclosure doctrine does not require i) a specific contract signed by employees, nor ii) an actual misappropriation of confidential information. The mere possibility of trade secret disclosure is

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[11] By its very nature, information disclosed in a published patent is not a secret anymore. Yet, patent law grants the patent holder the exclusive right to exclude others from making, using, importing, and selling the patented innovation for a limited period of time (see United States Code Title 35 U.S.C.A. § 154(a)).

sufficient for this doctrine to apply.

In inevitable disclosure cases, courts issue an injunction prohibiting the employee from going to work for a competitor. The case in point is PepsiCo, Inc. v. Redmond, 54 F.3d 1262 (7th Cir. 1995):

> While in upper management at PepsiCo, Redmond signed a confidentiality agreement but not a non-compete agreement. After he left PepsiCo for a similar job at Quaker, PepsiCo sought to enjoin him from assuming his duties or divulging trade secrets, which concerned mainly strategic sales, marketing, logistics and financial information. Considering the similarity of positions, competitive landscape, timing of departure, and Redmond's previous work conduct, the court ruled that Redmond's new employment "would inevitably lead him to disclose trade secrets." (See, e.g., Kahnke and Bundy (2013) for further details.)

As this case illustrates, the inevitable disclosure doctrine provides employers with a legal tool to prevent employees from working for another company without proving that the individual disclosed any trade secret or even threatened to do so. As such, this doctrine provides employers with a mechanism to severely restrict knowledge workers' mobility and hence knowledge spillovers (e.g., Gilson, 1999; Kahnke and Bundy, 2013; Png and Samila, 2015).

In this study, we focus on the *rejection* of the inevitable disclosure doctrine by U.S. states. This rejection occurs when a state court rules that the doctrine is not enforceable in the state. By rejecting the doctrine, states remove an important mobility restriction for workers with valuable knowledge, and hence facilitate knowledge appropriation by rivals. Since the rejection of the inevitable disclosure doctrine does not reflect any firm's strategic decision, it offers plausibly exogenous variation in a firm's exposure to knowledge spillovers. This allows us to test whether companies react to an increased threat of knowledge spillovers by strategically increasing their CSR engagement. By the year 2013 (the end of our sample), a total of 14 states in the U.S. had rejected the inevitable disclosure doctrine. Table A2 lists all 14 states along with the rejection years

(and the relevant cases). This list is adapted from Kahnke, Bundy, and Liebman (2008) and Kahnke and Bundy (2013), and is updated with recent court rulings.[12]

In the ideal experiment, states would "randomly" reject the inevitable disclosure doctrine. In reality, however, rejecting the doctrine is not random—it may depend on, e.g., changes in economic conditions and political pressures (see Kahnke and Bundy, 2013). These, in turn, may affect firms' decisions to invest in CSR. In the methodology section, we discuss the political economy of the "treatments" and describe how our difference-in-differences specification helps address this potential issue.

*Data sources and sample selection*

To construct our sample, we merge the KLD database with Standard & Poor's Compustat. The KLD database contains annual ratings of companies' social and environmental performance from 1991 onward; Compustat contains accounting information and additional firm-level information (such as industry classification, state of location, etc.) for U.S. public companies. We exclude observations with missing accounting information, as well as companies located outside of the U.S. Using these selection criteria, we obtain a final sample of 30,216 firm-year observations from 1991-2013.

*Dependent variable*

The CSR data are obtained from the KLD database. KLD is an independent social choice investment advisory firm that compiles ratings on the extent to which companies address the needs of their stakeholders. For each stakeholder group, strengths and concerns are measured to evaluate

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[12] We are grateful to lawyers Randall Kahnke, Kerry Bundy, and Ken Liebman from the trade secret practice of Faegre Baker Daniels LLP for sharing their insights on the inevitable disclosure doctrine. Note that a 15th state, Louisiana, rejected the inevitable disclosure doctrine in 1967. This rejection year precedes our sample period and hence is not pertinent to our analysis.

positive and negative aspects of corporate actions toward stakeholders. These ratings are compiled from multiple data sources, including annual questionnaires sent to companies' investor relations offices, firms' financial statements, annual and quarterly reports, general press releases, government surveys, and academic publications (see KLD, 2010). KLD ratings are widely used in CSR studies (see Chatterji *et al.*, 2016).

We construct the composite KLD-index by summing up the number of KLD strengths with respect to employees, customers, the natural environment, and communities.[13] In the analysis, we also consider subindices based on specific stakeholder groups.

One caveat of the KLD-index—and, more generally, any CSR rating—is that it is subject to measurement error, as it is difficult to accurately measure CSR (e.g., Chatterji *et al.*, 2016; Chatterji, Levine, and Toffel, 2009; Delmas and Blass, 2010). This measurement error is unlikely to bias our results, though—intuitively, there is no reason to expect a systematic relationship between measurement error in the KLD-index and state courts' rejection of the inevitable disclosure doctrine. In addition, in auxiliary analysis, we show that our results are robust if we use Thomson Reuters' ASSET4 index of social and environmental performance in lieu of the KLD-index, thereby following Chatterji *et al.*'s (2016) advice to use more than one measure of CSR to minimize potential issues of measurement error.

*Control variables*

In our analysis, we control for a set of firm-level characteristics that may affect a firm's social engagement, all of which are obtained from Compustat. *Size* is the natural logarithm of the book

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[13] In addition to CSR strengths, the KLD database also contains a list of CSR weaknesses, labeled "concerns." Accordingly, an alternative approach is to construct a "net" KLD-index by subtracting the number of concerns from the number of strengths. In robustness checks, we show that our results are similar if we use this net KLD-index instead.

value of total assets. *Return on assets* (ROA) is the ratio of operating income before depreciation to the book value of total assets. *Tobin's Q* is the ratio of the market value of total assets (obtained as the book value of total assets plus the market value of common stock minus the sum of the book value of common stock and balance sheet deferred taxes) to the book value of total assets. *Leverage* is the ratio of debt (long-term debt plus debt in current liabilities) to the book value of total assets. *Cash holdings* is the ratio of cash and short-term investments to the book value of total assets. To mitigate the impact of outliers, all ratios are winsorized at the $1^{st}$ and $99^{th}$ percentiles of their empirical distribution.

*Summary statistics*

In Table A3, we present descriptive statistics for the main variables used in this paper, as well as the corresponding correlation matrix. We note the positive correlation between the KLD-index and firm size (51.1%), which underlines the need to control for size in our regressions.

**Methodology**

*Difference-in-differences*

To examine whether firms increase their CSR following the rejection of the inevitable disclosure doctrine, we use a difference-in-differences methodology based on the 14 treatments listed in Table A2. Our methodology follows Bertrand and Mullainathan's (2003) application of the difference-in-differences methodology in the presence of staggered treatments at the state level. Specifically, we estimate the following regression:

$$KLD_{it} = \alpha_i + \alpha_j \times \alpha_t + \alpha_r \times \alpha_t + \beta \times IDD_{st} + \gamma' \mathbf{X}_{it} + \varepsilon_{it}, \tag{1}$$

where $i$ indexes firms; $t$ indexes years; $j$ indexes 2-digit SIC industries; $s$ indexes states of location; $r$ indexes Census regions; $\alpha_i$ are firm fixed effects; $\alpha_j \times \alpha_t$ are industry by year fixed effects; and

$\alpha_r \times \alpha_t$ are region by year fixed effects, respectively.[14] *KLD* is the dependent variable of interest. *IDD* is the "treatment dummy"—i.e., a dummy variable that equals one if the company is located in a state that has rejected the inevitable disclosure doctrine by year $t$.[15,16] **X** is the vector of control variables, which includes size, ROA, Tobin's Q, leverage, and cash holdings. $\varepsilon$ is the error term. The regression is estimated by Ordinary Least Squares (OLS). We account for serial correlation of the error term by clustering standard errors at the state of location. The coefficient of interest is $\beta$, which measures the effect of the rejection of the inevitable disclosure doctrine on firms' CSR. Hypothesis 1 predicts that $\beta$ should be positive and significant.

In regression (1), $\alpha_i$ accounts for unobserved heterogeneity at the firm level. (Note that state fixed effects are subsumed by the firm fixed effects and hence need not be included.) The inclusion of $\alpha_j \times \alpha_t$ accounts for industry trends that may correlate with the treatment. Similarly, the inclusion of $\alpha_r \times \alpha_t$ account for any regional trend (e.g., regional economic booms) that may correlate with the rejection of the inevitable disclosure doctrine.[17] Finally, the controls account for differences in terms of size, profitability (ROA), investment opportunities (Tobin's Q) and financing (leverage and cash holdings).

Our identification strategy can be illustrated with a simple example. Suppose we want to measure the effect of Maryland's 2004 rejection of the inevitable disclosure doctrine on firms'

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[14] For the mapping of states to Census regions, see U.S. Census Bureau (1994, p. 6-24).

[15] The inevitable disclosure doctrine applies at the state of location (as opposed to the state of incorporation). To proxy for the state of location, we use the state of headquarters' location provided in Compustat. Doing so raises two measurement issues. First, Compustat only records the state of location for the latest available year and hence does not account for headquarters relocations. Second, the state of headquarters' location is an imperfect measure of employees' location—if some of the company's facilities are located in a different state, then employees at those facilities are subject to a different legal regime. In robustness checks, we address these measurement issues by using the data of Garcia and Norli (2012) on the state-level operations of companies based on their 10-K filings. Following the approach of Flammer and Luo (2017), we then show that our results are robust if we restrict the sample to the subset of firms that have at least 80% of their operations in the state in question ("geographically concentrated firms").

[16] Note that the control group includes all states that have not rejected the IDD—i.e., it includes states that have not ruled on the IDD, as well as states that have ruled in favor. In robustness checks, we consider several variations of the control group.

[17] Note that we cannot include state by year fixed effects since the treatment is at the state-year level.

CSR practices. We would compute the difference in the KLD-index post-2004 versus pre-2004 for companies located in Maryland ("treated firms"). Yet, other events may have happened around 2004, potentially influencing firms' social engagement. For example, there may have been an economy-wide boom that translates into higher profits and hence more resources available to invest in CSR after 2004. To account for such contemporaneous effects, we use a control group. For example, we could look at firms located in Pennsylvania ("control firms") and compute the corresponding difference in the KLD-index post-2004 versus pre-2004 (Pennsylvania did not reject the doctrine). Computing the *difference between these two differences* provides an estimate of the effect of Maryland's 2004 rejection of the inevitable disclosure doctrine on the KLD-index, controlling for contemporaneous changes in the KLD-index that are due to changes in economic conditions. The difference between this example and our regression specification is that the latter accounts for the fact that the rejection of the inevitable disclosure doctrine is staggered over time across states. It follows that the composition of both the treatment and control groups changes over time as more states are progressively treated.

**Validity of the identification strategy**

Our identification strategy needs to satisfy two requirements to be valid, i.e. the relevance condition and the exclusion restriction. First, the treatment (i.e., the rejection of the IDD) needs to trigger *relevant* changes in the threat of knowledge spillovers. Second, the treatment needs to be *exogenous* with respect to CSR. In the following, we discuss both requirements.

*Relevance condition*

To satisfy the relevance condition, the rejection of the IDD needs to bring about relevant changes in the risk of knowledge spillovers. Extant literature suggests that this is indeed the case (e.g., Gilson, 1999; Kahnke and Bundy, 2013; Png and Samila, 2015). In particular, Png and Samila

(2015) show that companies located in states that have rejected the inevitable disclosure doctrine experience a 10% increase in mobility of knowledge workers. This effect is comparable to—in fact, slightly stronger than—the effect of the rejection of non-compete agreements on knowledge workers' mobility. For example, Marx *et al.* (2009) find an 8% increase in inventors' mobility following Michigan's rejection of non-compete agreements. Overall, this indicates that the rejection of the inevitable disclosure doctrine triggers a substantial increase in knowledge workers' mobility and the threat of knowledge spillovers.

*Exclusion restriction*

Our identification strategy assumes that the rejection of the inevitable disclosure doctrine is exogenous with respect to firms' CSR practices. In the following, we discuss potential identification concerns and how our difference-in-differences specification helps address them.

*Lobbying.* A potential concern is that firms may lobby for the rejection of the inevitable disclosure doctrine, and hence the treatment would reflect a firm's choice. For instance, if firms that are considerate of their stakeholders' interests—that is, firms with high CSR—tend to (successfully) pressure courts to reject the doctrine, then our results would be driven by reverse causation. Nevertheless, this concern is mitigated for the following reasons. First, we search for qualitative evidence that would be indicative of this possibility. In particular, we search the *Lexis-Nexis* database for press releases mentioning that social responsible firms actively advocated the rejection of the doctrine. Not surprisingly, we find no such evidence. Second, to further rule out potential reverse causality concerns, we examine the dynamics of the treatment effect. If reverse causation explains our results, then we would expect that the rejection of the inevitable disclosure doctrine has a positive and significant "effect" already before the rejection occurs. However, we find no evidence for such pre-existing trends. Changes in CSR appear only *after* (not before or

contemporaneous with) the rejection of the doctrine (see the results section).

*Unobserved differences between treated and control firms.* Another potential concern is that treated and control firms may differ along unobservable characteristics, and that these differences may correlate with both CSR decisions and states' rejection of the inevitable disclosure doctrine. Nevertheless, this concern is unlikely to explain our results, for several reasons. First, as discussed above, we find no evidence of pre-existing trends. This suggests that treated and control firms are on similar trends prior to the treatment. Second, the inclusion of region by year fixed effects mitigates the potential concern that omitted local trends may confound our results. Third, to further address this point, we re-estimate our baseline regression including a large set of (time-varying) state-level controls that capture i) changes in the state's pro-social values, ii) changes in local economic conditions, and iii) other regulatory changes. We find that our results are robust (see Appendix B). Fourth, given the staggered nature of the treatments, the eventually treated firms are first in the control group, and only later in the treatment group (i.e., once they have been treated). This feature allows us to re-estimate our difference-in-differences specification using only the eventually treated firms—which means that the control group consists only of firms that are eventually treated (for a similar test see, e.g., Bertrand and Mullainathan, 2003; Flammer and Kacperczyk, 2016). When re-estimating our baseline specification using only the eventually treated firms, we find that our results are again robust (see Appendix B).

**RESULTS**

*Main results.* The main results are presented in columns (1)-(3) of Table 2. In all regressions, the dependent variable is the KLD-index. In column (1), the regression includes the treatment dummy (*IDD*), as well as firm and year fixed effects. In column (2), we also include industry × year and region × year fixed effects. In column (3), we further include control variables. As can be seen,

the coefficient of the treatment dummy is positive and significant in all three specifications. More specifically, it lies between 0.167 and 0.258 and is always significant at the 5% level (*p*-values ranging between 0.012 and 0.041). This implies that the rejection of the inevitable disclosure doctrine leads firms to increase their CSR by about 0.17-0.26 KLD strengths. While this effect may seem small in absolute terms, it is quite sizeable in relative terms. Since the average number of KLD strengths is 1.357 (see Table A3), it implies that companies increase their CSR by 13-19% following the rejection of the inevitable disclosure doctrine. Overall, these findings indicate that firms respond to the increased threat of knowledge spillovers by increasing their social engagement, which lends support to Hypothesis 1.

------Insert Table 2 about here------

*Dynamics.* In column (4), we inspect the dynamics of the treatment effect. To do so, we replace the treatment dummy with a set of four dummy variables indicating the year prior to the treatment (*IDD (–1)*), the year of the treatment (*IDD (0)*), the first year after the treatment (*IDD (1)*), and two or more years after the treatment (*IDD (2+)*). As is shown, the coefficient of *IDD (–1)* is small and insignificant, which confirms that there is no pre-existing trend in the data. The coefficient of *IDD (0)* is insignificant as well, that is, there is no effect in the year of the treatment either. In fact, as shown by the positive and significant coefficient of *IDD (1)*, it is only in the first year after the treatment that the effect becomes large and significant. This suggests that it takes about 12 to 24 months for the increased threat of knowledge spillovers to translate into improved CSR practices. Finally, the coefficient of *IDD (2+)* remains large and significant, which indicates that the increased threat of knowledge spillovers has a long-lasting effect on companies' social engagement.[18]

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[18] In Figure A1, we illustrate the dynamics of the treatment effect by plotting the average KLD-index in the treatment

*Stakeholder groups.* In columns (5)-(7), we decompose the KLD-index into three subindices pertaining to i) employees, ii) environment and communities, and iii) customers (i.e., product responsibility). We find that all three subindices increase following the treatment, suggesting that companies use a broad range of CSR practices to mitigate the threat of knowledge spillovers. More specifically, the effect is large and significant for employees (coefficient of 0.085, *p*-value = 0.065) as well as the environment and communities (coefficient of 0.075, *p*-value = 0.032), while it is somewhat smaller for customers (coefficient of 0.011, *p*-value = 0.317).

*ASSET4.* In Table A4, we re-estimate our baseline specification using Thomson Reuters' ASSET4 ratings (in lieu of the KLD-index).[19] ASSET4 rates companies along three dimensions ("pillars"): environmental issues, social issues, and corporate governance. In the analysis, we use the first two ratings (*environment score*, *social score*), along with the composite score that combines both ratings (*composite score*). As is shown, both the environment and social scores (as well as the composite score) increase significantly following the rejection of the inevitable disclosure doctrine, consistent with our findings based on KLD data.[20] In Table A5, we further refine this analysis by splitting *environment score* and *social score* into the underlying ten ASSET4 categories. Again, the results mirror those we obtained with the KLD data—the increase is large for the ASSET4 categories pertaining to employees (columns (1)-(4)), communities and society (columns (5)-(6)) and the environment (columns (8)-(10)), while it is somewhat smaller for

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group minus the average KLD-index in the control group three years before and after the rejection of the inevitable disclosure doctrine (the 95% confidence interval is reported within dashed lines). As can be seen, the pattern in Figure A1 mirrors the pattern in column (4) of Table 2—there is no pre-trend, the effect comes with a lag of 12 to 24 months, and it is somewhat persistent over time.

[19] Note that the sample drops to 5,112 firm-year observations due to the less comprehensive coverage of ASSET4, which starts in 2002 and covers fewer U.S. firms than the KLD data.

[20] ASSET4 ratings range from 0 to 100. The average social score is 50.8. Hence, the point estimate of 4.0 (*p*-value = 0.043) corresponds to an increase in the social score by 8.7%. Similarly, the average environment score is 46.1. Accordingly, the point estimate of 3.1 (*p*-value = 0.055) corresponds to an increase in the environment score by 6.7%.

customers (column (7)).[21] Overall, this finer analysis confirms that companies use several CSR levers in response to the threat of knowledge spillovers (not just employee-related CSR).

*Alternative explanations.* The results in Table 2 show that companies respond to the treatment by increasing their CSR, consistent with our arguments that CSR helps mitigate knowledge spillovers. There are other potential explanations, though. First, it could be that—due to the higher mobility of knowledge workers induced by the rejection of the IDD—companies find it less attractive to allocate resources to R&D and employee training. Instead, they would reallocate these resources to other projects such as CSR, which could explain our results. Nevertheless, we find no evidence in support of this alternative. As discussed above, in Table A5, we find that the ASSET4 component "workforce: training and development" increases (as opposed to decreases) following the treatment. Moreover, in Table A6, we re-estimate our baseline specification using R&D as dependent variable, defined as the ratio of R&D expenditures to sales (column (1)) and the ratio of R&D expenditures to total assets (column (2)), both winsorized at the 1st and 99th percentiles of their empirical distribution. We find no significant change in R&D spending following the treatment.[22] Second, it could be that companies increase CSR in order to attract new knowledge workers, in addition to retaining existing workers and preventing knowledge spillovers. Both are closely related—arguably, if CSR is effective at retaining workers and preventing knowledge spillovers, it may also be effective in attracting knowledge workers. In the next section,

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[21] The coefficient of IDD is significant for all four employee categories (*workforce: diversity and opportunities*; *workforce: employment quality*; *workforce: health and safety*; *workforce: training and development*) with *p*-values ranging from 0.006 to 0.087; it is significant for *society: community* (*p*-value = 0.096) and marginally insignificant for *society: human rights* (*p*-value = 0.115); it is insignificant for *customer: product responsibility* (*p*-value = 0.300); it is significant for *environment: emission reduction* and *environment: resource reduction* (with *p*-values of 0.059 and 0.052, respectively), and insignificant for *environment: product innovation* (*p*-value = 0.211).

[22] This need not imply that the rejection of the IDD does not affect innovation. In fact, Contigiani, Hsu, and Barankay (2018) show that the (citation-weighted) patent count decreases following the rejection of the IDD. Taken together, these results suggest that, while companies maintain their R&D budgets, they are less effective in converting their R&D into successful patents.

we conduct two experiments that provide direct evidence of the effectiveness of CSR to prevent knowledge spillovers. Hence, our results are unlikely to merely capture the "attracting new workers" role of CSR.

*Robustness and extensions.* Supplemental analyses are provided in the appendix. In Appendix B (and Table A7), we present a series of robustness checks.[23] In Appendix C (and Table A8), we explore the heterogeneity in the treatment effect.[24]

**EXPERIMENTAL EVIDENCE**

The results presented so far show that companies respond to the threat of knowledge spillovers by increasing their CSR engagement. As discussed above, our proposed rationale is that CSR helps mitigate knowledge spillovers by i) reducing employees' propensity to join a rival firm, and ii) reducing employees' propensity to disclose the firm's valuable knowledge *even if* they join a rival firm. In this section, we describe two experiments (a laboratory experiment and an online experiment) that shed light on the latter.

*Experiment design*

We conducted two experimental vignette studies.[25] The first one was conducted in the Behavioral Lab of Boston University's Questrom School of Business. A total of 148 students participated in

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[23] In particular, we show that our results are robust i) if we include a large set of time-varying state-level controls (capturing changes in the state's pro-social values, changes in local economic conditions, and regulatory changes such as the adoption of the Uniform Trade Secret Act (UTSA)); ii) if we use alternative control groups; iii) if we restrict the sample to the eventually treated companies; iv) if we restrict the sample to geographically concentrated companies; v) if we use alternative techniques to account for serial correlation (as in Bertrand, Duflo, and Mullainathan, 2004); and vi) if we use the "net" KLD-index that accounts for CSR concerns.

[24] We find that the treatment effect is stronger when the risk of knowledge spillover is higher. Specifically, we observe a larger treatment effect for companies that i) operate in states that have weaker enforcement of non-compete agreements (based on Starr's (2018) enforceability index), ii) are located closer to innovation hubs, as well as companies operating in industries that are iii) more R&D intensive, iv) more competitive, and v) have more attractive investment opportunities.

[25] A vignette study indicates a hypothetical situation to which research participants respond, thereby revealing their perceptions, values, social norms, or impressions of events. Experimental vignette studies are widely used in the social

this lab experiment. The second one was conducted using the online labor-sourcing platform Amazon Mechanical Turk. A total of 495 online workers currently employed in the U.S. and holding at least a bachelor degree participated in this online experiment.

The same script was used in both experiments. At the beginning, participants received a message describing their current employer. To obtain variation in the employer's engagement in CSR, we used four different variations of the employer's description, which we randomly assigned to the participants. We used two control groups and two treatment groups. The first control group received a generic company description with no reference to CSR ("baseline"). Both treatment groups received the same company description as in the baseline, but with supplemental information describing the company's CSR engagement. For the first treatment group, the CSR engagement was in terms of employees, while for the second treatment group it was in terms of the environment and communities. Finally, to account for the fact that, compared to the baseline, the treatment groups received more information, we used a second control group in which we supplemented the baseline company description with additional generic company information (such that the length and format of the supplemental generic information was similar to that of the supplemental CSR information used in the treatment groups). This second control group allowed us to rule out the possibility that our results may capture "more information" as opposed to "CSR information".[26]  See Table A9 for the phrasing of the four messages, as well as the complete script of the experiment.

In addition to the employer's description, all participants were told that "for this employer you were part of a small team that had developed an extensive client list (Client List A)—of current

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and behavioral sciences to assess attitudes, behaviors, and related constructs when experimental manipulation is unethical or impractical.

[26] See Burbano (2016) for a comparable setup.

and prospective clients—that is used for direct marketing purposes globally […] this client list is very valuable to the company and is a well-kept trade secret." The participants were further informed that their employer undertook considerable efforts to protect the client list (see Table A9 for details). Subjects were then told that they moved to a competitor in early 2018. Compared to the previous employer, the new employer was described as having a relatively short client list (Client List B). Participants were asked to launch a direct marketing campaign for the new employer by reaching out to current and potential clients. Participants were presented with three choices: they could email 1) Client List A, 2) Client List B, or 3) Client Lists A and B. Participants who selected "Client List B" were choosing not to disclose their previous employer's trade secret, whereas participants who selected either of the other two options were choosing to disclose their previous employer's valuable knowledge to the new employer.

*Results*

The results are presented in Table 3 (laboratory experiment) and Table 4 (online experiment). In Panel (A) of both tables, we compare the treated participants (pooling both treatment groups) versus the control participants (pooling both control groups).[27] In the lab experiment, we found that 43.7% of the treated subjects clicked on "Client List B," compared to 35.1% of the control subjects. The difference (8.6%) is significant at conventional statistical levels ($p$-value = 0.033). Similarly, in the online experiment, we found that 63.0% of the treated subjects clicked on "Client List B," compared to 46.9% of the control subjects. The difference (16.1%) is again statistically significant ($p$-value = 0.0003). These findings are consistent with our argument that CSR reduces employees' propensity to disclose the firm's valuable knowledge upon joining a competitor.

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[27] The randomization ensures that there is no systematic difference between treatment and control groups. To assess the randomization, we confirmed that participants' characteristics were balanced across groups.

------Insert Table 3 and Table 4 about here------

One potential concern is that subjects may not devote the necessary attention—e.g., participants may quickly browse through the text and pick an arbitrary answer—which would attenuate our results. To mitigate this issue, in Panel (B) of Tables 3 and 4, we restrict the samples to subjects who were more likely to pay attention. For the laboratory experiment, we focused on subjects whose time spent on the survey was above the median across all respondents ("attention criterion"). For the online experiment, we focused on subjects who passed an attention check— specifically, subjects who correctly remembered the firm's CSR engagement (or lack thereof), when asked at the end of the survey. We find that our results are indeed stronger in these subsamples.

In Panels (C) and (D) we repeat the analysis of Panels (A) and (B), respectively, decomposing the treatment and control groups into the four subgroups described above. A caveat of this analysis is that we have fewer observations per subgroup, which reduces the power of our tests. Nevertheless, we find that our results are generally robust regardless of which subgroups we consider—the percentage of participants choosing "Client List B" is always higher for treated participants (columns (3)-(4)) compared to control participants (columns (1)-(2)). In particular, in the most conservative specifications—that is, columns (2)-(4) of Panel (D) in Table 3, where we use the length-matched control group and apply the attention criterion—we find that treated participants based on CSR related to employees (and environment and communities, respectively) are 18.8% (and 17.5%, respectively) more likely to choose "Client List B," with a $p$-value of 0.036 (and 0.038, respectively). The pattern is again similar in Table 4. These findings indicate that various types of CSR (i.e., not just employee-related CSR) help mitigate the disclosure of valuable knowledge. This is consistent with our findings based on the rejection of the inevitable disclosure

doctrine. Overall, the results of these experiments provide supportive evidence that CSR reduces employees' propensity to disclose the firm's valuable knowledge *even if* they join a competitor.

Lastly, we caution that our experiments are subject to important limitations. First—and this is a common caveat of experiments—business school students and online workers need not be representative of the universe of knowledge workers, which may limit the external validity of the findings. Second, our evidence is based on a vignette study and therefore relies on hypothetical employers (as opposed to the participants' actual employers).

## DISCUSSION AND CONCLUSION

How do firms respond to the threat of knowledge spillovers? Answering this question is at the core of strategic management and has important implications for innovation, entrepreneurship, and strategic human capital. While the limelight of scholarly attention has been on legal mechanisms and pecuniary tools, a firm's strategic engagement in relationship-based practices as a defense against knowledge spillovers has remained largely unexplored. Our study aims to make ground on this question.

We propose that, when exposed to an increased threat of knowledge spillovers, firms strategically increase their CSR as a defense. The rationale is two-fold: employees of firms with higher CSR are less inclined to join rival firms (i.e., they are less likely to "walk" out the door) and, *even if they do*, they are less likely to disclose the firm's valuable knowledge to their new employer (i.e., they are less likely to "talk").

Our empirical strategy involves several steps, as we triangulate survey, observational, and experimental data. First, we conduct a large-scale survey of knowledge workers to substantiate our arguments that CSR practices are perceived to mitigate the threat of knowledge spillovers by reducing knowledge workers' propensity to i) join rival firms, and ii) disclose the firm's valuable

knowledge even if they join a rival firm.

We then leverage observational data to examine whether companies respond to the threat of knowledge spillovers by increasing their CSR. Specifically, we exploit a quasi-natural experiment provided by the rejection of the inevitable disclosure doctrine by several U.S. states. Since the doctrine prevents employees with valuable know-how from working for a competitor in the immediate future, its rejection leads to an increase in the risk of knowledge spillovers. Accordingly, by focusing on the rejection of the inevitable disclosure doctrine, we are able to test whether companies strategically increase their CSR in response to the increased threat of knowledge spillovers. Consistent with our prediction, we find that companies react to the rejection of the inevitable disclosure doctrine by significantly increasing their engagement in CSR. This suggests that CSR is used as a defense to counter the risk of knowledge spillovers.

Finally, we supplement our findings by conducting two experimental vignette studies: a laboratory experiment and an online experiment. In these experiments, we randomly assigned subjects to hypothetical employers that either engaged or did not engage in CSR. Subjects then joined a rival firm and faced the decision of whether to disclose their previous employer's proprietary knowledge. We find that employees whose previous employer engaged in CSR were less likely to disclose their previous employer's valuable knowledge. This provides direct evidence that CSR reduces employees' propensity to disclose the firm's valuable knowledge *even if* they choose to join a rival firm.

To the best of our knowledge, our study is the first to examine whether companies respond to the increased threat of knowledge spillovers by increasing their CSR. As such, this study contributes to the academic literature in several ways. First, it relates to the large body of work in management, economics, and psychology that examines how companies address the threat of

losing valuable know-how. In particular, a vibrant literature studies the impact of legal mechanisms—such as non-compete covenants, patent enforcement, and the inevitable disclosure doctrine—on employee mobility, knowledge spillovers, and imitation by rival firms (e.g., Agarwal *et al.*, 2009; Ganco *et al.*, 2015; Kim and Marschke, 2005; Marx, 2011; Marx *et al.*, 2009; Png and Samila, 2015). Absent such legal tools, however, companies need to find alternative ways to alleviate the threat of knowledge spillovers. Our study expands the existing literature and indicates that firms use CSR as a strategic management tool to mitigate the risk of knowledge spillovers.

Second, by identifying a management practice—specifically, firms' social responsible practices—that does not rely on pecuniary incentives to manage knowledge workers, we contribute to the literature on employee governance (e.g., Gallus and Frey, 2016; Gubler, Larkin, and Pierce, 2016; Larkin and Pierce, 2015; Wang, He, and Mahoney, 2009). In contrast to relationship-based practices, pecuniary incentives have been widely studied in the literature, with many scholars (e.g., Akerlof and Kranton, 2005; Gibbons, 1998; Larkin and Pierce, 2015; Prendergast, 1999) pointing at the drawbacks of pecuniary incentives and the need to go beyond them.

Third, our paper is related to the few but notable studies that examine how specific CSR practices affect employee behavior. In particular, Burbano (2016) shows that online workers are willing to settle for lower wages if their employer has a long tradition of charitable giving. Similarly, Bode *et al.* (2015) and Bode and Singh (2018) show that management consultants at a global consulting company are less likely to leave the company, and more willing to accept a pay cut, respectively, if they are given the opportunity to engage in pro bono work. Relatedly, Burbano (2017), Flammer (2015a), and Flammer and Luo (2017) show that CSR has a positive influence on employees' productivity. Our paper contributes to this literature by examining the relationship between firms' CSR practices and their efforts to prevent knowledge appropriation by rivals—it

shows that firms react to an increased risk of knowledge spillovers by strategically increasing their CSR as a defense. Our results further suggest that CSR helps mitigate knowledge spillovers in two ways: i) by reducing knowledge workers' propensity to join a rival firm, and ii) by reducing knowledge workers' propensity to disclose the firm's valuable knowledge *even if they choose to join a rival firm.*

Fourth, and more broadly, we contribute to the literature on the internal and external drivers of CSR activities, such as regulatory institutions (e.g., Fabrizio, 2012; Flammer, 2015b; Toffel, Short, and Ouellet, 2015), the community (e.g., Tilcsik and Marquis, 2013), activists (e.g., Baron, 2009; Baron and Diermeier, 2007; McDonnell and King, 2013; Zhang and Luo, 2013), and shareholders (e.g., Flammer, 2015a). Our study contributes to this line of work by highlighting a novel antecedent of CSR: the risk of losing proprietary knowledge.

Finally, our findings have important managerial implications as failing to retain employees with valuable knowledge can lead to inter-firm knowledge spillovers (Agarwal *et al.*, 2009; Almeida and Kogut, 1999; Rosenkopf and Almeida, 2003), declines in explorative and path-breaking R&D projects (Conti, 2014), and may ultimately undermine the competitive advantage of the focal firm (Campbell, Coff, and Kryscynski, 2012). As such, our findings indicate that managers of companies exposed to the threat of knowledge spillovers may find it worthwhile to devote enough resources to the design of CSR policies.

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# Table 1. Alumni survey

| | Mean | Median | Std. dev. | % agree | p-value (mean vs. mid-point) | p-value (% agree vs. 50%) |
|---|---|---|---|---|---|---|
| **Panel (A): Preliminary questions** | | | | | | |
| Had access to trade secrets (yes/no) | – | – | – | 82.7% | – | 0.000 |
| Important to retain workers with access to trade secrets | 5.3 (out of 6) | 5 | 0.78 | 97.9% | 0.000 | 0.000 |
| **Panel (B): General questions: In general, CSR …** | | | | | | |
| … enhances knowledge workers' appreciation of their current employment | 5.0 (out of 6) | 5 | 0.91 | 95.0% | 0.000 | 0.000 |
| … improves the firm's ability to retain knowledge workers | 4.9 (out of 6) | 5 | 0.98 | 92.6% | 0.000 | 0.000 |
| … helps differentiate the company from other employers | 4.6 (out of 6) | 5 | 0.98 | 90.5% | 0.000 | 0.000 |
| … improves the overall reputation of the company as a workplace | 5.0 (out of 6) | 5 | 0.83 | 96.8% | 0.000 | 0.000 |
| … allows employees to have a positive impact on society and the natural environment | 4.9 (out of 6) | 5 | 0.99 | 92.4% | 0.000 | 0.000 |
| … helps strengthen workers' loyalty to the company | 4.7 (out of 6) | 5 | 1.08 | 88.8% | 0.000 | 0.000 |
| … decreases the risk that knowledge workers disclose a firm's unique and valuable knowledge such as trade secrets even if they choose to leave the company to work for a rival firm | 3.9 (out of 6) | 4 | 1.28 | 63.8% | 0.000 | 0.000 |
| **Panel (C): Hypothetical scenarios: To mitigate the threat of knowledge spillovers, I would …** | | | | | | |
| … increase non-salary work/life benefits (e.g., flex time, child care, etc.) | 4.7 (out of 6) | 5 | 1.04 | 90.7% | 0.000 | 0.000 |
| … offer more authority and employee involvement | 4.9 (out of 6) | 5 | 0.95 | 93.4% | 0.000 | 0.000 |
| … improve the firm's policies to support minorities and other underrepresented groups | 4.1 (out of 6) | 4 | 1.20 | 74.7% | 0.000 | 0.000 |
| … improve the work environment | 4.6 (out of 6) | 5 | 1.00 | 88.3% | 0.000 | 0.000 |
| … provide the opportunity to devote some of the work time to environmental/social initiatives | 4.1 (out of 6) | 4 | 1.15 | 74.4% | 0.000 | 0.000 |
| … increase the firm's engagement in local communities | 4.0 (out of 6) | 4 | 1.14 | 70.0% | 0.000 | 0.000 |
| … increase the firm's efforts to be eco-friendly | 3.9 (out of 6) | 4 | 1.14 | 68.8% | 0.000 | 0.000 |
| … improve firm relations with customers | 4.6 (out of 6) | 5 | 1.10 | 86.3% | 0.000 | 0.000 |

*Notes.* Agreement is measured on a 6-point Likert scale ranging from *Strongly Disagree* (= 1) to *Strongly Agree* (= 6). "*p*-value (mean vs. mid-point)" indicates whether the mean is significantly higher than the neutral mid-point of 3.5; "*p*-value (% agree vs. 50%)" indicates whether the percentage of respondents agreeing with the statement is significantly higher than 50%. The precise wording of the questions is provided in Appendix A.

# Table 2. Main results

| Dependent variable | KLD-index | | | | KLD-index (employees) | KLD-index (environment & community) | KLD-index (customers) |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| IDD | 0.258 | 0.167 | 0.171 | | 0.085 | 0.075 | 0.011 |
| | (0.126) | (0.070) | (0.068) | | (0.046) | (0.035) | (0.011) |
| IDD (-1) | | | | -0.008 | | | |
| | | | | (0.060) | | | |
| IDD (0) | | | | 0.022 | | | |
| | | | | (0.072) | | | |
| IDD (1) | | | | 0.175 | | | |
| | | | | (0.092) | | | |
| IDD (2+) | | | | 0.285 | | | |
| | | | | (0.098) | | | |
| Size | | | 0.174 | 0.177 | 0.136 | 0.013 | 0.025 |
| | | | (0.076) | (0.075) | (0.048) | (0.031) | (0.007) |
| ROA | | | 0.079 | 0.081 | 0.138 | -0.057 | -0.003 |
| | | | (0.140) | (0.142) | (0.101) | (0.067) | (0.025) |
| Tobin's Q | | | -0.028 | -0.027 | -0.008 | -0.023 | 0.004 |
| | | | (0.017) | (0.017) | (0.015) | (0.007) | (0.003) |
| Leverage | | | 0.187 | 0.188 | 0.066 | 0.095 | 0.026 |
| | | | (0.114) | (0.114) | (0.068) | (0.057) | (0.027) |
| Cash | | | 0.444 | 0.450 | 0.173 | 0.233 | 0.039 |
| | | | (0.145) | (0.145) | (0.103) | (0.063) | (0.021) |
| Year fixed effects | Yes | – | – | – | – | – | – |
| Firm fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry × year fixed effects | No | Yes | Yes | Yes | Yes | Yes | Yes |
| Region × year fixed effects | No | Yes | Yes | Yes | Yes | Yes | Yes |
| R-squared | 0.750 | 0.777 | 0.778 | 0.778 | 0.746 | 0.683 | 0.558 |
| Observations | 30,216 | 30,216 | 30,216 | 30,216 | 30,216 | 30,216 | 30,216 |

*Notes.* Standard errors (clustered at the state level) are reported in parentheses.

# Table 3. Laboratory experiment

Panel (A): Baseline sample

|  | Control (N = 77) | Treated (N = 71) | Difference (N = 148) | p-value (difference) |
|---|---|---|---|---|
| Client List B (no disclosure of proprietary info) | 35.1% | 43.7% | 8.6% | 0.033 |

Panel (B): Sample fulfilling attention criterion

|  | Control (N = 36) | Treated (N = 36) | Difference (N = 72) | p-value (difference) |
|---|---|---|---|---|
| Client List B (no disclosure of proprietary info) | 41.7% | 55.6% | 13.9% | 0.019 |

Panel (C): Variations in phrasing (baseline sample)

|  | Control Baseline (N = 39) | Control Length-matched (N = 38) | Treated Employee CSR (N = 36) | Treated Society CSR (N = 35) |
|---|---|---|---|---|
|  | (1) | (2) | (3) | (4) |
| Client List B (no disclosure of proprietary info) | 35.9% | 34.2% | 48.6% | 38.9% |
| Difference (p-value in parentheses) |  |  |  |  |
| (3) vs. (1) | 12.7% | (0.028) |  |  |
| (3) vs. (2) | 14.4% | (0.013) |  |  |
| (4) vs. (1) | 3.0% | (0.595) |  |  |
| (4) vs. (2) | 4.7% | (0.406) |  |  |

Panel (D): Variations in phrasing (sample fulfilling attention criterion)

|  | Control Baseline (N = 20) | Control Length-matched (N = 16) | Treated Employee CSR (N = 16) | Treated Society CSR (N = 20) |
|---|---|---|---|---|
|  | (1) | (2) | (3) | (4) |
| Client List B (no disclosure of proprietary info) | 45.0% | 37.5% | 56.3% | 55.0% |
| Difference (p-value in parentheses) |  |  |  |  |
| (3) vs. (1) | 11.3% | (0.183) |  |  |
| (3) vs. (2) | 18.8% | (0.036) |  |  |
| (4) vs. (1) | 10.0% | (0.212) |  |  |
| (4) vs. (2) | 17.5% | (0.038) |  |  |

## Table 4. Online experiment

Panel (A): Baseline sample

|  | Control (N = 249) | Treated (N = 246) | Difference (N = 495) | $p$-value (difference) |
|---|---|---|---|---|
| Client List B (no disclosure of proprietary info) | 46.9% | 63.0% | 16.1% | 0.0003 |

Panel (B): Sample fulfilling attention criterion

|  | Control (N = 227) | Treated (N = 224) | Difference (N = 451) | $p$-value (difference) |
|---|---|---|---|---|
| Client List B (no disclosure of proprietary info) | 47.5% | 63.8% | 16.3% | 0.0005 |

Panel (C): Variations in phrasing (baseline sample)

|  | Control Baseline (N = 121) | Control Length-matched (N = 128) | Treated Employee CSR (N = 127) | Treated Society CSR (N = 119) |
|---|---|---|---|---|
|  | (1) | (2) | (3) | (4) |
| Client List B (no disclosure of proprietary info) | 52.0% | 42.1% | 62.9% | 63.0% |
| Difference ($p$-value in parentheses) |  |  |  |  |
| (3) vs. (1) | 10.9% | (0.082) |  |  |
| (3) vs. (2) | 20.8% | (0.008) |  |  |
| (4) vs. (1) | 11.0% | (0.086) |  |  |
| (4) vs. (2) | 20.9% | (0.001) |  |  |

Panel (D): Variations in phrasing (sample fulfilling attention criterion)

|  | Control Baseline (N = 116) | Control Length-matched (N = 111) | Treated Employee CSR (N = 116) | Treated Society CSR (N = 108) |
|---|---|---|---|---|
|  | (1) | (2) | (3) | (4) |
| Client List B (no disclosure of proprietary info) | 51.7% | 43.2% | 63.7% | 63.8% |
| Difference ($p$-value in parentheses) |  |  |  |  |
| (3) vs. (1) | 12.0% | (0.063) |  |  |
| (3) vs. (2) | 20.5% | (0.001) |  |  |
| (4) vs. (1) | 12.1% | (0.066) |  |  |
| (4) vs. (2) | 20.6% | (0.002) |  |  |

**APPENDIX**

**Appendix A. Survey of knowledge workers**

*Survey design*

We surveyed alumni from Boston University (BU) and the Massachusetts Institute of Technology (MIT).[28] We distributed the survey electronically to the alumni and received 1,257 responses (759 from the BU survey and 498 from the MIT survey, corresponding to a response rate of about 7% at each institution). Although our sample is unlikely to be perfectly representative, we have no reason to expect the sample to be biased toward respondents that are favorably inclined toward CSR initiatives. Respondent characteristics are provided in Table A1. In particular, we note that a large fraction of respondents work in industries that are knowledge-intensive—e.g., information technology (19%), finance (18%), pharmaceuticals (11%), consulting (10%), consumer products (7%), aerospace (6%), energy (4%), and several others.

An important concern in survey design is the possibility of social desirability bias, or the tendency of participants to present themselves in a socially acceptable way (Maccoby and Maccoby, 1954; Nederhof, 1985). In our case, social desirability bias may motivate the respondents to express favorable opinions about CSR initiatives. We mitigated this concern in two ways. First, we administered the survey in an anonymous manner and informed the respondents that their identity would remain undisclosed. Second, we implemented the technique of "indirect questioning," which has been shown to reduce social desirability bias (e.g., Fisher, 1993). Rather than asking participants about their own behavior, we asked them about the general use of CSR as

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[28] The sampling frame of the BU survey includes all alumni from the Questrom School of Business (and the former School of Management) who graduated by 2016 and are based in the U.S.; the sampling frame of the MIT survey includes all alumni from the Sloan School of Management who graduated between 1980-2015 and are based in the U.S. The responses were very similar across both schools.

a means of reducing knowledge spillovers. Moreover, we presented the respondents with a hypothetical scenario and asked them to make decisions regarding CSR. Specifically, participants were told that a legislative change was about to increase the threat of knowledge spillovers. Faced with this increased threat, respondents had to assess the effectiveness of CSR initiatives in helping reduce knowledge spillovers.

For all survey questions, we asked the respondents to agree or disagree with the proposed statements, using a standard 6-point Likert scale ranging from *Strongly Disagree* (= 1) to *Strongly Agree* (= 6).

*Survey questions*

The goal of this survey is to better understand how to prevent employees with access to a firm's valuable and unique knowledge from leaving to other firms and disclosing this knowledge to competitors. The insights of this research have important implications for human resource management and innovation. The survey will take about 5 minutes. Your participation is highly valued. All responses are anonymous and will be kept strictly confidential. The information provided will be used only for the purposes of this research.

Please answer the questions based on what is/was typical for you as a manager/employee.

1. **Have you ever worked as an employee with access to a firm's trade secrets? By trade secrets, we mean knowledge and information that is valuable to the firm and is not shared with competitors. For example, a firm's trade secrets include (but are not limited to) research and development processes, chemical formulas, manufacturing techniques, product design, technical data, customer lists, business leads, marketing strategies, pricing schedules, and sales techniques. (yes/no)**

2. **Please state whether you agree or disagree with the following statements (use 6-point Likert scale to measure agree/disagree):**

   "In general, it is important for a firm to put in place practices that aim to retain workers with access to a firm's trade secrets (i.e., knowledge workers)."

   "In general, socially-responsible practices can enhance knowledge workers' appreciation of their current employment."

   "In general, socially-responsible practices can improve firm's ability to retain their knowledge workers."

3. **Please state whether you agree or disagree with the following statements (use 6-point Likert scale to measure agree/disagree):**

"In general, improving a firm's socially-responsible practices might help retain knowledge workers because:

a.   … it helps better differentiate the company from other employers."

b.   … it helps improve the overall reputation of the company as a workplace."

c.   … it allows employees to have a positive (direct or indirect) impact on society and the natural environment and hence helps improve how knowledge workers feel about the job they are doing."

d.   … it helps strengthen knowledge workers' loyalty to the company (e.g., by fostering interpersonal relationships among employees, appealing to their general justice perception, and by enhancing employees' identification with the firm)."

4. **Please state whether you agree or disagree with the following statement (use 6-point Likert scale to measure agree/disagree):**

"In general, improving a firm's socially-responsible practices might strengthen knowledge workers' loyalty and prevent them from disclosing a firm's unique and valuable knowledge such as trade secrets even if they choose to leave the company to work for a rival firm."

5. **Please consider the hypothetical scenario below:**

**Suppose that you are a manager of a firm that heavily relies on knowledge workers. A legislative change is about to make it easier for employees to switch employers. As a result, you worry that your employees might join a rival firm and disclose your valuable knowledge to competitors.**

**Please state whether you agree or disagree with the following statements (use 6-point Likert scale to measure agree/disagree):**

"In an attempt to mitigate this threat, you will likely:

a.   … increase non-salary work/life benefits (e.g., flex time, maternity policy, child care, health benefits, retirement benefits, etc.)."

b.   … offer more authority, employee involvement in decision-making, learning and advancement opportunities, and/or other forms of career development to knowledge workers."

c.   … improve the firm's policies to support minorities, LGBT (lesbian, gay, bisexual, and transgender), women, and other underrepresented groups among employees."

d.   … improve the firm's work environment in terms of health, safety, recreational facilities, sports and wellness offerings, etc."

e.  … provide knowledge workers with the opportunity to devote some of their worktime to environmental initiatives, and/or other ways to have a positive impact on society and the natural environment."

f.  … increase the firm's engagement in local communities (e.g., through charitable donations)."

g.  … increase the firm's efforts to be eco-friendly (e.g., green the workspace with plants, improve the firm's environmental footprint, increase efforts in green tech development, or increase efforts in other sustainable practices)."

h.  … improve firm relations with customers (e.g., improve product quality, develop innovative products, offer products and services that benefit economically disadvantaged customers, improve customer service, etc.)."

6. **Please provide the following information:**

a.  What is your age?

- ○  25 or under
- ○  26-35
- ○  36-45
- ○  46-55
- ○  56-65
- ○  Over 65

b.  What industry do you work in? _____

c.  What is your current job function? (e.g., manager, consultant) _____

## Appendix B. Robustness

Table A7 presents various robustness checks that are variants of the specification used in column (3) of Table 2 (henceforth "baseline specification"). In the following, we describe each of them.

*State-level controls.* In our baseline specification, the inclusion of firm fixed effects—which, by construction, absorb state fixed effects—ensures that our results are not driven by fixed differences across states. That being said, it could still be the case that *time-varying* differences across states affect our results. This concern is mitigated by the inclusion of region × year fixed effects, which account for unobservable trends at the regional level. Yet, Census regions are broader than states and need not account for more granular trends at the state-year level. To

alleviate this issue, in column (1) of Table A7, we include a large set of (time-varying) state-level controls that could potentially correlate with both the rejection of the IDD and CSR policies. First, we include variables that capture *changes in the state's pro-social values*—specifically, we control for i) income inequality (the top 10% income share) at the state level and ii) a set of three indicator variables for the state's political lean (Democrat, Republican, split).[29] Second, we include variables that capture *changes in the state's economic conditions*—i) changes in state-level GDP and ii) changes in the state-level unemployment rate.[30] Third, we include variables that capture *other legal changes* that may coincide with the timing of the IDD and also affect CSR—specifically, we account for changes in i) antitakeover legislation, ii) banking deregulation, and iii) the enforcement of non-competes.[31] As can be seen, our results change little when we include all these controls.

*Accounting for the Uniform Trade Secret Act (UTSA).* In column (2) of Table A7, we account for the staggered introduction of the Uniform Trade Secret Act (UTSA) at the state level. The UTSA strengthened the protection of trade secrets by dropping the requirement that the information be business-related and in continuous use, and by defining misappropriation to include mere acquisition of the secret (Png, 2017). To account for the adoption of UTSA, we extend the set of state-level controls by including an indicator variable equal to one if the state has adopted the UTSA by the year in question.[32] As is shown, our results are robust to this inclusion.

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[29] The data on income inequality are obtained from the World Top Incomes Database. The data on states' political lean are obtained from the National Conference of State Legislatures.

[30] The data on state-level GDP growth are obtained from the U.S. Bureau of Economic Analysis. State-level unemployment rates are obtained from the U.S. Bureau of Labor Statistics.

[31] The list of antitakeover laws (business combination laws) is obtained from Karpoff and Wittry (2018). The list of bank deregulation laws is obtained from Amore, Schneider, and Zaldokas (2013). For each set of legislations, we include a dummy variable equal to one if a law has been passed in the state. To control for the enforcement of non-competes, we include the Starr (2018) index described in Appendix C.

[32] The list of UTSA by state and year is obtained from Table 1 of Png (2017, p. 180). We supplement Png's list (which is up to year 2010) with New Jersey and Texas who adopted the UTSA in 2012 and 2013, respectively.

*Alternative control groups.* In our baseline specification, the control group includes all states that have not rejected the IDD—i.e., it includes i) states that have not ruled on the IDD, and i) states that have ruled in favor. In columns (3) and (4) of Table A7, we show that our results are robust if the control group is restricted to states that have not ruled (column (3)) and states that have ruled in favor (column (4)), respectively.[33] As is shown, the treatment effect is positive and significant in either specification. The point estimate is 0.153 ($p$-value = 0.019) in column (3), and 0.164 ($p$-value = 0.019) in column (4).

*Eventually treated companies.* As discussed in the methodology section, a potential concern is that unobserved differences between treated and control firms may affect our results. To address this issue, we take advantage of the staggering of the treatments and re-estimate our baseline specification using only the subsample of eventually treated firms. As can be seen from column (5) of Table A7, our estimate of the treatment effect remains similar, which implies that our findings are not driven by unobserved differences between firms located in treated and control states.

*Geographically concentrated firms.* The inevitable disclosure doctrine applies in the state in which the employee works, whereas our analysis is based on the state in which the company's headquarters is located. As discussed in the methodology section, this raises two measurement issues. First, Compustat only records the most recent state of headquarters' location. Second, the state of headquarters' location is an imperfect measure of employees' location for companies that have operations outside of their headquarters' state. This measurement error is likely to attenuate our estimate of the treatment effect. To address this issue, we use the data of Garcia and Norli

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[33] We identify states that adopt the IDD using the compilation of Kahnke, Bundy, and Liebman (2008). Note that their compilation ends in 2008, yet we find that no other state has adopted the IDD in the later part of our sample (2009-2013).

(2012) on the state-level operations of companies based on their 10-K filings. Specifically, we follow the approach of Flammer and Luo (2017) and identify a subset of "geographically concentrated firms," that is, firms with at least 80% of their operations in a given state. We then re-estimate our baseline specification using this subsample of firms. As is shown in column (6) of Table A7, our results also hold in this subsample. As expected, the point estimate is larger than in the full sample.

*Serial correlation.* In their assessment of the difference-in-differences methodology, Bertrand, Duflo, and Mullainathan (2004) recommend that standard errors be clustered at the dimension of the treatment. Accordingly, in our baseline specification, we cluster standard errors at the state of location. In column (7) of Table A7, we consider an alternative method proposed by Bertrand *et al.* (2004): block bootstrapping. The difference to standard bootstrapping is that instead of drawing single observations, we draw entire groups ("blocks") of observations. The idea, which is similar to clustering, is to preserve the existing correlation structure within each block while using the independence across blocks to consistently estimate standard errors. In analogy to our clustering approach, we construct blocks at the state level. Specifically, we construct 100 bootstrap samples by drawing with replacement states of location. For each bootstrap sample, we estimate our baseline specification and store the coefficients. The standard errors are then calculated based on the empirical distribution of these 100 sets of coefficients. As is shown, the significance level is very similar to before.

*Accounting for CSR concerns.* In column (8) of Table A7, we re-estimate our baseline specification using the "net" KLD-index (i.e., the number of KLD strengths net of the number of KLD concerns) instead of the KLD-index based on the number of KLD strengths. As can be seen, the point estimate is similar to our baseline estimate in Table 2.

**Appendix C. Cross-sectional heterogeneity**

Our main results show that companies respond to an exogenous increase in the threat of knowledge spillovers by increasing their CSR. In this section, we complement this analysis by showing that the response is stronger when the risk of knowledge spillover is higher. We consider five different dimensions.

First, the risk of knowledge spillovers is likely lower in states that strongly enforce non-compete agreements. Such agreements restrict employees' ability to leave their current employer and hence reduce the threat of knowledge spillovers. Second, the risk of knowledge spillovers is likely higher for companies located in close proximity to innovation hubs, as the geographic agglomeration of firms can lead to increased interactions between firms and their knowledge workers, resulting in increased knowledge spillovers (e.g., Almeida and Kogut, 1999; Mariani *et al*., 2015). Finally, the risk of knowledge spillovers is likely higher in i) R&D-intensive industries, ii) competitive industries, and iii) industries with better investment opportunities—that is, industries where the ability to innovate and retain knowledge is key to competitiveness and survival. In the following, we describe how we measure each of these five characteristics.

*Cross-sectional characteristics*

*Enforceability of non-compete agreements.* Following Starr (2018) and Starr, Ganco, and Campbell (2018), we measure the extent to which states enforce non-compete agreements by using Starr's (2018) index of enforceability of non-compete agreements at the state level (*non-compete index*).[34]

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[34] The Starr index is a refinement of the index of Bishara (2011) that assigns a score between 0 to 10 on seven dimensions of non-compete enforceability at the state level, and aggregates the individual dimensions using subjectively chosen weights. The Starr index improves upon Bishara's weighting scheme by using confirmatory factor analysis on the seven scores to generate weights that capture the importance of the various dimensions of non-compete

*Proximity to innovation hubs*. To measure the proximity to innovation hubs, we compute the great-circle distance between the ZIP code of the company's headquarters (from Compustat) and the fifteen innovation hubs identified by Booz Allen (see Booz Allen, 2016, p. 11)—San Francisco, Seattle, Austin, Boston, Raleigh, San Diego, Los Angeles, Salt Lake City, Houston, Denver, Pittsburgh, Washington DC, Minneapolis, Phoenix, and Dallas. The great-circle distance is the shortest distance between any two points on the surface of a sphere and is obtained from the formula:

$$r \times \arccos\left[\sin(\lambda_i) \times \sin(\lambda_{hub}) + \cos(\lambda_i) \times \cos(\lambda_{hub}) \times \cos(\theta_i - \theta_{hub})\right],$$

where $\lambda_i$ ($\theta_i$) is the latitude (longitude) of the ZIP code of company $i$'s headquarters, and $\lambda_{hub}$ ($\theta_{hub}$) is the latitude (longitude) of the centroid of the innovation hub, respectively. We match ZIP codes to longitudes and latitudes using the "zipcode" file of the SAS software. We approximate the latitude and longitude of each innovation hub by taking the average latitude and longitude of all ZIP codes pertaining to the innovation hub's city. We then code a company as "close" if it is located within 100 miles of any of these innovation hubs (*high proximity to innovation hub*).

*R&D-intensive industries.* We construct a measure of R&D intensity at the industry level by computing the average ratio of R&D expenses to total assets across all Compustat firms in the same 3-digit SIC industry. We then code an industry as R&D intensive if this average ratio lies above the median across all industries in the year prior to the treatment (*high R&D industry*).

*Product market competition.* We measure product market competition by using the Herfindahl-Hirschman Index (HHI) of industry concentration at the 3-digit SIC level. HHI is defined as the sum of the squared market shares of all companies in the same industry. We use

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enforceability. The data are obtained from Table B1 of Starr (2018, p. 51). Note that the index is available for 1991 and 2009. To fill in the missing years, we use the index from the latest available year (i.e., we fill in the 1992-2008 values with the 1991 index and the 2010-2013 values with the 2009 index).

sales data from Compustat to compute market shares. (Note that HHI is a measure of concentration, and hence an inverse measure of competition.) We then code an industry as competitive if HHI lies below the median across all industries in the year prior to the treatment (*high competition*).

 *Investment opportunities.* We construct a measure of investment opportunities at the industry level by computing the average Tobin's Q across all companies in the same 3-digit SIC industry and code an industry as having high investment opportunities if the average Tobin's Q lies above the median across all industries in the year prior to the treatment (*high investment opportunities*).

*Interaction analysis*

In Table A8, we re-estimate our baseline specification, interacting the treatment dummy (*IDD*) with the five cross-sectional characteristics described above.[35]

 As can be seen, we find that the treatment effect is larger for firms in R&D-intensive industries ($p = 0.022$), in closer proximity to innovation hubs ($p = 0.032$), in competitive industries ($p = 0.065$), and in industries with better investment opportunities ($p = 0.169$). Moreover, the treatment effect is smaller in states with a stronger enforcement of non-compete agreements, although the coefficient is not significant at the 10% level ($p = 0.217$). Overall, these results confirm that the treatment effect is stronger when the risk of knowledge spillover is higher.

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[35] Except for *non-compete index*, all interaction variables are time-invariant. Hence, we do not include them as standalone in the regressions (as they would be absorbed by the firm fixed effects).

# Table A1. Respondents' characteristics

Panel (A): Age distribution

| | |
|---|---|
| 25 or under | 0.2% |
| 26-35 | 22.0% |
| 36-45 | 28.2% |
| 46-55 | 21.9% |
| 56-65 | 13.8% |
| Over 65 | 13.9% |

Panel (B): Industry distribution

| | |
|---|---|
| Information technology/computer science/high tech | 19.3% |
| Financial services | 17.9% |
| Pharma/biotech/health care | 10.6% |
| Management consulting | 9.9% |
| Consumer products/retail/wholesale | 7.1% |
| Aerospace/aviation/defense | 5.6% |
| Energy/oil/gas | 3.5% |
| Advertising/sales/marketing | 3.0% |
| Manufacturing | 2.7% |
| Automotive/transportation | 2.5% |
| Government | 2.4% |
| Other | 2.2% |
| Food & beverage/hospitality | 2.1% |
| Non-profit | 1.9% |
| Telecommunication | 1.7% |
| Engineering/construction | 1.6% |
| Legal services | 1.6% |
| Education | 1.5% |
| Media/communications | 1.3% |
| Entertainment/arts | 1.0% |
| Agriculture | 0.4% |
| Chemicals | 0.4% |

**Table A2. Rejection of the inevitable disclosure doctrine (IDD)**

| State | Year | Case |
|---|---|---|
| Arkansas | 2009 | *Cellco Partnership v. Langston*, No. 4:09CV00928 JMM (W.D. Ark. 2009) |
| California | 2002 | *Whyte v. Schlage Lock Co.*, No. G028382 (Ct. of App. of California 2002) |
| Florida | 2001 | *Del Monte Fresh Produce Co. v. Dole Food Co.*, Inc., 148 F. Supp. 2d 1322 (S.D. Fla. 2001) |
| Georgia | 2013 | *Holton v. Physician Oncology Servs., LP*, No. S13A0012, 2013 WL 1859294 (Ga. 2013) |
| Maryland | 2004 | *LeJeune v. Coin Acceptors, Inc.*, 381 Md. 288 (Md. 2004). |
| Massachusetts | 2012 | *U.S. Elec. Servs. v. Schmidt*, Civil Action No. 12-10845-DJC (U.S. Dist. CT. for the Dist. of Mass. 2012) |
| Michigan | 2002 | *CMI Int'l, Inc. v. Intermet Int'l Corp.*, 649 N.W.2d 808, 812 (Mich. Ct. App. 2002) |
| New Hampshire | 2010 | *Allot Communications v. Cullen*, 10-E-0016 (N.H. Merrimack Superior Ct. 2010) |
| New Jersey | 2012 | *SCS Healthcare Marketing, LLC v. Allergan USA*, Inc., N.J. Super. Unpub. LEXIS 2704 (N.J. Sup. Ct. Ch. Div. 2012) |
| New York | 2009 | *American Airlines, Inc. v. Imhof*, U.S. Dist. LEXIS 46750 (S.D.N.Y. 2009) |
| Ohio | 2008 | *Hydrofarm, Inc. v. Orendorff*, Ohio App. LEXIS 5717 (Ohio App. Ct. 2008) |
| Virginia | 1999 | *Government Technology Services, Inc. v. Intellisys Technology Corp.*, 51 Va. Cir. 55 (Va. Cir. Ct. 1999) |
| Washington | 2012 | *Amazon.com, Inc. v. Powers*, Case No. C12-1911RAJ (W.D. Wash. 2012) |
| Wisconsin | 2009 | *Clorox Co. v. SC Johnson & Son Inc.*, 2:09-cv-00408-JPS (U.S. District Court, Eastern District of Wisconsin 2009) |

# Table A3. Summary statistics

| | Variable | N | Mean | Std. Dev. | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | KLD-Index | 30,216 | 1.357 | 2.208 | | | | | |
| 2 | Size | 30,216 | 7.359 | 1.742 | 0.511 | | | | |
| 3 | ROA | 30,216 | 0.109 | 0.128 | 0.118 | 0.137 | | | |
| 4 | Tobin's Q | 30,216 | 1.960 | 1.348 | -0.001 | -0.316 | 0.094 | | |
| 5 | Leverage | 30,216 | 0.216 | 0.199 | 0.062 | 0.274 | 0.001 | -0.183 | |
| 6 | Cash | 30,216 | 0.172 | 0.201 | -0.092 | -0.434 | -0.320 | 0.466 | -0.331 |

*Notes.* The sample includes all firm-year observations for companies in the merged KLD-Compustat sample from 1991-2013.

## Table A4. ASSET4 ratings

| Dependent variable | ASSET4 score | | |
|---|---|---|---|
| | ASSET4 score (composite) | ASSET4 score (social) | ASSET4 score (environment) |
| | (1) | (2) | (3) |
| IDD | 3.512 | 3.958 | 3.066 |
| | (1.496) | (1.954) | (1.599) |
| Size | 4.297 | 4.327 | 4.266 |
| | (1.157) | (1.301) | (1.387) |
| ROA | 9.081 | 7.894 | 10.268 |
| | (5.288) | (6.028) | (6.669) |
| Tobin's Q | 0.966 | 1.504 | 0.427 |
| | (0.473) | (0.534) | (0.620) |
| Leverage | 7.316 | 7.481 | 7.151 |
| | (5.849) | (5.331) | (7.283) |
| Cash | 0.743 | 7.580 | -6.094 |
| | (3.632) | (3.514) | (4.800) |
| | | | |
| Firm fixed effects | Yes | Yes | Yes |
| Industry × year fixed effects | Yes | Yes | Yes |
| Region × year fixed effects | Yes | Yes | Yes |
| | | | |
| R-squared | 0.869 | 0.832 | 0.842 |
| Observations | 5,112 | 5,112 | 5,112 |

*Notes.* Standard errors (reported in parentheses) are clustered at the state level.

# Table A5. ASSET4 components

| Dependent variable | Components of ASSET4 social score | | | | | | | Components of ASSET4 environment score | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Workforce *diversity and opportunities* | Workforce *employment quality* | Workforce *health and safety* | Workforce *training and development* | Society *community* | Society *human rights* | Customer *product responsibility* | Environment *emission reduction* | Environment *product innovation* | Environment *resource reduction* |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| IDD | 3.190 | 3.922 | 3.476 | 4.614 | 3.210 | 2.925 | 1.859 | 2.917 | 1.907 | 3.300 |
| | (1.865) | (1.429) | (1.780) | (1.725) | (1.929) | (1.855) | (1.794) | (1.547) | (1.523) | (1.700) |
| Size | 3.214 | 3.321 | 2.938 | 4.257 | 4.275 | 5.299 | 2.250 | 3.528 | 3.836 | 4.098 |
| | (1.056) | (1.098) | (1.152) | (1.175) | (1.443) | (1.314) | (1.463) | (1.405) | (1.398) | (1.363) |
| ROA | 2.597 | 6.979 | 7.394 | 12.379 | 3.692 | 12.329 | 4.097 | 9.346 | 11.146 | 7.970 |
| | (6.308) | (4.865) | (5.223) | (6.488) | (6.488) | (6.914) | (4.124) | (6.602) | (5.869) | (7.037) |
| Tobin's Q | 1.139 | 0.843 | 1.556 | 1.183 | 1.381 | 2.124 | 0.996 | 0.282 | 0.515 | 0.466 |
| | (0.485) | (0.553) | (0.500) | (0.590) | (0.524) | (0.553) | (0.416) | (0.626) | (0.576) | (0.633) |
| Leverage | 6.087 | 5.422 | 12.267 | 5.270 | 4.943 | 2.866 | 7.886 | 7.357 | 6.612 | 6.876 |
| | (5.012) | (4.937) | (5.354) | (4.490) | (5.359) | (4.631) | (5.831) | (7.372) | (6.747) | (7.097) |
| Cash | 4.399 | 6.966 | 7.477 | 6.648 | 5.376 | 7.552 | 5.252 | -5.484 | -6.693 | -4.304 |
| | (3.750) | (3.160) | (3.894) | (3.326) | (3.716) | (3.134) | (3.984) | (4.289) | (4.934) | (5.183) |
| Firm fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry × year fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Region × year fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| R-squared | 0.824 | 0.837 | 0.795 | 0.808 | 0.826 | 0.783 | 0.830 | 0.847 | 0.831 | 0.837 |
| Observations | 5,112 | 5,112 | 5,112 | 5,112 | 5,112 | 5,112 | 5,112 | 5,112 | 5,112 | 5,112 |

*Notes.* Standard errors (reported in parentheses) are clustered at the state level.

## Table A6. R&D expenditures

| Dependent variable | R&D / sales | R&D / assets |
|---|---|---|
| | (1) | (2) |
| IDD | 0.0025 | 0.0017 |
| | (0.0019) | (0.0012) |
| Size | 0.0026 | -0.0114 |
| | (0.0019) | (0.0040) |
| ROA | -0.1238 | -0.0175 |
| | (0.0204) | (0.0083) |
| Tobin's Q | 0.0064 | 0.0050 |
| | (0.0010) | (0.0006) |
| Leverage | -0.0023 | -0.0068 |
| | (0.0078) | (0.0045) |
| Cash | -0.0140 | -0.0256 |
| | (0.0074) | (0.0048) |
| | | |
| Firm fixed effects | Yes | Yes |
| Industry × year fixed effects | Yes | Yes |
| Region × year fixed effects | Yes | Yes |
| | | |
| R-squared | 0.940 | 0.924 |
| Observations | 13,635 | 13,691 |

*Notes.* Standard errors (reported in parentheses) are clustered at the state level.

# Table A7. Robustness

| Dependent variable | KLD-index | | | | | | | Net KLD-index |
|---|---|---|---|---|---|---|---|---|
| | Accounting for time-varying state-level controls | Accounting for time-varying state-level controls (including adherance to UTSA) | Control group consisting of states that have not ruled on IDD | Control group consisting of states that have ruled in favor of IDD | Eventually treated firms | Geographically concentrated firms | Block-bootstrapped standard errors | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| IDD | 0.149 | 0.155 | 0.153 | 0.164 | 0.125 | 0.623 | 0.171 | 0.230 |
| | (0.072) | (0.071) | (0.065) | (0.070) | (0.052) | (0.299) | (0.080) | (0.078) |
| Size | 0.172 | 0.171 | 0.096 | 0.218 | 0.133 | 0.087 | 0.174 | -0.004 |
| | (0.076) | (0.076) | (0.092) | (0.098) | (0.128) | (0.115) | (0.073) | (0.108) |
| ROA | 0.080 | 0.077 | 0.118 | 0.066 | 0.080 | -0.126 | 0.079 | 0.281 |
| | (0.140) | (0.141) | (0.132) | (0.207) | (0.189) | (0.367) | (0.161) | (0.166) |
| Tobin's Q | -0.028 | -0.028 | -0.032 | -0.040 | -0.044 | 0.060 | -0.028 | -0.035 |
| | (0.017) | (0.017) | (0.018) | (0.015) | (0.015) | (0.035) | (0.018) | (0.020) |
| Leverage | 0.186 | 0.184 | 0.297 | 0.159 | 0.243 | 0.519 | 0.187 | 0.113 |
| | (0.113) | (0.113) | (0.117) | (0.125) | (0.133) | (0.511) | (0.120) | (0.170) |
| Cash | 0.445 | 0.442 | 0.416 | 0.574 | 0.563 | 0.133 | 0.444 | 0.298 |
| | (0.143) | (0.143) | (0.149) | (0.171) | (0.176) | (0.463) | (0.164) | (0.187) |
| UTSA | | -0.202 | | | | | | |
| | | (0.093) | | | | | | |
| Firm fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry × year fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Region × year fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Time-varying state-level controls | Yes | Yes | No | No | No | No | No | No |
| R-squared | 0.778 | 0.778 | 0.780 | 0.788 | 0.796 | 0.943 | 0.778 | 0.686 |
| Observations | 30,216 | 30,216 | 24,771 | 21,930 | 17,142 | 1,763 | 30,216 | 30,216 |

*Notes.* Standard errors (reported in parentheses) are clustered at the state level, except in column (5) where they are block-bootstrapped at the state level using 100 bootstrap samples.

## Table A8. Cross-sectional heterogeneity

| Dependent variable | KLD-index | | | | |
| --- | --- | --- | --- | --- | --- |
| | (1) | (2) | (3) | (4) | (5) |
| IDD | 0.030 | 0.052 | -0.016 | 0.055 | 0.115 |
| | (0.081) | (0.085) | (0.121) | (0.094) | (0.070) |
| IDD × High R&D industry | 0.263 | | | | |
| | (0.115) | | | | |
| IDD × High proximity to innovation hubs | | 0.377 | | | |
| | | (0.176) | | | |
| IDD × High competition | | | 0.311 | | |
| | | | (0.169) | | |
| IDD × High investment opportunities | | | | 0.235 | |
| | | | | (0.171) | |
| IDD × Non-compete index | | | | | -0.074 |
| | | | | | (0.060) |
| Size | 0.172 | 0.174 | 0.171 | 0.172 | 0.175 |
| | (0.075) | (0.075) | (0.075) | (0.074) | (0.075) |
| ROA | 0.086 | 0.078 | 0.091 | 0.085 | 0.082 |
| | (0.142) | (0.143) | (0.141) | (0.141) | (0.141) |
| Tobin's Q | -0.028 | -0.026 | -0.028 | -0.028 | -0.027 |
| | (0.017) | (0.017) | (0.017) | (0.017) | (0.018) |
| Leverage | 0.184 | 0.177 | 0.182 | 0.180 | 0.182 |
| | (0.114) | (0.109) | (0.115) | (0.112) | (0.114) |
| Cash | 0.441 | 0.442 | 0.437 | 0.440 | 0.448 |
| | (0.146) | (0.142) | (0.146) | (0.146) | (0.145) |
| Non-compete index | | | | | -0.093 |
| | | | | | (0.086) |
| | | | | | |
| Firm fixed effects | Yes | Yes | Yes | Yes | Yes |
| Industry × year fixed effects | Yes | Yes | Yes | Yes | Yes |
| Region × year fixed effects | Yes | Yes | Yes | Yes | Yes |
| | | | | | |
| R-squared | 0.778 | 0.778 | 0.778 | 0.778 | 0.778 |
| Observations | 29,241 | 30,216 | 30,216 | 30,216 | 30,216 |

*Notes.* Standard errors (reported in parentheses) are clustered at the state level.

## Table A9. Experimental vignette study

| Control Group | | Treatment Group | |
|---|---|---|---|
| Baseline company info | Baseline company info<br><br>+<br><br>neutral company info (same length as CSR info) | Baseline company info<br><br>+<br><br>CSR info related to employees | |
| | | Baseline company info<br>+<br>CSR info related to employees | Baseline company info<br>+<br>CSR info related to society and environment |
| **(1)** | **(2)** | **(3)** | **(4)** |

PREVIOUS EMPLOYER:

Imagine that your previous employer is an automobile company that develops and manufactures electric vehicles. The market for electric vehicles is still in its infancy and companies fiercely compete for new clients who are willing and able to purchase electric vehicles.

For this employer you were part of a small team that had developed an extensive client list (Client List A)—of current and prospective clients—that is used for direct marketing purposes globally (including USA, China, and other countries). Compiling this list and identifying customers who are ready, willing and able to buy an electric vehicle was an expensive, arduous and time consuming task. Clearly, this client list is very valuable to the company and is a well-kept trade secret.

Your previous employer undertook considerable efforts to protect its client list as a trade secret. For example, it limited access to the client list and advised all those with access (including you) that this client list is the property of the company and a trade secret of great economic value to the company. All employees with access (including you) were aware that the company considers the list to be confidential and valuable, and that they are not to use or divulge any client information to anyone outside the company. Its disclosure would allow a competing firm to direct its sales efforts to (current and prospective) customers who have already shown a willingness to buy an electric vehicle as opposed to a list of people who only might be interested.

Your previous employer, a California-based company is a leader in the market for electric vehicles and has a workforce of nearly 3,500 employees in total.

| | | |
|---|---|---|
| | Most recently, it has published a detailed report on the company's product portfolio and growth strategy. For example, it highlights its plan to enter the Chinese market—the fastest growing market for electric vehicles. A key reason for this strong growth is the aim of the Chinese government to drastically reduce its carbon emissions. | Most recently, the company was ranked among the best places to work for. For example, it was praised for offering shared governance, for encouraging employee involvement and autonomy. Furthermore, it strongly supports minorities, and offers superior learning and advancement opportunities, work/life benefit programs (e.g., flextime), and overall a safe and healthy work environment. | Most recently, the company was ranked among the best places to work for. For example, it was praised for providing its employees the opportunity to devote some of their worktime to environmental and social initiatives. Furthermore, the company matches any of its employees' donations made to support the community and protect the environment. |

Click on "continue" on the bottom of this page once you are done reading your previous employer's company info.

NEW EMPLOYER:

In early 2018, you moved to a different city for family reasons. You have found a similar job at a competitor firm.

Compared to your previous employer, your new employer is a young player in the field with a relatively short client list (Client List B). With the aim to grow its business, it tasked you to conduct a marketing campaign and to reach out to (current and potential) clients.

Whom will you contact?

* Client List A
* Client List B
* Client Lists A and B

Thank you for your participation.

**Figure A1. Evolution of the KLD-index around the rejection of the IDD**
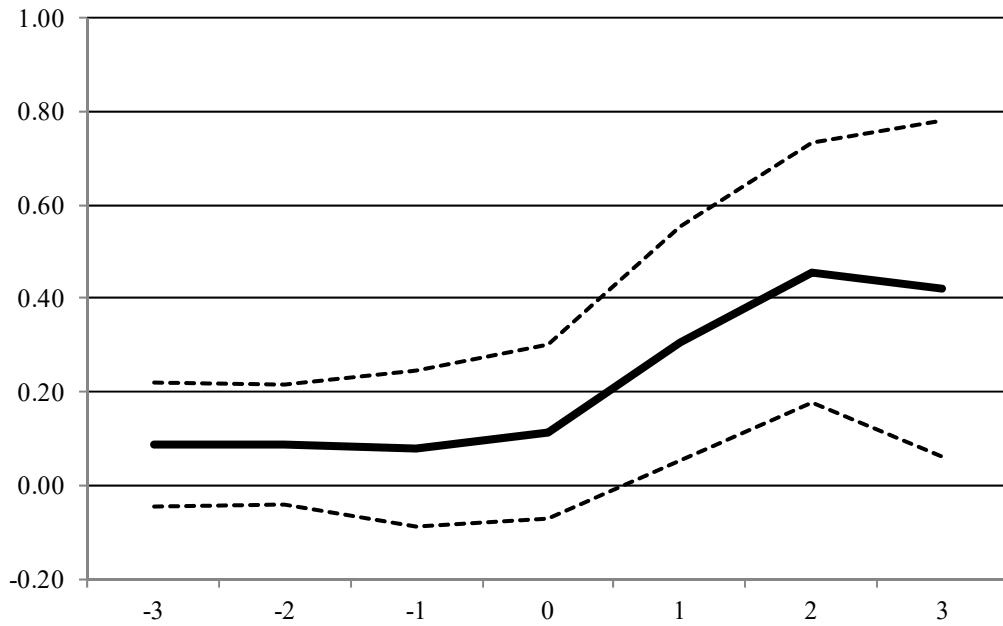


*Notes.* The vertical axis plots the average KLD-index in the treatment group minus the average KLD-index in the control group three years before and after the treatments (95% confidence interval within dashed lines). "Treatments" refer to the rejection of the inevitable disclosure doctrine in the treated states listed in Table A2. The horizontal axis plots the years relative to the treatment ("year 0" refers to the year of the treatment, "year 1" is the year after the treatment, etc.).