

## **Does social responsibility begin at home? The relation between firms' pension policies and corporate social responsibility (CSR) activities**

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We examine how corporate policies on funding and reporting defined-benefit (DB) pension plans fit within initiatives on corporate social responsibility (CSR). For a large sample of U.S. DB pension sponsors, we find that sponsors whose DB pensions are poorly funded, and whose pension funding status is aggressively overstated on corporate balance sheets, tend to exhibit higher levels of CSR engagement with external stakeholders. Finding that responsibility toward external stakeholders is not necessarily accompanied by responsibility towards internal stakeholders (employees and retirees) is inconsistent with the view that CSR initiatives arise from an underlying corporate culture that values the welfare of all stakeholders. Further tests show that plan sponsors step up CSR initiatives aimed at external stakeholders following pension freezes, and after an accounting rule change that increases the visibility of pension underfunding. These findings are supportive of a 'risk-management' motive for CSR, wherein firms engage in CSR activities so as to manage corporate image in the face of pension-related events that have the potential to create negative publicity and controversy.

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*Comments are welcome.*

## 1. INTRODUCTION

Initiatives to promote corporate social responsibility (CSR) have been steadily gathering momentum in recent times. The creation of “shared value” – i.e., creating economic value for stockholders in a manner that also creates value for the larger society within which firms operate (Rangan, Chase, and Karim 2015) – is becoming increasingly accepted as a business ideal. This is reflected in the tremendous growth of “socially responsible investing” (SRI) – the U.S. Social Investment Forum (2014) reports that U.S.-domiciled assets under management using SRI strategies stood at \$6.6 trillion at the beginning of 2014, with an increase of 76% in just two years, and representing one-sixth of total U.S. assets under professional management. The increasing acceptance of CSR initiatives as an integral part of corporate activity can also be seen in the fact that CSR reporting is “now undeniably a mainstream business practice worldwide” (KPMG, 2014). Of the 100 largest companies in 41 countries worldwide, 71% provided stand-alone CSR reports in 2013 (KPMG, 2014).

CSR is commonly understood to refer to the integration of business operations and values, wherein the interests of all stakeholders – stockholders, other investors, customers, employees, the community, and the environment – are reflected in corporate policies and actions.<sup>1</sup> One key stakeholder group that CSR initiatives often attempt to target is employees. Employees constitute the “front line” of a firm (Barnett and Salomon 2006), and the business case for employee-focused CSR activities can readily be made: firms in today’s environment rely increasingly on the knowledge and creativity of employees to add value (Florida, 2002), and positive relations with

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<sup>1</sup> CSR initiatives are as varied as the labels attached to them – “corporate citizenship”, “sustainability”, “valued-led business” “stakeholder engagement”, to name a few. In this study, we use the nomenclature “CSR” to refer to all attempts to integrate the needs of a wider group of stakeholders, extending beyond stockholders, into corporate objectives. Note here that CSR is a broader concept than corporate charity or philanthropy, even though philanthropic giving could certainly feature as a part of CSR initiatives.

the labor force can translate into ability to attract the best talent, lower attrition, more loyalty, greater morale, and higher productivity (e.g., Freeman, 1984).

One set of corporate policies that strongly affect relations with employees and their overall well-being is policies on retirement benefits. Retirement plans are broadly of two kinds: defined-benefit (DB) plans promise a certain, ‘defined’ stream of pension income to employees starting from retirement and lasting for as long as they live; defined-contribution (DC) plans involve the employer making a certain, fixed contribution annually into the employee’s retirement fund, which is then invested and can be withdrawn as per employees’ preferences. DB plans put the onus on the employer to set aside funds and invest those funds in a manner such that sufficient cash flows are available eventually to pay the defined stream of benefits, and so do not impose any investment risk or longevity risk on employees themselves. As these risks are borne by the employer instead, DB plans are viewed as being costlier to maintain from the employer’s perspective than DC plans, a fact borne out by the spate of DB plans being discontinued on account of their being too expensive to maintain (e.g., Munnell and Soto 2007).

Having a secure and well-funded DB plan in place has a strong bearing on employees’ retirement income security, which in turn impacts their overall welfare. This begs the question - how does the responsible management of DB plans fit into the larger framework of CSR initiatives that corporations undertake? More specifically, is DB plan security viewed as an integral part of CSR activities by socially responsible corporations? Do corporations that are viewed as being socially responsible typically have strong and well-funded DB plans? These are the questions we attempt to address in this study.

We examine two related dimensions of what we label ‘responsible’ DB pension management. First, while federal regulations require most DB plans to maintain a certain minimum

level of funding, discretion in the funding rules still leaves wide variation in the extent to which plans are funded. All else equal, having more assets set aside specifically to meet benefit payments increases benefit security for employees. Hence, the first dimension of DB plan management we examine is the extent to which plans are funded. Second, the measurement of pension liabilities on corporate balance sheets requires several actuarial assumptions as inputs, many of which are subject to managerial discretion. All else equal, choosing these assumptions opportunistically allows employers to understate pension liabilities, which makes plans appear better-funded than they actually are. This window-dressing of true funding status could ultimately reduce benefit security for employees, as the appearance of strong funding could reduce scrutiny (from employees, labor unions, regulators, the media and other parties) that would otherwise have resulted in pressure for more employer contributions into the plan. Hence, the second dimension of DB plan management we examine is the extent to which the funding status might be overstated due to aggressively chosen assumptions.

There are two alternative perspectives on how DB pension management fits into the broader framework of CSR initiatives, based on what the firm's underlying motivations are for undertaking CSR activities. On one hand, corporations could engage in CSR because of a culture, or an underlying belief, that incorporating the needs of all stakeholders into corporate decision-making is the right thing to do (either because it fulfills some guiding moral principle, *or* because it ultimately makes good business sense). If the fulfilment of this moral imperative is the primary driver of CSR initiatives, we would then expect socially responsible firms to genuinely integrate the welfare of all stakeholders – employees included, into their policies, which implies in turn that these socially responsible corporations will also have DB plans that are well-funded and whose

funding status is faithfully represented on financial statements. We label this the “corporate culture” perspective.

On the other hand, some commentators take a less benign view of the underlying motivation for much of the CSR initiatives observed in practice, arguing that they are a way for companies to manage the risks of unpredictable corporate events that could damage reputation (Financial Times, 2004). Engaging in CSR activities builds up goodwill and moral capital with stakeholders, which could function as a form of “insurance” or “risk management” with customers, communities, and other stakeholders; either by encouraging these stakeholders to give the company the benefit of the doubt in situations where corporate motives are ambiguous, or by dampening their negative judgments when reputation-damaging events occur. This “risk management” perspective carries a very different prediction on how DB pension management relates to CSR initiatives: it predicts that firms with poorly funded plans have a greater need to engage in CSR, so as to deflect attention from the weak state of their plans; or manage reputations with employees, retirees, labor unions, regulatory authorities, the media, and the general public, in the wake of funding crises or negative pension events such as the closure of plans. We attempt to understand which of these perspectives more accurately characterizes the firms in our sample.

We conduct empirical analysis on a sample of 11,412 firm-year observations on U.S. firms that sponsor DB pension plans (“plan sponsors”) over 1995-2012. We find in initial analysis that the responsible management of DB pension plans does not correspond with a high level of socially responsible engagement towards external stakeholders such as customers, the local community, and the environment. In fact, it is the sponsors whose DB pension plans are poorly funded and whose funded status is aggressively overstated that tend to display a high degree of socially responsible behavior aimed at external stakeholders. This is *prima facie* consistent more with a

risk-management perspective of CSR activity than a corporate-culture perspective. Digging deeper into the implications of the risk-management perspective, we find that sponsors with underfunded plans tend to engage more in CSR activities around a regulatory change that made their pension underfunding more visible (by moving it out of the footnotes of the financial statements onto the corporate balance sheet). We find also that sponsors step up CSR engagement aimed at external stakeholders right after they take actions to freeze their pension plans. Both these findings buttress the risk-management perspective that firms engage in CSR activity as a means of deflecting attention away from poor pension funding, and/or to earn moral capital with external stakeholders so that they will temper their negative judgments about the firm when a pension crisis occurs.

Our study makes the following contributions. First, we contribute to a small but growing stream of work within the CSR literature that examines how CSR activities relate to other aspects of corporate behavior. This stream of work has examined how CSR activities associate with earnings management behavior (Kim, Park, and Wier 2012); to tax avoidance behavior (Hoi, Wu, and Zhang 2013), and to insider trading activity by top corporate executives (Gao, Lisic, and Zhang 2014).

Second, by examining how the conservative management of DB pension plans – which can be perceived as responsible behavior towards internal stakeholders (employees) – fits into the larger framework of CSR initiatives aimed at other, external stakeholders (customers, the local community, the environment), we are able to comment on firms’ underlying motivations for engaging in CSR activity. The fact that responsible behavior towards external stakeholders does not necessarily go hand-in-hand with responsible behavior towards internal stakeholders could be interpreted as indicating that socially responsible firms do not necessarily “walk the talk”. Finding that CSR engagement aimed at external stakeholders increases significantly around negative

pension-related events (e.g., the increased visibility of pension underfunding, or announcements to discontinue pension plans) suggests even more specifically that these CSR activities are motivated by the desire to manage corporate reputation, in the face of pension-related events that have the potential to damage it. In this regard, we add to the small stream of literature across disciplines that documents such a risk-management or reputation-repair motivation for CSR activity (e.g., Godfrey, Merrill, and Hansen 2009, Chakravarthy, DeHaan, and Rajgopal 2014).

Third, we contribute to the literature spanning accounting, finance, and economics on the factors that drive the funding and management of corporate DB plans. Prior work has documented various drivers of pension funding strategy (e.g., financial constraints or financial slack, tax incentives, labor-related incentives, and political costs, to name a few), as well as of decisions to freeze plans (e.g., financial health of the sponsor, desire to manage volatility in pension costs, and demographics of the labor force).<sup>2</sup> Our finding that plan sponsors step up CSR efforts in the face of negative pension-related events suggests that sponsors' ability to use CSR activities to manage corporate image could in turn play a role in the strategies they ultimately adopt with respect to funding and continuing (or not, as the case may be) their pension plans.

Section 2 provides institutional background of pension plans, and Section 3 develops hypotheses based on the alternative perspectives of CSR. Section 4 documents baseline results on the association between pension status and CSR. Section 5 lays out more specific tests of the risk-management perspective, and Section 6 concludes.

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<sup>2</sup> Please see Friedman (1983), Bodie, Light, Morck, and Taggart (1985), Francis and Reiter (1987), Petersen (1996), and Anantharaman and Lee (2014) for work on the drivers of pension funding. For work on the determinants of pension freeze decisions, please see Munnell and Soto (2007), who provide a comprehensive review of the wide variety of drivers identified of pension freezes.

## 2. INSTITUTIONAL BACKGROUND OF PENSIONS

### 2.1. *Defined-benefit and defined-contribution plans: An overview*

Pensions are essentially wages whose payment is deferred into the future post-retirement, and defined-benefit (DB) plans were the primary form of pensions offered to workers in the U.S. until the early 1980s in both private and public sectors. These plans promise a certain, pre-specified stream of benefits (hence the term “defined-benefit”) to employees, payable from the time they retire, for the length of their post-retirement lives. Benefits are typically a function of (i) the number of years of service, (ii) end-of-career salary (or in some cases, career-average salary), and (iii) a multiplier that ranges typically from 1.5-2%. Therefore, for an employee who retires after a 30-year tenure with a firm, a DB plan would typically provide an annual pension equal to 50-60% of that employee’s final salary before retirement. For every additional year of service provided by the employee, hence, the employer accrues an additional pension liability, equal to the discounted present value of the benefits earned from that year of service.

Since the early 1980s, however, DB plans have been steadily on the wane, increasingly replaced by defined-contribution (DC) plans. DC plans, in contrast to DB plans, do not promise a certain benefit on retirement; instead, employers commit to contributing a pre-specified amount into an account designated for each employee (hence the term “defined-contribution”).<sup>3</sup> As Rauh, Stefanescu, and Zeldes (2013) point out, the key differences between DB and DC plans lie in the way in which they distribute risk between employer and employee. DB plans put the onus on the employer to set aside funds and invest them in such a way as to ensure that sufficient funds are available to pay benefits as they fall due. Employers are also responsible for funding a longer stream of benefit payments, if employees should live for longer than expected. In other words,

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<sup>3</sup> 401(k) plans are a common type of DC plan, offered by corporations to their employees. Public education entities and other non-profit organizations offer 403(b) plans to their employees.

both investment risk and mortality / longevity risk are borne by the employer. DC plans, in contrast, put the onus on the employee to contribute sufficient amounts over time and invest those funds so as to fund their post-retirement needs.

A further difference between DB and DC plans arises from the fact that corporate DB plans are protected by federal regulation put in place to ensure benefit security, starting with the Employee Retirement Income Security Act (ERISA, 1973). ERISA mandates most corporate DB plans to set aside funds in a trust dedicated to meeting benefit payments, and requires sponsors to maintain a certain minimum level of funding, as a percentage of the pension obligation. Moreover, if plan sponsors are in a state of financial distress, the Pension Benefit Guaranty Corporation (PBGC) takes over the plan and guarantees benefit payments, up to a limit reset by federal law every year.<sup>4</sup> Beneficiaries' downside risk is therefore subject to a floor, determined by what the PBGC will guarantee. With DC plans, in contrast, employees have control at any point in time over the funds contributed into their account, but must bear the full downside risk of any investment decisions they make.<sup>5</sup>

The costs to the sponsor of managing and maintaining a DB plan, along with tightening funding and reporting requirements over time, have contributed towards a spate of employers closing their DB plans in recent times (e.g., Munnell and Soto, 2007). As Munnell and Soto (2007) explain, the closing of a DB plan typically begins with new hires being kept out of the plan, and offered a DC plan instead (this is often referred to as a "closed freeze"). Employees already

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<sup>4</sup> The monthly guarantee that applies in 2015 to a 65-year old retiree is \$5,011.36. See <http://www.pbgc.gov/wr/benefits/guaranteed-benefits/maximum-guarantee.html>

<sup>5</sup> The often-quoted example is that of Enron, whose employees were heavily invested in Enron stock through their DC (401(k)) plans. Enron had also made employer contributions in the form of its own stock. Around the revelation of the accounting scandals at Enron, the company chose to freeze assets in the 401(k) plan, which prevented employees from switching out of Enron stock. As a result, many employees lost almost all their retirement savings. See, for example, <http://www.nytimes.com/2001/11/22/business/employees-retirement-plan-is-a-victim-as-enron-tumbles.html>

enrolled in the DB plan at times continue accruing additional benefits for any future salary increases, but not for additional years of service (a “soft freeze”). Alternatively, benefit accruals stop entirely even for employees currently in the DB plan, and no additional benefits are earned for future years of service or future salary increases (a “hard freeze”).<sup>6</sup>

Extant research concludes that sponsors with underfunded plans and those facing uncertain, potentially volatile future cash contribution requirements are significantly more likely to freeze their plans. Deteriorating financial health of the employer also makes freezes more likely. All these factors point to the desire for long-term cost savings and cost stability as primary drivers of the trend to freeze. Consistently, Rauh, Stefanescu, and Zeldes (2013) find that firms that have frozen DB plans have reduced their overall costs of providing retirement benefits to employees, even after considering the higher 401(k) contributions they give to compensate employees for the closure of the DB plan.

## *2.2. The funding of DB pension plans*

While corporate DB plans are required to maintain minimum funding levels per ERISA rules, some discretion still exists in funding, leaving wide variation in actual funding levels observed across plans. For example, plan sponsors were exempt from contributing for many years if they had previously contributed above the minimum, and if their plans were at least 90% funded. Underfunded sponsors also had a long period of time (30 years) over which to amortize (i.e., catch up on) funding deficits. Partially because of a recognition that these gaps in the rules had contributed to pervasive funding weaknesses, the Pension Protection Act (PPA) was enacted in

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<sup>6</sup> One key driver of the shift from DB to DC plans is the changing demographics of the labor force. Younger, more mobile workers tend to prefer DC plans, which they can take with them as move from employer to employer. DB plans, on the other hand, reward longevity, with a substantial portion of the benefits typically accruing during the last few years of an employee’s tenure. Therefore, the shift toward DC plans is to some extent driven by evolving workforce demand for more flexible, DC-type benefits (see, e.g., Aaronson and Coronado 2005). For this reason, we do not make a general assertion that DB plans are strictly better than DC plans from the perspective of employees; rather, we focus on how secure DB plan promises are, *for the employers that make those promises in the first place.*

2006 to tighten up funding requirements. The PPA, among other things, raised the required funding level from 90% to 100%, reduced the amortization period for deficits to seven years, and introduced a new category of “at-risk” plans that were subject to stricter funding requirements. While the PPA’s funding requirements were originally meant to phase in from 2008, however, intense corporate lobbying in the wake of the financial crisis has led to a series of Congressional measures delaying PPA implementation.<sup>7</sup>

Ceteris paribus, a higher level of plan funding (i) increases the likelihood of sufficient funds being available to meet benefit payments, and also (ii) lowers the likelihood of the plan being frozen, thus increasing benefit security from employees’ perspective.<sup>8</sup>

### *2.3. The measurement and reporting of DB pension liabilities*

DB pension liabilities, as measured and recognized on corporate balance sheets, are the discounted present values of benefit payments expected to be made to eligible employees on retirement. Benefit payments, however, are made very far out into the future for currently active employees, leaving substantial uncertainty in what will be paid and when it will be paid. Valuing pension obligations hence requires a number of actuarial assumptions, which are broadly of two types: (i) demographic assumptions, which pertain to the behavior of the beneficiary pool - e.g., how long will employees continue working before they retire? How many will take early

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<sup>7</sup> For example, the Worker, Retiree, and Employer Recovery Act (2008), the Preservation of Access to Care for Medicare Beneficiaries and Pension Relief Act (2010), and Moving Ahead for Progress in the 21<sup>st</sup> Century Act (2012).

<sup>8</sup> However, two plans need not have the same level of benefit security simply by virtue of having the same funding level, as the funds could be invested differently. Most plan sponsors invest plan assets in a combination of equity and fixed-income securities. As benefit payments involve pre-determined cash outflows at specified points in time, their payoffs resemble the payoffs on debt, and hence investing plan assets in a duration-matched portfolio of high-quality, fixed-income securities can minimize exposure to interest rate risk. Investing in equities, on the other hand, does not provide this matching, and could bring considerably volatility in funding levels due to market fluctuations. Nevertheless, we do not explicitly examine the extent of fixed-income investment in pension asset portfolios as a component of ‘responsible’ DB management, as there are countervailing benefits to investing in equities: while they create funding volatility from period to period, equities are also expected to earn higher returns over the long-term, which could give plans invested in equities a better chance of ultimately meeting benefit payments. Therefore, whether investing pension assets in equities ultimately helps or detracts from benefit security is unclear.

retirement? How many will be terminated before retirement? On retiring, will they choose a lump-sum benefit or an annuity? How long will retirees live? and (ii) economic assumptions, which relate to how market forces affect the cost of the plan – e.g., at what rate will salaries grow over the working lives of eligible employees (the “salary growth rate”)? At what rate should future benefits be discounted back to present value (the “discount rate”)?

While the Financial Accounting Standards Board (FASB) provides guidelines on how to choose economic assumptions, the task of choosing a set of assumptions that accurately reflects each plan’s past experience and expected future is ultimately one that involves the judgment of managers, aided by actuaries. This discretion also implies that assumptions are, at times, chosen opportunistically by managers who are motivated to window-dress financial statements, or to under-report pension expense or pension liabilities. The complexity of pension valuation, the judgmental nature of assumption-setting and there being an acceptable range for many assumptions, and difficulty in detecting manipulation *ex ante* or in disentangling it from honest error *ex post* all contribute to enabling aggressive reporting (Asthana 1999, Brown 2004, Picconi 2006). Consistently, a stream of research (Feldstein and Morck 1982, Amir and Gordon 1996, Asthana 1999, Brown 2004) has found that firms with strong incentives to understate pension liabilities (e.g., firms in poor financial health, with high leverage, and underfunded plans) tend to choose aggressive (i.e., obligation-reducing) discount rates and salary growth rates.<sup>9</sup>

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<sup>9</sup>Accounting research has so far focused on economic assumptions as opposed to demographic assumptions, perhaps because (i) economic assumptions are required disclosure in SEC filings whereas demographic assumptions are not; and (ii) modeling the “expected”, or “true” or “un-managed” demographic assumption for each plan would require detailed data on the actual demographics of the beneficiary pool, which are not public disclosure. FASB pronouncements governing pension accounting (Statement of Financial Accounting Standards 87 *Employers’ Accounting for Pensions*, 132 *Employers’ Disclosures about Pensions and Other Postretirement Benefits*, 158 *Employers’ Accounting for Defined Benefit Pension and Other Postretirement Plans*), on the other hand, require disclosure of at least some plan parameters that are helpful in modeling the expected component of economic assumptions. Even for these economic assumptions, however, we still do not have complete public disclosure on all the plan parameters that would be necessary to evaluate how reasonable the assumptions chosen are.

Ceteris paribus, aggressive (obligation-reducing) economic assumptions could ultimately hurt benefit security. An aggressive set of assumptions values pension liabilities at lower than they actually are, and correspondingly makes funding status appear better than it truly is. This could in turn reduce the scrutiny and attention on funding from employees, labor unions, and the media, who would otherwise have exerted pressure on the plan sponsor to increase contributions into the plan. Window-dressing reported funding status can therefore be a means for plan sponsors to deplete the true funding level stealthily over time.

### **3. HYPOTHESES**

How pension funding and reporting decisions fit into the larger framework of CSR activities depends to a large extent on what firms' underlying motivations are for engaging in CSR. The extensive literature on drivers of CSR offers two competing perspectives on why firms might choose to engage in CSR activities.

#### *3.1. The corporate culture perspective*

A firm's commitment to CSR could arise from a shared set of beliefs, or culture within the firm, that integrating the welfare of a wider group of stakeholders – suppliers, customers, employees, the local community, the environment, etc. – is “the right thing to do”.<sup>10</sup> If an underlying culture of “corporate goodness” exists, then this should permeate consistently into the firm's policies affecting a wide group of stakeholders. We would expect such a culture to systematically drive CSR activities engaging not only with external stakeholders such as customers, the local community and the environment, but also internal stakeholders, namely employees. Such a firm, having made certain DB promises to employees, is unlikely to retract these promises (which

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<sup>10</sup> This belief could arise either because it fulfills some guiding moral principle, or because integrating the needs of a broad group of stakeholders into corporate decision-making ultimately makes good business sense. We do not distinguish between these underlying reasons.

happens to varying degrees in a pension freeze), which in turn implies a commitment to fund those DB promises. Under this perspective, therefore, firms that are socially responsible towards external stakeholders are also likely to have secure, well-funded, and transparently reported DB pension plans. Note that this perspective does not imply a causal relationship between pension policies and CSR policies, but rather implies that an underlying corporate culture that values responsibility towards all stakeholders will drive the responsible management of DB plans as well as responsible behavior towards other stakeholders. The corporate-culture perspective hence provides the following empirical prediction:

***H1a:** CSR activities are positively associated with pension funding.*

***H1b:** CSR activities are negatively associated with aggressive (i.e., obligation-reducing) pension assumptions.*

Although “culture” is a latent concept that is difficult to observe directly, various strands of research have thrown up findings that could be interpreted as manifestations of corporate culture. First, there is considerable variation in policies across firms that cannot be explained by standard models. For example, researchers in finance have observed that a substantial portion of the variation in capital structure across firms is explained by firm fixed-effects (e.g., Lemmon, Roberts, and Zender 2008), consistent with “informal rules” guiding capital structure policies (Graham and Harvey 2001). Second, Cronqvist, Low, and Nilsson (2007) find that spinoff firms exhibit capital structure, payout, and operating policies that are similar to those of their parent firms, consistent with the idea that culture involves behavior that is inherited from previous generations (Guiso, Sapienza, and Zingales 2006). Third, empirical researchers have found evidence consistent with there being underlying beliefs within organizations that guide their activities on varying fronts, typically that organizations that exhibit risky, aggressive or rent-seeking behavior in one area also

tend to behave similarly in other areas, with the converse also holding true for organizations that voluntarily go beyond mere compliance in letter or form. For example, Frank, Lynch, and Rego (2009) find that firms that exhibit aggressive tax reporting (i.e., manipulate taxable income downwards on their tax return) also tend to exhibit aggressive financial reporting behavior (i.e., manipulate reported earnings upwards on SEC filings). Frank, Lynch, Rego, and Zhao (2015) find that firms that exhibit aggressive financial *and* tax reporting behavior also exhibit a propensity for growth through mergers and acquisitions (as opposed to internal, organic growth), which they conclude is indication of a risk-taking corporate culture.

Three recent studies extend this notion to CSR activities. Kim, Park, and Wier (2012) find that socially responsible firms are also less likely to manipulate reported earnings through either discretionary accruals or real actions, and less likely to be subject to SEC investigations for financial misreporting. Hoi, Wu, and Zhang (2013) find that firms that are socially “irresponsible” (i.e., that behave in an unethical way, or are heedless of how their activities might harm stakeholders) are also more likely to be aggressive on the tax front, i.e., engage in more tax avoidance. Gao, Lisic, and Zhang (2014) find that managers of socially responsible firms also tend to profit less from informed trading in their own stock. All three studies confirm the notion that socially responsible firms also go above and beyond mere compliance with SEC or IRS rules, suggesting that a culture of “goodness” pervades the organization and permeates into a wide variety of corporate decisions.

### *3.2. The risk management perspective*

An alternative perspective is less benign about firms’ motivations for engaging in CSR activities. This view of CSR characterizes it not as something that arises naturally from beliefs deep within an organization about the “right thing to do”, but as a more superficial exercise aimed

largely at managing corporation image and reputation, especially in the face of events that have the potential to damage it (e.g., Financial Times, 2004).

As Godfrey (2005) and Godfrey, Merrill, and Hansen (2009) explain, the normal course of business often necessarily involves actions that impact various stakeholders negatively – from the discontinuation of products or closure of plants, to market-destabilizing frauds, to unpredictable events that are out of the firm’s control to some degree, such as environmental disasters. When these negative events occur, stakeholders can respond with a range of sanctions, such as creating negative publicity for the firm; boycotting its products; or in extreme cases even revoking the firm’s right to conduct business. In this scenario, CSR activities could act as a form of “reputation insurance” or “risk management”, as they build up the firm’s goodwill and moral capital with these external stakeholders. These external stakeholders who function as “society’s arbiters” (Godfrey 2005) might then either moderate their negative sanctions against the firm, or give the firm the benefit of the doubt when judging its actions, whenever there is ambiguity about the firm’s motives (Uzzi 1997). This perspective predicts that firms build up CSR activities as a pre-emptive measure against the potential risk of negative events, or in the wake of negative events, to white-wash corporate image and repair corporate reputation *ex post*.

There is some empirical evidence consistent with this risk-management perspective. Godfrey, Merrill, and Hansen (2009) examine a sample of 254 firms subject to negative legal or regulatory actions (lawsuits, regulatory investigations or penalties, health and safety violations), and find that the negative equity market reaction to these events is significantly lower when these firms have demonstrated high levels of engagement with the local community and with society at large.<sup>11</sup> Chakravarthy, DeHaan, and Rajgopal (2014) examine a sample of firms that have been

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<sup>11</sup> Godfrey, Merrill, and Hansen (2009) distinguish between primary stakeholders – those essential to the firm’s operations who thus have the power to enforce their claims on the firm (e.g., employees, customers), and secondary

forced to restate their financial statements – an indication that serious financial misreporting has occurred – and find a sharp increase thereafter in what they label reputation-repair actions, targeting customers (e.g., improved warranty programs), employees (e.g., investing in winning “Best Employer” awards), and the community (e.g., charitable contributions and involvement with non-profit organizations).

How does this risk-management perspective inform the potential relation between responsible pension management and CSR activities? Weak pension funding (and aggressive over-reporting of funding status, which eventually contributes to weak funding) can create difficulties in corporate relations with employees, retirees, and labor unions, and place sponsors in the regulatory spotlight, all of which in turn puts the firm at the receiving end of negative media coverage. IBM’s 1999 conversion of its traditional DB plan into a “cash-balance” plan is a famous case in point. This move resulted in the formation of the IBM Employees Benefit Action Coalition, which actively protested the change, helped to organize town-hall meetings with elected representatives, and challenged the legality of the conversion in court. Court hearings were accompanied by picketing and protests, with elected representatives getting involved, and significant media coverage.<sup>12</sup>The Lucent Retirees Organization is another example of a volunteer-led beneficiary group that has lobbied actively against Lucent’s cut of retiree medical benefits, starting in 2003. Pension funding crises in troubled industries such as airlines and steel have seen

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stakeholders – those with legitimate claims on the firm but lacking the power to enforce them (e.g., the local community, society at large). They argue that CSR activities aimed at primary stakeholders are unlikely to create the “moral capital” that is essential to reputational insurance, as actions aimed at placating primary stakeholders are likely to be seen through a power-exchange lens. CSR activities aimed at secondary stakeholders, on the other hand, are more likely to create this moral capital, precisely because these stakeholders lack the urgency or power to enforce their claims. For this reason, these activities are more likely to be viewed as voluntary acts of social beneficence than as self-serving actions by managers trying to improve the terms under which they transact with primary stakeholders.

<sup>12</sup> See, for example, <http://www.wsj.com/articles/SB937779366171684213>, <http://www.pionline.com/article/19990906/PRINT/909060743/big-blues-ibms-conversion-draws-watchdogs-switch-to-cash-balance-plan-raises-concern-from-lawmakers-about-age-discrimination>, [http://www.ranknfile-ue.org/uen\\_cbpensions.html](http://www.ranknfile-ue.org/uen_cbpensions.html), and [http://www.forbes.com/2003/04/16/cz\\_jn\\_0416beltway.html](http://www.forbes.com/2003/04/16/cz_jn_0416beltway.html)

significant protest from unions. In the face of United Airlines' bankruptcy and resulting pension termination in 2002, unions threatened strikes and protested outside courthouses and airports.

If the risk-management view more accurately characterizes firms' motivations for undertaking CSR activities, then we would expect firms with poorly managed DB plans – which are at greater risk of the reputation-damaging events described above, and in greater need of boosting employee morale or deflecting stakeholder attention away from impending funding crises – to be more likely to engage in CSR. These CSR activities could occur either pre-emptively – to buy reputation insurance before difficulties break out, or after the fact. Unlike the corporate-culture perspective, this perspective implies a directional relation between pension management and CSR: problems with pension funding motivate firms to engage in CSR activities. The empirical prediction from the risk-management perspective, therefore, is:

***H2a:** Firms with weakly-funded pension plans are more likely to undertake CSR activities.*

***H2b:** Firms with aggressive (i.e., obligation-reducing) pension assumptions are more likely to undertake CSR activities.*

There is some indirect evidence consistent with this view in the work of Guthrie and Miller (2011). They find that corporations are more aggressive in adopting CSR practices when they are located in areas with high union density or in jurisdictions that have historically protected workers' rights. They interpret these findings as consistent with CSR being a less expensive way for corporations to gain legitimacy within their communities, most often as a response to pressures

from workers and unions, leading to the conclusion that corporate social responsibility is “cheaper than a pension fund”<sup>13,14</sup>.

## 4. RESEARCH DESIGN AND BASELINE RESULTS

### 4.1. *Measuring CSR activities*

We use data from Kinder, Lydenberg, and Domini (KLD) Research and Analytics, now a part of MSCI, to measure CSR activities. KLD is an information intermediary that quantifies stakeholder relations along the dimensions of environment, community, diversity, employee relations, human rights, product quality and safety, and corporate governance. For each of these dimensions, KLD provides a set of binary indicator variables that are either positive (Strengths), or negative (Concerns). For example, a positive indicator under the environment dimension might reflect that firm’s pollution prevention efforts, whereas a negative indicator might indicate that it generates hazardous waste. KLD’s analysts rely on publicly available sources of information such as articles in popular press, financial statements, surveys, and government reports to capture pertinent information and systematically match it with the most appropriate positive or negative indicator.<sup>16</sup> In addition, KLD offers exclusionary screens indicating firms involved in alcohol, gambling, military contracting, nuclear power, and tobacco.

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<sup>13</sup> See <http://www.forbes.com/sites/dougguthrie/2012/02/08/corporate-social-responsibility-cheaper-than-a-pension-fund/>. This view of CSR presents something of a middle ground between the two extremes that view CSR as acts of altruism or as public relations stunts. Instead, this perspective argues that all corporations need to respond to pressures from their local communities, primarily from workers and unions, and views CSR as an institutionalized way of fulfilling the social contract and gaining legitimacy with these workers and unions.

<sup>14</sup> We stress here that these competing perspectives do not lie on either side of the debate on “does CSR make good business sense?”. An organization whose culture embeds CSR could have evolved that way either because it believes that CSR fulfills some underlying moral imperative, or because CSR activities translate into stockholder value. Similarly, even though the risk-management perspective takes a less benign view of firms’ motivations for CSR, the reputation insurance provided by CSR activities could protect stockholder value, for example by protecting the firm from losing too many customers following a reputation-damaging event. Distinguishing between the whether the CSR activities are value-reducing or value-adding from stockholders’ perspective is not a primary focus of our study.

<sup>16</sup>See the KLD STATS manual at [https://wrds-web.wharton.upenn.edu/wrds/support/Data/\\_001Manuals%20and%20Overviews/\\_175MSCI/index.cfm](https://wrds-web.wharton.upenn.edu/wrds/support/Data/_001Manuals%20and%20Overviews/_175MSCI/index.cfm) for more information on the different binary indicators and issue areas.

KLD data have been used extensively in scholarly research to measure CSR activities.<sup>17</sup> Following prior studies (e.g. Kim, Park, and Wier 2012) we construct a CSR score (*CSR\_SCORE*), measured as total strengths minus total concerns in five social rating categories: environment, community, diversity, human rights, and product. Absent from the construction of *CSR\_SCORE* are the employee, corporate governance, and exclusionary screen dimensions of KLD ratings. We exclude the employee dimension of KLD ratings because this category considers strong retirement benefits as a strength, and “substantially” underfunded DB plans or “inadequate” retirement benefits programs as a concern. Including the employee dimension of KLD ratings in *CSR\_SCORE* could hence lead to a purely mechanical association between our variables of interest.. Following Kim, Park, and Wier (2012), we also exclude corporate governance ratings from *CSR\_SCORE*. Corporate governance is a set of mechanisms to overcome agency problems and to ensure shareholder welfare (Shleifer and Vishny, 1997). CSR is aimed at ensuring the interests of all stakeholders including shareholders. Thus, corporate governance can be viewed as an important aspect of CSR. Prior research has examined the effect of corporate governance on various managerial choices, including defined benefit pension policies (Phan and Hegde, 2013). Therefore, we exclude corporate governance ratings from *CSR\_SCORE* to ensure that our documented relation between a firm’s CSR activities and its pension policies does not simply reflect the relation between a firm’s corporate governance and its pension policies. Finally, we do not include KLD’s exclusionary screens in *CSR\_SCORE* because we are interested in capturing the extent to which the firm undertakes voluntary CSR activities, whereas the exclusionary screens derive more fundamentally from the firm’s core business.

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<sup>17</sup> Recent examples of its use in the accounting and financial economics research include: Hong and Kostovetsky, 2012; Hong, Kubik, and Scheinkman, 2012; Kim, Park, and Wier, 2012; Cheng, Hong, and Shue, 2013; Hoi, Wu, and Zhang, 2013; Servaes and Tamayo, 2013; Deng, Kang, and Low, 2013; Di Giuli and Kostovetsky, 2014; Kruger, 2015.

#### 4.2. Measuring DB pension funding and reporting

Our core measure of DB funding is the funding status ratio (*FSRATIO*), defined as the fair value of a firm's DB pension assets divided by its pension liability (also known as the pension projected benefit obligation, or PBO). We supplement *FSRATIO* with an indicator variable set to one if the plan is underfunded (i.e., if the fair value of plan assets is lower than the PBO) and set to zero otherwise (*UNDERFUNDED*). In addition to examining these "stock" measures of pension funding, we also examine a flow measure of how much cash the sponsor contributes to pension plans during the year, scaled by beginning-of-year PBO (*CONTRIBUTION*).

Capturing the aggressive reporting of the pension PBO is less straightforward, as it requires us to identify when pension assumptions have been over- or understated, which in turn requires a benchmark for what the "true" or "un-managed" assumptions are for each firm. In order to construct a measure of aggressive reporting for a large sample of firms using machine-readable data, we rely on an approach developed by Hann, Lu, and Subramanyam (2007, hereafter "HLS"). Each firm's PBO is a function of two key assumptions: (i) the discount rate, at which future benefits are discounted back to present value; and (ii) the salary growth rate, at which current salaries are expected to grow over employees' working lives. HLS develop a technique to re-estimate a firm's PBO assuming that the firm uses the industry-median discount rate and industry-median salary growth rate, instead of the actual firm-specific assumption it chooses for that period. This estimate is dubbed the firm's "non-discretionary" PBO. Using the HLS technique, therefore, allows us to estimate the extent to which the firm's actual PBO differs from the "non-discretionary" PBO that would have resulted had the firm used industry-median assumptions, with this difference capturing the "discretionary" component of the PBO. The industry-median assumptions, therefore, implicitly serve as neutral benchmarks for what the firm's assumptions would have been in the

absence of any managerial incentives to manipulate them. A discount rate and salary growth rate, which in combination result in a lower PBO than what would result from using industry-median assumptions, captures aggressive reporting, and vice versa. Following this logic, our measure of aggressive reporting, *FSRATIO\_ERROR*, is the difference between *FSRATIO* (fair value of plan assets / actual PBO) and *Predicted\_FSRATIO* (fair value of plan assets / non-discretionary PBO). A higher (more positive) *FSRATIO\_ERROR* implies more overstatement of the funding status.

#### 4.3. Baseline model

We estimate the following model to test the association between pension funding/reporting and CSR activities:

$$CSR\_SCORE = \alpha_0 + \alpha_1 * PENSIONVAR + Controls + Firm\ FE + Year\ FE + \varepsilon_t(1)$$

We estimate four different specifications of this model where *PENSIONVAR* in each specification is *UNDERFUNDED*, *FSRATIO*, *CONTRIBUTION*, and *FSRATIO\_ERROR*, respectively.

Our choice of control variables is guided by recent studies on the determinants of CSR (e.g. Di Giuli and Kostovetsky, 2014; Lys, Naughton, and Wang 2015). We include a measure of the firm's overall corporate governance (*GOV\_SCORE*), obtained from KLD ratings, because as discussed earlier, corporate governance affects the nature and effectiveness of CSR activities undertaken by a firm (Johnson and Greening, 1999) . We then control for firm size, measured as the natural log of total assets (*SIZE*). Larger firms are more likely to engage in CSR activities because they have more resources at their disposal and they might also face greater pressure to engage in CSR-related activities (Wu, 2006). We include the market-to-book ratio (*MB*), leverage (*LEV*), and cash flow volatility (*CFVOL*), in the regression model because prior research suggests that more stable and less risky firms are more likely to spend more on CSR (Margolis, Elfenbein,

and Walsh, 2009). We also include the return on assets (*ROA*), the Kaplan and Zingales (1997) index of financial constraints (*KZ*), free cash flows (*FREECF*), and dividend payments (*DIV*) in the model. Together, these measures capture financial performance and flexibility. It is important to control for these factors because firms that are doing well (financially) might be the ones that are also likely to “do good” (Hong, Kubik, and Scheinkman, 2011), or because CSR activities might also be a signal of future profitability (Lys, Naughton, and Wang 2015). We further control for advertising expense (*AD*) and R&D expense (*RD*) because firms incur expenditures to create customer awareness and maintain high product quality, which in turn are integral parts of CSR policies of a firm (McWilliams and Siegel, 2000). Finally, we include firm fixed-effects in the model to capture firm-specific unobservable factors, and year fixed-effects to capture time trends. Appendix A provides detailed variable definitions.

#### *4.4. Sample selection*

We begin with KLD social ratings data, which is available for the 1995-2012 period. The number of firms covered in this dataset range from around 650 in the initial years to around 3,000 in the more recent years, with a major expansion coming in the year 2003. We merge this CSR data with financial accounting and pension data from the Compustat database, for those firms with DB pension plans. After removing firm-year observations with insufficient data to compute any of the Equation (1) variables, we obtain a sample of 1,516 unique firms with 11,412 firm-year observations over the 1995-2012 period.

Table 1 describes the sample, with Panel A providing a year-by-year breakdown of the sample. Each of the years 1995-2001 accounts for 2-2.5% of the overall sample, with a sudden increase in sample size commencing from 2003, when KLD expanded data coverage. As a result, each of the years 2003 onwards accounts for about 6-8% of the overall sample. The average

*CSR\_SCORE* shows no discernible trend over the years. Panel B tabulates firm-year observations by industry (Fama and French 12-industry classification). Manufacturing firms are the most highly represented (19.93% of the sample), followed by finance (15.83%), utilities (9.28%), and business equipment (9.21%). Panel C tabulates firm-year observations by the net KLD rating assigned to them.

#### 4.5. Descriptive statistics

Table 2, Panel A, presents descriptive statistics of the Equation (1) variables. *CSR\_SCORE* has a mean (median) of 0.26 (0), with an interquartile range of -1 to 1, and 1<sup>st</sup> (99<sup>th</sup>) percentile values of -5(8). The mean (median) pension funding ratio is 82.7% (80.8%), with the interquartile range from 68% to 95.5% demonstrating wide variation in pension funding observed in practice. 83% of the firm-year observations have underfunded pensions. The mean (median) employer contribution is 6% (4.4%) of beginning-of-period pension liabilities, with an interquartile range from 1.3% to 8.3%. *FSRATIO\_ERROR*, our measure of the aggressive reporting of funding status, has a mean and median very close to zero, with an interquartile range of -1.2% to 1.2%. The 1<sup>st</sup> (99<sup>th</sup>) percentile of *FSRATIO\_ERROR* is -15% (7.9%), indicating that managers' discretionary choice of pension assumptions leads to a reported funding status that is 15% lower (or 7.9% higher) than what would have been obtained had the firm used industry-median assumptions instead.

The median firm in the sample has total assets of \$ 3.4142 billions, a market-to-book ratio of 1.9, and leverage to the tune of 23.3% of total assets. The median firm also has, as a percentage of total assets, income of 4%, free cash flows of 3.9%, and dividend payouts of 0.9%. The median firm has no advertising or R&D expenditure, although these expenses average 0.9% and 1.5% in the sample.

Panel B presents the results of univariate tests partitioning the sample by the four measures of DB pension status. Firms with underfunded plans have a mean *CSR\_SCORE* of 0.33, compared to firms with overfunded plans which have a mean *CSR\_SCORE* of -0.09. Similarly, partitioning the sample by median funding status shows an average *CSR\_SCORE* of 0.78 (-0.21) within firms having relatively poorly-funded (well-funded) plans. Consistent with this pattern, firms having plans with relatively low (high) contributions have a *CSR\_SCORE* of 0.41 (0.15). All these differences are highly statistically significant. These patterns indicate that firms with relatively poorly-funded pensions tend to engage more in CSR activities; at first glance, this is consistent more with the risk-management perspective than with the culture perspective. Finally, firms with relatively more overstated funding status have a *CSR\_SCORE* of 0.39, again significantly higher than the mean *CSR\_SCORE* of 0.19 in the other subsample.

Overall, firms with low pension funding and aggressively overstated funding tend to engage in more CSR. Notice here that our measures of pension funding, *FSRATIO* and *UNDERFUNDED*, use as-reported pension obligation measures; therefore, to the extent to which funding status is overstated, the true relation between low pension funding and CSR could be even stronger than what we observe here.

Panel C presents univariate correlations between the model variables. Correlations between the explanatory variables of interest and *CSR\_SCORE* mirror those described in Panel B. Larger, more profitable firms, with healthier and more stable cash flows, tend to engage more in CSR, which is broadly consistent with extant research. Larger and more profitable firms tend to have better pension funding.

#### 4.6. Baseline results on the relation between DB pension status and CSR

Table 3 presents results of estimating Equation (1). Column (1) presents results with *UNDERFUNDED* as the explanatory variable, with Column (2) presenting results with *FSRATIO*, Column (3) with *CONTRIBUTION*, and Column (4) with *FSRATIO\_ERROR*. Columns 1-3 present a consistent picture: controlling for other determinants of CSR, lower pension funding and lower contributions associate with higher CSR activity aimed at external stakeholders. Furthermore, in Column 4, a higher *FSRATIO\_ERROR* is strongly positively associated with CSR activity. The overall implication from these results is that firms with weakly funded pensions and aggressively overstated funding status tend to engage in more CSR activity. These results are not consistent with the corporate-culture view, which would predict that firms showing high degrees of commitment to external stakeholders would also integrate employees' and retirees' benefit security into their priorities. Rather, these results are more consistent with the risk-management view, wherein engagement with external stakeholders is more of a device to deflect attention away from weak pension funding, or to temper the negative judgments that external stakeholders might form of the firm as a result of weak pension funding. In terms of economic significance of these results, column (1) suggests that the *CSR\_SCORE* of firms with underfunded plans is greater than the *CSR\_SCORE* of firms with overfunded plans by 0.3199, which is 1.23 times more than the mean *CSR\_SCORE* for the entire sample. Similarly, from column (4), we can say that one standard deviation increase in *FSRATIO\_ERROR* increases the *CSR\_SCORE* by 0.0673, which is about 26% of the mean *CSR\_SCORE* for the entire sample and hence quite significant.

Table 4 extends these findings further by breaking *CSR\_SCORE* down into its components: environment, community, diversity, human rights, and product quality. *FSRATIO* is strongly

negatively related to each of these components, indicating that the relations documented in Table 3 are not driven by any single component in particular.

Among control variables in Tables 3-4, firms with higher and more stable free cash flows, lower dividend commitments, more financial slack (as measured by the *KZ* index), and fewer growth opportunities tend to engage more in CSR. Contrary to expectation, smaller firms tend to engage more in CSR, as do highly leveraged firms.

#### *4.7. Interpretation, endogeneity concerns, and further predictions*

Note here that the models in Table 3-4 are run with firm-specific fixed-effects. The coefficients are, therefore, estimated using only within-firm variation, so as to mitigate the effect of any time-invariant unobservable factors that could differ across firms and drive variation in both pension funding policies as well as CSR policies. One plausible channel through which omitted variables could affect both our dependent and independent variables, is that documented by Hong, Kubik, and Scheinkman (2011), who show that financially constrained firms tend to do less CSR, and Lys, Naughton, and Wang (2015), who document that CSR activities can be interpreted as a signal of future profitability. Financial constraints can also lead to weak pension funding. However, note here that even if the unobservable components of financial constraints and future investment opportunities affect our estimation, they would bias *against* observing the effect that we do observe, which is that pension funding policies and CSR are *negatively* related.

Nevertheless, the risk-management view, in contrast to the corporate-culture view, implies a *causal* effect from weak pension funding to CSR activity: firms with poorly-managed pensions engage in CSR in order to deflect attention from the weak condition of their pension plans, and/or to manage corporate image in the face of pension-related events that have the potential to damage

reputation. We design a series of tests to tease out these mechanisms more specifically. We turn to these tests next.

## **5. SPECIFIC TESTS OF THE RISK-MANAGEMENT PERSPECTIVE**

### *5.1. Changes in CSR around a shock to pension funding visibility*

The risk-management perspective predicts that firms are motivated to undertake CSR activities in order to deflect stakeholders' attention away from weaknesses in their pension plans, or to dampen the negative reputational consequences arising from weak funding. To more explicitly test this motivation, we exploit a recent shock to the visibility of pension funding to design a quasi-experiment.

The FASB issued Statement of Financial Accounting Standards (SFAS) 158 *Employers' Accounting for Defined Benefit Pension and Other Postretirement Plans* in September 2006. Effective for fiscal years ending after December 15, 2006, SFAS 158 mandated that firms sponsoring DB pension or other post-employment benefit plans ("OPEBs", which are typically medical benefit plans) were to recognize the net funding status of their plans (i.e., PBO minus the fair value of plan assets) on the corporate balance sheet. This marked a dramatic shift in the accounting for benefit plans: prior to SFAS 158, the funding status was only required to be disclosed in footnotes to the financial statements, but not recognized on-balance sheet.<sup>18</sup>

We argue that the shift from disclosure in financial statement footnotes to recognition on-balance sheet increased the visibility of pension funding status, particularly for sponsors of underfunded plans, many of whom were required to make large downward adjustments to

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<sup>18</sup> To be more specific, the benefit plan PBO was not recognized on-balance sheet, but a smaller estimate of the pension obligation, the accumulated benefit obligation (ABO) was recognized if the plan was underfunded on an ABO basis. The ABO is estimated similarly to the PBO, with the key difference that the effect of any future salary increases that employees may earn is excluded from the calculation of future benefit payments. Furthermore, the adjustment to reflect underfunding on an ABO basis was not made through the income statement but directly to stockholders' equity through the Statement of Changes to Stockholders' Equity.

stockholders' equity to bring pension underfunding fully on-balance sheet. A large body of literature in accounting supports the notion that disclosure is not a full substitute for recognition, documenting that market participants value recognized items differently from disclosed items (Bernard and Schipper 1994, Aboody 1996, Davis-Friday, Liu, and Mittelstaedt 2004, Ahmed, Kilic, and Lobo 2006, Yu 2013, among others); that auditors direct more scrutiny on information that is required to be recognized (e.g., Libby, Nelson, and Hunton 2006); and that managers expend considerable resources on lobbying against FASB proposals requiring recognition of items that were previously only disclosed (e.g., Fried 2012). More specifically with respect to SFAS 158, extant research has documented negative equity market reactions for underfunded plan sponsors around dates of release of key FASB pronouncements that eventually became SFAS 158 (Fried, 2012), consistent with recognition bringing economic consequences. Research has also documented increased efforts post-SFAS 158 by managers to manipulate actuarial assumptions so as to understate obligations - and overstate the funding status (Fried and Davis-Friday, 2013; Jones, 2013), again consistent with recognition bringing heightened visibility of underfunding.

If SFAS 158 indeed makes pension underfunding more visible, this allows us to design a specific test of the risk-management hypothesis, which predicts that sponsors of underfunded plans will engage in more CSR activity following SFAS 158. As SFAS 158 changes the manner in which pension funding is presented on financial statements but is not expected to have any inherent impact on firms' CSR policies, this setting allows for a clean test of the mechanism underlying the risk-management perspective. Accordingly, we employ the following difference-in-differences (DD) research design:

$$\begin{aligned}
 CSR\_SCORE = & \beta_0 + \beta_1*NEGADJ158 + \beta_2*POST158 + \beta_3*NEGADJ158*POST158 \\
 & + \text{Controls} + \text{Industry FE} + \text{Year FE} + \varepsilon(2)
 \end{aligned}$$

Where *NEGADJ158* is an indicator variable that equals one if the application of SFAS 158 led to a negative adjustment to stockholders' equity, and to zero if SFAS 158 led to no/a positive adjustment to stockholders' equity. *POST158* is an indicator variable that refers to the time period after SFAS 158 became effective, i.e. fiscal years 2006 and after. All other variables are as previously defined in Equation (1). The sample period for this test is restricted to the year in which SFAS 158 was first implemented (the "event year"), and two years before and after the event year. The risk-management perspective predicts that  $\beta_3 > 0$ .

## 5.2. Empirical results

Table 5 presents the results of estimating Equation (2). Panel A presents univariate statistics of *CSR\_SCORE* for the treatment group (*NEGADJ158*=1) and control group (*NEGADJ158*=0), separately for the pre-158 and post-158 periods, and Figure 1 summarizes these univariate statistics. As shown in Panel A and Figure 1, the treatment and control groups show no significant differences in *CSR\_SCORE* in the pre-158 period. In the year of implementation of SFAS 158, however, the treatment firms – which had a negative adjustment to stockholders' equity as a result of SFAS 158 – show a sharp and significant increase in *CSR\_SCORE*, whereas the control firms show an insignificant change in *CSR\_SCORE* across periods. These univariate patterns are borne out by the positive and highly significant coefficient on *NEGADJ158\*POST158* ( $\beta_3$ ) in the estimation of Equation (2), presented in Table 5, Panel B. The economic significance of the  $\beta_3$  coefficient is as follows- increase in *CSR\_SCORE* for firms with a negative adjustment to stockholders' equity after the implementation of SFAS 158 is 0.2471 more than the increase in *CSR\_SCORE* for firms with no / a positive adjustment to stockholders' equity after the implementation of SFAS 158. This increase is about 95% of the sample mean for *CSR\_SCORE*.

### 5.3. Changes in CSR around pension freezes

Pension freezes, as we describe in Section 3, are events that often bring considerable negative attention and publicity to the firms announcing them. If CSR activities are employed as a means of managing the firm's reputation whenever potentially damaging events occur, then we would expect to see firms stepping up CSR activities either before pension freezes (as a pre-emptive measure, i.e., reputation insurance), or after pension freezes (to engage in reputation repair, or white-washing, after the fact).

While pension freezes are not strictly exogenous events in that managers ultimately decide whether and when to freeze plans, they still present a useful setting to test the mechanism underlying our findings in support of the risk-management perspective. First, while pension freezes are likely to affect CSR activities, reverse causality is less plausible in this scenario because the financial condition of the plan and the sponsor - and not its CSR philosophy - is likely to be the primary driver of the decision to freeze. Second, various firms freeze their plans at various times, and hence event-time and calendar-time are not aligned, helping to rule out the possibility that some systematic or macroeconomic factors drive both pension freezes and CSR.

We employ the following DD research design to examine changes in CSR activity around pension freezes:

$$CSR\_SCORE = \gamma_0 + \gamma_1 * FREEZE + \gamma_2 * POST\_FREEZE + \gamma_3 * FREEZE * POST\_FREEZE + \text{Controls} + \text{Industry FE} + \text{Year FE} + \varepsilon \quad (3)$$

Where *FREEZE* is an indicator variable that equals one if a firm freezes its pension during the year, and zero otherwise, and *POST\_FREEZE* is an indicator variable that refers to time period after the announcement of the pension freeze. All other variables are as previously defined in Equation (1). In this DD framework, the treatment group consists of firms that had a pension

freeze. As we are interested in documenting inter-temporal changes in CSR activities arising from changes in pension policies, we continue to retain two years before and two years after the pension freeze for these firms.

We then generate a control sample to help ensure that any inter-temporal changes in CSR activity that we document for the treatment group are not common to all firms over the sample period. To do this, we identify a sample of firms that are similar to the treatment firms along multiple dimensions but do not have a pension freeze in that period, using propensity-score matching as described in Rosenbaum (2002) and Rosenbaum and Rubin (1983). To implement this propensity score matching procedure, for each initial firm-year (i.e., the year of the pension freeze) in our treatment sample, we select a matching firm (without a pension freeze) in the same year that has the closest propensity score. This propensity score is the predicted value from a probit regression where the incidence of a pension freeze is modeled as a function of *FSRATIO*, pension plan size, *SIZE*, *MB*, *LEV*, *CFVOL*, *ROA*, *KZ*, *FREECF*, and *DIV*. Once we obtain propensity-score matched firms, we then look three years forward and back to construct pseudo “pre-freeze” and “post-freeze” periods for each control firm. Although control firms have no true event year like the treatment firms, this process yields a control sample with pre-freeze and post-freeze periods that have a similar alignment in calendar time to the periods that comprise our treatment group. To maintain the statistical independence of our tests, we allow a matching firm-year to be used only once.

#### *5.4. Empirical results*

Table 6 presents results, with Panel A summarizing univariate shifts in *CSR\_SCORE* between pre- and post-freeze periods for treatment and control groups, and Figure 2 providing a graphical representation of the shifts. Again, as Figure 2 shows, *CSR\_SCORE* is insignificantly

different between treatment and control firms in the two years leading up to a pension freeze; in the year of the pension freeze, however, *CSR\_SCORE* jumps significantly for the freezing firms, and remains at the new, higher level for two years thereafter. Panel B presents results of estimating Equation (3), and shows that *FREEZE\*POST\_FREEZE* is positive and highly significant, again consistent with freezing firms stepping up CSR activities after they freeze their pension plans. The economic significance of the  $\gamma_3$  coefficient is as follows- increase in *CSR\_SCORE* after the pension freeze, for firms that freeze their pension plan, is 0.8666 more than the increase in *CSR\_SCORE* for firms don't freeze their pension plans around the same time period. This increase is about 3.3 times the sample mean for *CSR\_SCORE*.

## 6. CONCLUSION

For a broad sample of U.S. defined-benefit (DB) pension plan sponsors over 1995-2012, we find that sponsors with poorly funded DB plans tend to have higher levels of CSR engagement with external stakeholders. Similarly, we find that sponsors whose pension funding status is aggressively overstated (through the strategic choice of actuarial assumptions that function as inputs to valuing pension obligations) also tend to have higher levels of CSR activity. Further tests indicate that plan sponsors increase their levels of CSR activity aimed at external stakeholders following decisions to freeze pension plans, and following a change in accounting rules that increased the visibility of pension underfunding.

Our results speak to the motivations underlying CSR initiatives. Firms with a culture oriented at “doing good” toward all stakeholders would exhibit high levels of commitment towards the welfare of external stakeholders and a similar commitment towards internal stakeholders, i.e., employees, by ensuring the secure funding of retirement promises made to those employees. Our results are not consistent with this view. Rather, they hark at a more cynical view of CSR activity,

wherein corporations pursue CSR activities as a means of deflecting attention from, or mitigating the fallout from, events that have the potential to damage corporation reputation.

To the extent to which a freeze or reduction in benefits promised to employees is accompanied by reputation-repairing activities aimed at other stakeholders (such as customers, the local community, the non-profit sector, or the environment), this could indicate a wealth transfer from employees to these external stakeholder groups. Our tests, however, do not directly speak to how these decisions ultimately affect stockholder value. Pension freezes have been shown to create cost savings for employers (e.g., Rauh, Stefanescu, and Zeldes 2013), which benefits stockholders. Freezes, could, however, result in negative effects on employee morale and loyalty, or affect the sponsor's reputation for being an employer that keeps its pension promises. To the extent to which CSR activities help to manage or repair a corporate reputation that has been affected by a pension funding crisis (or by protracted negotiations with employees and labor unions on proposed benefit cuts), these activities could contribute to stockholder value. We leave this interesting and important question to future research.

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## Appendix A: Variable definitions

This table defines variables used. Names in the block capitals are Compustat variable names

Variable	Definition
<i>CSR_SCORE</i>	Net score of CSR ratings, measured as total strengths minus total concerns in five social rating categories of KLD ratings data: environment, community, diversity, human rights, and product;
<i>GOV_SCORE</i>	Net score of KLD ratings in the governance category, measured as the number of strengths minus the number of concerns
<u><i>Pension characteristics</i></u>	
<i>UNDERFUNDED</i>	A dummy variable that equals one if pension liabilities (PBPRO) are greater than fair value of pension assets (PPLAO)
<i>FSRATIO</i>	Fair value of pension assets (PPLAO) / Pension liabilities (PBPRO)
<i>CONTRIBUTION</i>	Cash contributed by the employer to the pension plan during the year (PBEC) , scaled by beginning-of-period pension liabilities (PBPRO)
<i>FSRATIO_ERROR</i>	<i>FSRATIO</i> – Predicted ( <i>FSRATIO</i> ), where Predicted ( <i>FSRATIO</i> ) is the ratio of fair value of pension assets and non-discretionary component of pension liabilities. The non-discretionary component of pension liabilities is calculated following Hann, Lu and Subramanyam (2007) using median assumptions for the 2-digit industry instead of the firm's actual assumptions.
<i>NEGADJ158</i>	An indicator variable that equals one if the application of SFAS 158 led to a negative adjustment to stockholders' equity, and zero otherwise.
<i>POST158</i>	An indicator variable that refers to time period after the application of SFAS 158 (i.e. F.Y.2006)
<i>FREEZE</i>	An indicator variable that equals one if the firm froze its pension plan during the year. <i>POST_FREEZE</i> is an indicator variable that refers to time period after the pension freeze.
<u><i>Firm characteristics</i></u>	
<i>SIZE</i>	Natural logarithm of total assets (AT).
<i>MB</i>	Book value of equity (EQ) divided by Market value of equity defined as stock price at the end of fiscal year (PRCC_F) times shares outstanding (CSHO).
<i>LEV</i>	Long-term debt (DLT) plus debt in current liabilities (DLCC), divided by beginning total assets (AT)
<i>ROA</i>	Income before extraordinary items (IB) less pension & retirement expense (XPR) divided by beginning total assets (AT)
<i>KZ</i>	Kaplan and Zingales (1997) index measured as following: $-1.002CF/A - 39.368DIV/A - 1.315C/A + 3.139BLEV + 0.283Q$ where CF/A is cash flow from operations (OANCF) over lagged assets (AT); DIV/A is cash dividends (DVC + DLC) over lagged assets; C/A is cash balances (CHE) over lagged assets; BLEV is book leverage that equals total debt divided by the sum of total debt and book equity((DLTT + DLC) / (DLTT + DLC + CEQ)) measured at fiscal year-end, and Tobin's Q is the market value of the firm equity(PRCC_F*CSHO) plus assets (AT) minus the book value of equity (CEQ) all over assets (AT).
<i>DIV</i>	Cash dividends (DVC) divided by beginning total assets (AT)
<i>FREECF</i>	Cash flows from operations (OANCF) before pension contributions (PBEC) less capital expenditure (CAPX) divided by beginning total assets (AT)
<i>CFVOL</i>	Standard deviation of FREECF for the current and previous four years.
<i>AD</i>	Advertisement expenditure (XAD) divided by beginning total assets (AT)

*RD*

R&D expenditure (XRD) divided by beginning total assets (AT)

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**Table 1: Sample description****Panel A: Distribution of firm-year observations by year**

Year	# of observations	% of sample	Mean CSR_SCORE
1995	253	2.22%	0.6008
1996	273	2.39%	0.5751
1997	271	2.37%	0.5351
1998	295	2.58%	0.5051
1999	307	2.69%	0.4039
2000	309	2.71%	0.3851
2001	407	3.57%	-0.0246
2002	443	3.88%	0.0835
2003	765	6.70%	0.0144
2004	884	7.75%	-0.0814
2005	900	7.89%	-0.0567
2006	905	7.93%	-0.0309
2007	892	7.82%	0.2354
2008	885	7.75%	0.1503
2009	892	7.82%	0.0191
2010	903	7.91%	0.4419
2011	903	7.91%	0.8272
2012	925	8.11%	0.8011
Total	11,412	100.00%	

**Panel B: Distribution of firm-year observations by industry**

Fama French industry code	# of observations	% of sample	Mean CSR_SCORE
1 Consumer non durables	943	8.26%	0.8887
2 Consumer Durables	387	3.39%	-0.0233
3 Manufacturing	2,274	19.93%	0.2485
4 Energy	500	4.38%	-1.9680
5 Chemicals	696	6.10%	-0.0201
6 Business Equipment	1,051	9.21%	1.0457
7 Telecom	280	2.45%	0.9071
8 Utilities	1,059	9.28%	-0.3560
9 Retail	879	7.70%	0.5165
10 Healthcare	550	4.82%	0.9655
11 Finance	1,806	15.83%	0.5648
12 Others	987	8.65%	-0.4022
Total	11,412	100.00%	

**Panel C: Distribution of firm-year observations by net KLD ratings**

Net Score (Strengths – Weaknesses)	<= -3	-2	-1	0	1	2	>= 3
<i>CSR_SCORE</i>							
<i>N</i>	957	1,298	2,052	2,928	1,509	1,005	1,663
<i>%</i>	8.39%	11.37%	17.98%	25.66%	13.22%	8.81%	14.57%
<i>GOV_SCORE</i>							
<i>N</i>	39	416	3,656	6,112	1,147	42	0
<i>%</i>	0.34%	3.65%	32.04%	53.56%	10.05%	0.37%	0.00%

## Table 2: Descriptive statistics

Panel A presents descriptive statistics for the *CSR\_SCORE*, pension plan characteristics and firm characteristics. All other variables are defined in Appendix A. Panel B reports the differences in mean *CSR\_SCORE* for firms grouped along pension characteristics. Four pension characteristics (*PENSION\_CHAR*) considered are whether (i) pension plan is underfunded; (ii) funding status ratio is below industry-year median; (iii) contributions to pension plan are below industry-year median; and (iv) firm's pension assumptions are more aggressive than the industry-year distribution. The significance of differences in means is evaluated based on a two-tailed *t-test*. Panel C presents the Pearson correlations between the main variables. All continuous variables are winsorized at the top and bottom 1 percent of their distribution. \* denote significance at < 5% level.

### Panel A: Full sample

	Mean	Median	SD	P1	P25	P75	P99
<i>CSR_SCORE</i>	0.2611	0.0000	2.5196	-5.0000	-1.0000	1.0000	8.0000
<i>GOV_SCORE</i>	-0.2957	0.0000	0.7248	-2.0000	-1.0000	0.0000	1.0000
<i>UNDERFUNDED</i> (dummy)	0.8312	1.0000	0.3746	0.0000	1.0000	1.0000	1.0000
<i>FSRATIO</i>	0.8267	0.8076	0.2465	0.1921	0.6798	0.9551	1.6060
<i>CONTRIBUTION</i>	0.0597	0.0439	0.0610	0.0000	0.0126	0.0832	0.2950
<i>FSRATIO_ERROR</i>	-0.0001	0.0001	0.0325	-0.1500	-0.0117	0.0117	0.0790
<i>SIZE</i> (\$ billions)	13.9999	3.4241	30.0562	0.1539	1.2815	11.4340	163.4290
<i>MB</i>	2.7232	1.8687	2.9084	0.4596	1.2443	2.9958	20.2079
<i>LEV</i>	0.2437	0.2327	0.1609	0.0000	0.1210	0.3440	0.6860
<i>ROA</i>	0.0442	0.0403	0.0654	-0.1797	0.0134	0.0748	0.2161
<i>KZ</i>	0.8230	0.8552	1.0835	-2.5608	0.2371	1.4818	3.1009
<i>DIV</i>	0.0149	0.0092	0.0195	0.0000	0.0011	0.0210	0.0955
<i>FREECF</i>	0.0443	0.0388	0.0640	-0.1302	0.0102	0.0789	0.2285
<i>CFVOL</i>	0.0344	0.0271	0.0297	0.0018	0.0154	0.0451	0.1408
<i>AD</i>	0.0091	0.0000	0.0252	0.0000	0.0000	0.0022	0.1408
<i>RD</i>	0.0152	0.0000	0.0314	0.0000	0.0000	0.0176	0.1425

### Panel B: Differences in mean *CSR\_SCORE*

Mean <i>CSR_SCORE</i>	<i>PENSION_CHAR</i> = 0	<i>PENSION_CHAR</i> = 1	Difference[1-0]
<i>UNDERFUNDED</i>	-0.0877 (n = 1,926)	0.3319 (n = 9,486)	0.4197***(t-stat =6.6778)
<i>LOFSRATIO</i>	-0.2089 (n = 5,977)	0.7781 (n = 5,435)	0.9871***(t-stat =21.3125)
<i>LOCONTRIBUTION</i>	0.1539 (n = 6,570)	0.4067 (n = 4,842)	0.2528***(t-stat =5.3030)
<i>HIFSRATIO_ERROR</i>	0.1941 (n = 7,484)	0.3887 (n = 3,928)	0.1946***(t-stat =3.9224)

**Panel C: Correlations among CSR\_SCORE, pension characteristics and firm characteristics**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
<i>CSR_SCORE (1)</i>	1.0000															
<i>GOV_SCORE (2)</i>	0.0840*	1.0000														
<i>UNDERFUNDED (3)</i>	0.0624*	-0.0060	1.0000													
<i>FSRATIO (4)</i>	-0.1608*	0.0063	-0.7080*	1.0000												
<i>CONTRIBUTION (5)</i>	-0.1053*	-0.0163	0.1665*	-0.1575*	1.0000											
<i>FSRATIO_ERROR (6)</i>	0.0723*	0.0046	-0.0704*	0.1292*	-0.0402*	1.0000										
<i>SIZE (7)</i>	0.2044*	-0.2203*	-0.0747*	0.0943*	-0.0622*	0.0946*	1.0000									
<i>MB (8)</i>	0.1275*	-0.0682*	-0.0309*	0.0328*	-0.0129	-0.0019	-0.0450*	1.0000								
<i>LEV (9)</i>	-0.0074	-0.0238*	-0.0400*	0.0477*	-0.0574*	0.0262*	0.1553*	0.1302*	1.0000							
<i>ROA (10)</i>	0.0635*	-0.0046	-0.0268*	0.0587*	0.0535*	0.0333*	-0.0613*	0.3552*	-0.1618*	1.0000						
<i>KZ (11)</i>	-0.0349*	-0.0377*	-0.0102	0.0015	-0.0223*	-0.0177	0.2320*	-0.0225*	0.5679*	-0.3576*	1.0000					
<i>DIV (12)</i>	0.1059*	0.0313*	-0.0754*	0.1044*	-0.0479*	0.0843*	0.0026	0.3695*	0.0470*	0.3501*	-0.6661*	1.0000				
<i>FREECF (13)</i>	0.1211*	-0.0540*	0.0319*	-0.0397*	0.0108	-0.0078	-0.1072*	0.3616*	-0.1821*	0.4802*	-0.3705*	0.3158*	1.0000			
<i>CFVOL (14)</i>	-0.0834*	-0.0212*	0.0480*	-0.0645*	0.0593*	-0.0589*	-0.2916*	0.1223*	-0.0285*	0.0522*	-0.1076*	0.0030	0.0726*	1.0000		
<i>AD (15)</i>	0.1477*	-0.0070	-0.0218*	0.0302*	-0.0459*	0.0263*	-0.0714*	0.2660*	0.0056	0.1548*	-0.1310*	0.2153*	0.1897*	0.0600*	1.0000	
<i>RD (16)</i>	0.1531*	-0.0661*	0.0328*	-0.1209*	-0.0191	-0.1948*	-0.1239*	0.2301*	-0.1668*	0.0491*	-0.1916*	0.0780*	0.1970*	0.1558*	0.0025	1.0000

**Table 3: The association between defined-benefit pension policies and CSR activities**

This table examines the association between firms' pension policies and their CSR activities. The dependent variable *CSR\_SCORE* is the net score of CSR ratings, measured as total strengths minus total concerns in five social rating categories of KLD ratings data: environment, community, diversity, human rights, and product. All other variables are as defined in Appendix A. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% level respectively.

<i>Dependent variable = CSR_SCORE</i>	(1) Coeff.	t-stat	(2) Coeff.	t-stat	(3) Coeff.	t-stat	(4) Coeff.	t-stat
<i>UNDERFUNDED</i>	0.3199***	5.4906						
<i>FSRATIO</i>			-2.8269***	-22.4049				
<i>CONTRIBUTION</i>					-2.3003***	-7.2315		
<i>FSRATIO_ERROR</i>							2.0702**	2.5689
<i>Firm controls</i>								
<i>GOV_SCORE</i>	0.6317***	24.7379	0.6078***	24.3405	0.6693***	24.9209	0.6623***	21.5055
<i>SIZE</i>	-0.3643***	-6.1266	-0.3288***	-5.6581	-0.4203***	-6.3130	-0.5135***	-6.9003
<i>MB</i>	-0.0209**	-2.0036	-0.0209**	-2.0536	-0.0273**	-2.4869	-0.0384***	-2.9240
<i>LEV</i>	2.2865***	6.3609	2.5662***	7.3023	2.1324***	5.5384	2.5955***	5.8091
<i>ROA</i>	-0.2245	-0.6992	-0.0351	-0.1119	-0.1121	-0.3255	0.0658	0.1599
<i>KZ</i>	-0.2555***	-3.4802	-0.3446***	-4.7974	-0.2218***	-2.8523	-0.2643***	-2.8722
<i>DIV</i>	-6.9687**	-2.0609	-10.0254***	-3.0321	-6.0129*	-1.6742	-6.8105	-1.5914
<i>FREECF</i>	0.8809**	2.4226	0.9299***	2.6174	0.6490	1.6323	0.5307	1.1554
<i>CFVOL</i>	-1.8752**	-2.3602	-1.8462**	-2.3784	-1.8400**	-2.1733	-2.5834***	-2.6090
<i>AD</i>	-6.4784***	-3.3723	-6.5875***	-3.5118	-1.7509	-0.7755	-8.3357***	-3.4324
<i>RD</i>	-1.3907	-0.8237	-1.5046	-0.9122	-0.0325	-0.0159	-0.1263	-0.0591
Firm fixed effects	Yes		Yes		Yes		Yes	
Year fixed effects	Yes		Yes		Yes		Yes	
Observations	11,412		11,412		10,162		8,395	
Adj. R <sup>2</sup>	0.6516		0.6674		0.6600		0.6611	

**Table 4: The association between defined-benefit pension policies and various dimensions of CSR activities**

This table examines the association between firms' pension policies and their CSR activities by dimension. The dependent variable in columns (1) – (5) is CSR ratings by individual categories. *CSR\_SCORE\_ENV* is net score of CSR ratings for the environment category. *CSR\_SCORE\_COM* is net score of CSR ratings for the community category. *CSR\_SCORE\_DIV* is net score of CSR ratings for the diversity category. *CSR\_SCORE\_HUM* is net score of CSR ratings for the human rights category. *CSR\_SCORE\_PROD* is net score of CSR ratings for the product category. The net score of KLD's social ratings for each category is measured as total strengths minus total concerns within each category. Other variables are as defined in Appendix A. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% level respectively.

	(1) <i>CSR_SCORE_ENV</i>		(2) <i>CSR_SCORE_COM</i>		(3) <i>CSR_SCORE_DIV</i>		(4) <i>CSR_SCORE_HUM</i>		(5) <i>CSR_SCORE_PROD</i>	
	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
<i>FSRATIO</i>	-0.8404***	-14.5291	-0.4169***	-10.6320	-0.8180***	-12.5238	-0.0629***	-2.9427	-0.2546***	-6.2581
<i>GOV_SCORE</i>	0.2709***	23.6615	0.0839***	10.8114	0.1520***	11.7625	0.0431***	10.1819	0.0425***	5.2771
<i>SIZE</i>	-0.2873***	-10.7837	0.0323*	1.7884	0.0111	0.3696	-0.0165*	-1.6765	-0.0494***	-2.6368
<i>MB</i>	-0.0139***	-2.9707	0.0000	0.0091	-0.0088*	-1.6686	-0.0016	-0.9175	0.0080**	2.4450
<i>LEV</i>	0.9051***	5.6181	0.3682***	3.3708	0.9202***	5.0584	0.2323***	3.9034	0.1634	1.4419
<i>ROA</i>	0.2710*	1.8839	-0.1305	-1.3377	-0.1090	-0.6712	-0.0776	-1.4598	0.0693	0.6851
<i>KZ</i>	-0.0871***	-2.6437	-0.0398*	-1.7835	-0.1525***	-4.1011	-0.0346***	-2.8471	-0.0511**	-2.2055
<i>DIV</i>	-2.9407*	-1.9400	0.5845	0.5687	-4.9670***	-2.9019	-1.2907**	-2.3047	-1.8647*	-1.7493
<i>FREECF</i>	0.2615	1.6053	0.2124*	1.9236	0.2392	1.3010	0.0244	0.4055	0.1062	0.9270
<i>CFVOL</i>	-0.6418*	-1.8034	0.0338	0.1403	0.2148	0.5346	-0.2204*	-1.6768	-0.9081***	-3.6288
<i>AD</i>	-1.7061**	-1.9839	-0.2192	-0.3760	-2.2443**	-2.3112	-0.0959	-0.3018	-1.7296***	-2.8601
<i>RD</i>	-2.3376***	-3.0913	-0.1719	-0.3354	2.5077***	2.9369	-0.1608	-0.5755	-1.4680***	-2.7606
Firm fixed effects	Yes		Yes		Yes		Yes		Yes	
Year fixed effects	Yes		Yes		Yes		Yes		Yes	
Observations	11,412		11,412		11,412		11,412		11,412	
Adj. R2	0.5941		0.5688		0.7331		0.4103		0.6181	

**Table 5: Changes in CSR around increased visibility of pension underfunding**

This table examines changes in CSR activities around the implementation of SFAS 158, which increased the visibility of pension funding status. Panel A reports the difference-in differences of mean *CSR\_SCORE* for the firms that had a negative adjustment to stockholders' equity after the application of SFAS 158 or not, before and after the application of SFAS 158. *NEGADJ158* is an indicator variable that equals one if the application of SFAS 158 led to a negative adjustment to stockholders' equity, and zero otherwise. *POST158* is an indicator variable that refers to time period after the application of SFAS 158. The sample period is restricted to two years before and two years after the application of SFAS 158. The significance of difference in mean between the two sub-samples is based on two-tailed *t*-test. Panel B reports the results of regression analysis. The *t*-statistics are adjusted for firm and year-level clustering. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% level respectively.

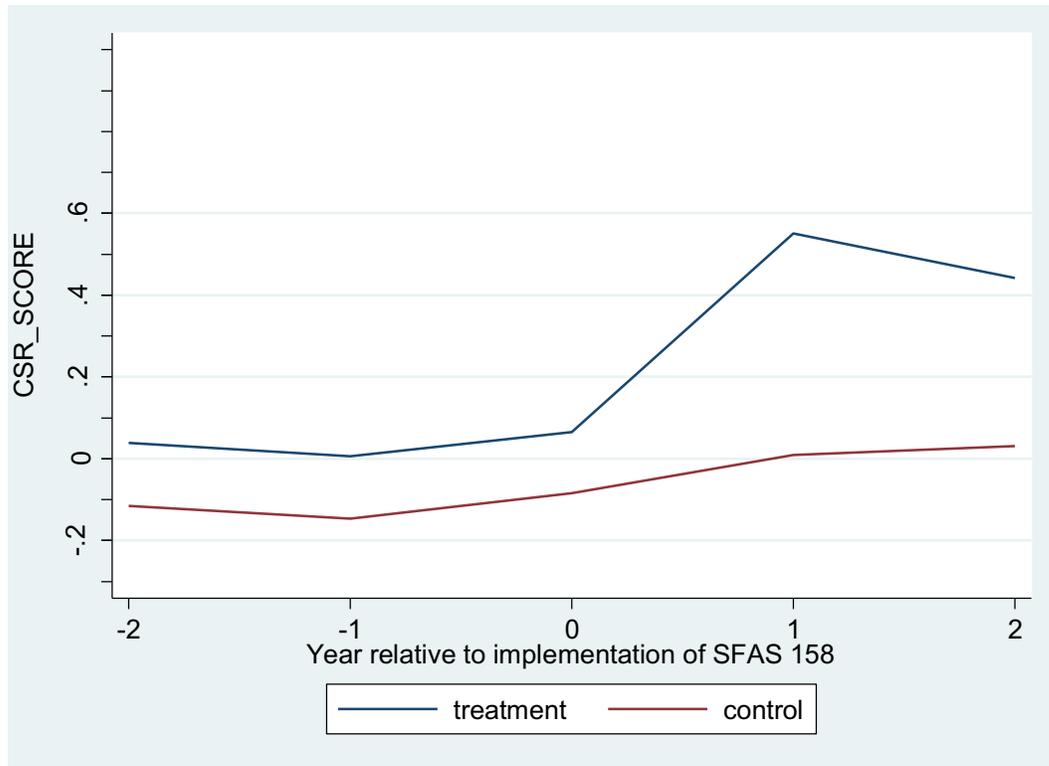
**Panel A: Univariate tests**

Mean <i>CSR_SCORE</i>	<i>POST158</i> = 0	<i>POST158</i> = 1	Difference[1-0]
<i>NEGADJ158</i> = 1	0.0217 (n = 922)	0.3441 (n = 1337)	0.3224*** (t-stat = 2.8178)
<i>NEGADJ158</i> = 0	-0.1314 (n = 685)	-0.0175 (n = 1028)	0.1139 (t-stat = 1.1768)
Difference [1-0]	0.1531 (t-stat = 1.3904)	0.3616*** (t-stat = 3.4527)	0.2085 (t-stat = 1.3300)

**Panel B: Regression analysis**

<i>Dependent variable</i> = <i>CSR_SCORE</i>	Coeff.	t-stat
<i>NEGADJ158</i>	0.2129	1.9330*
<i>POST158</i>	-0.5840	-38.6816***
<i>NEGADJ158*POST158</i>	0.2471	2.9883***
<i>Firm controls</i>		
<i>GOV_SCORE</i>	0.1690	1.8373*
<i>SIZE</i>	0.3453	5.6887***
<i>MB</i>	0.0578	1.1995
<i>LEV</i>	-1.4874	-2.2227**
<i>ROA</i>	0.8640	1.1631
<i>KZ</i>	0.2692	1.9101*
<i>DIV</i>	18.2286	2.7205***
<i>FREECF</i>	-0.0843	-0.0718
<i>CFVOL</i>	-4.7575	-2.4626**
<i>AD</i>	7.4996	2.6437***
<i>RD</i>	18.4557	5.5874***
Industry fixed effects	Yes	
Year fixed effects	Yes	
Observations	3,972	
Adj. R <sup>2</sup>	0.2821	

**Figure 1: Mean *CSR\_SCORE* around the implementation of SFAS 158**



## Table 6: Changes in CSR around pension freezes

This table examines changes in CSR activities around pension freezes. Panel A reports the difference-in-differences of mean *CSR\_SCORE* for the firms with and without pension freezes, before and after the freeze. *FREEZE* is an indicator variable that equals one if the firm froze its pension plan during the year. *POST\_FREEZE* is an indicator variable that refers to time period after the pension freeze. The sample period is restricted to two years before and two years after the pension freeze. For each firm-year in our sample with pension freeze, we select a matching firm without a pension freeze in the same year that has the closest propensity score. The propensity score is the predicted value of a firm freezing its pension plan. We also look two years back and forward, relative to the year of “pseudo” pension freeze for the control group to construct a “pre” and “post” period. The significance of difference in mean between the two subsamples is based on two-tailed *t*-test. Panel B reports the results of regression analysis. The *t*-statistics are adjusted for firm and year-level clustering. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% level respectively.

### Panel A: Univariate tests

Mean <i>CSR_SCORE</i>	<i>POST_FREEZE</i> = 0	<i>POST_FREEZE</i> = 1	Difference[1-0] (t-stat)
<i>FREEZE</i> = 1			0.9534*** (t-stat = 7.1044)
<i>FREEZE</i> = 0	-0.0354 (n = 1,243)	0.9179 (n = 744)	
Difference [1-0]	0.0867 (n = 1,222)	0.2561 (n = 738)	0.1694 (t-stat = 1.5330)
	-0.1221 (t-stat = 1.1799)	0.6619*** (t-stat = 4.5969)	0.7841*** (t-stat = 4.5100)

### Panel B: Regression analysis

<i>Dependent variable</i> = <i>CSR_SCORE</i>	Coeff.	t-stat
<i>FREEZE</i>	-0.2464	-1.9081*
<i>POST_FREEZE</i>	0.0249	0.3025
<i>FREEZE*POST_FREEZE</i>	0.8666	9.7984***
<i>Firm controls</i>		
<i>GOV_SCORE</i>	0.6498	2.5301**
<i>SIZE</i>	0.4966	3.3945***
<i>MB</i>	0.0743	1.8021*
<i>LEV</i>	-0.3593	-0.3671
<i>ROA</i>	-0.1827	-0.2182
<i>KZ</i>	-0.0156	-0.0702
<i>DIV</i>	13.6651	1.4567
<i>FREECF</i>	1.2952	1.4306
<i>CFVOL</i>	-4.6514	-2.4167**
<i>AD</i>	9.3420	2.6590***
<i>RD</i>	17.4236	4.7453***
Industry fixed effects	Yes	
Year fixed effects	Yes	
Observations	3,947	
Adj. R <sup>2</sup>	0.2739	

**Figure 2: Mean *CSR\_SCORE* around pension freezes**

