Corporate social responsibility and cost stickiness*

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Abstract: This paper examines the effects on cost stickiness of firms' involvement in corporate social responsibility (CSR) activities. Cost stickiness represents asymmetric cost behavior whereby the magnitude of cost increases in response to an increase in activity level is greater than the magnitude of cost decreases with a decrease in activity level. We hypothesize that CSR involvement requires ongoing investments in value-creating activities that may involve significant downward adjustment costs during periods of revenue shocks, giving rise to cost stickiness. We use two different CSR proxies and find support for our hypothesis. We further decompose CSR into strategic and tactical CSR and find that cost stickiness is more pronounced for strategic CSR. Finally, we examine the CSR-related cost behavior pattern during economic recession and find that costs stickiness is associated with strategic CSR decrease.

Keywords: Corporate social responsibility; asymmetric cost behavior; KLD.

Companies are allocating significant portions of their expense budgets to CSR — $28 billion on sustainability and $15 billion on corporate philanthropy spent by large U.S. firms in 2010 [*DI Giuli & Kostovetsky, 2014*]

1. Introduction

We examine the effect of firms' CSR involvement on cost stickiness, where "…costs are sticky if the magnitude of the increase in costs associated with an increase in volume is greater than the magnitude of the decrease in costs associated with an equivalent decrease in volume" (Anderson, Banker, & Janakiraman, 2003, p. 48). The conventional model of cost accounting, as well as activity-based costing, posits that costs are proportional to the cost drivers (Noreen, 1991). However, subsequent research has found a more complex relationship between cost and activities whereby some costs rise more when activity increases but do not fall proportionately with a decrease in activity (Cooper & Kaplan, 1998). Anderson et al. (2003) use firm-level selling, general, and administrative (SG&A) expenses as cost components, and confirm cost stickiness.[1] Anderson et al. (2003) argue that many costs arise because managers make a deliberate decision to commit resources which entail costs. Changing resources in the short run incur resource adjustment costs, requiring managers to evaluate carefully which costs to reduce in the event of a shock. The prevailing state of the economy as well managerial incentives, further influence resource commitment and withdrawal decisions (Banker and Byzalov 2014).

We examine a hitherto unexplored determinant of cost stickiness: firms' involvement in CSR activities. We argue that investment in CSR is costly, owing to the managerial resource commitment decisions arising from stakeholder demand for CSR activities. Many CSR programs

[1] Other researchers extend Anderson et al. (2003) by investigating the stickiness of other costs, e.g., COGS, labour costs, R&D expenditures and advertising expense, and for different levels (such as inter-department, inter-firm, inter-industry, and inter-country comparisons) (e.g., Balakrishnan & Gurca, 2008; Calleja, Steliaros & Thomas, 2006; Dierynck, Landsman, and Renders, 2012). Banker and Byzalov (2014) provide a comprehensive review of the cost stickiness literature.

instituted by firms by extra spending would increase operating costs. Examples include charitable giving, work/life benefits such as childcare, pollution prevention, employee health and safety programs, and quality control. Managers are willing to incur CSR costs as some studies have argued that employing valuable firm resources to engage in CSR can have significant managerial benefits, (Freeman, 1984; Wartick & Cochran, 1985; Wood, 1991). CSR investments can also have a positive impact by providing better access to valuable resources (Cochran & Wood, 1984; Waddock & Graves, 1997) and by attracting and retaining higher-quality employees (Greening & Turban, 2000; Turban & Greening, 1997), thus allowing for better marketing of products and services (Fombrun, 1996; Moskowitz, 1972), and creating unforeseen opportunities (Fombrun, Gardberg, & Barnett, 2000). Furthermore, CSR involvement can mitigate the likelihood of negative regulatory, legislative, or fiscal action (Berman, Wicks, Kotha, & Jones, 1999; Freeman, 1984; Hillman & Keim, 2001), attract socially conscious consumers (Hillman & Keim, 2001), or attract financial resources from socially responsible investors (Kapstein, 2001). These benefits are presumed to offset the higher costs associated with CSR, "because *resources must be allocated* to allow the firm to achieve CSR status" (Siegel & Vitaliano, 2007) (italics added).

On the one hand, Friedman (1970) describes CSR involvement as being value destroying for investors, thus predicting a negative relationship between CSR involvement and firm value. For instance, Preston and O'Bannon (1997) discuss the managerial opportunism hypothesis, and argue that managerial self-serving interests might lead to CSR over-investment: an act detrimental to the interests of stakeholders and likely to create a competitive disadvantage, affecting firm value negatively (Benabou & Tirole, 2010).

Both these views allude to long-term CSR investment, which is as much a response to external pressure as it is to firm-level resources. The level of resources that will be devoted to CSR activities in the short-term depends mainly on the accessibility of resources not required for other purposes. From a cost behavior perspective, it is interesting to explore the CSR cost behavior pattern: in particular the presence or absence of cost stickiness. The theoretical perspective on cost stickiness relies on the notion that many costs, including investments on CSR-related activities, arise from managers' deliberate resource commitment decisions, and adjustment costs associated with changing resource commitments make costs 'sticky' (e.g., Anderson et al., 2003). When activity levels decrease, managers may be reluctant to downsize CSR resources, e.g., contribution to charities, supporting housing and education programs and the like. Therefore, to the extent that managers recognize the trade-offs arising because of adjustment costs, they will reduce CSR investments to a lesser extent when activity decreases than they will expand CSR investments when activity increases, thus generating cost stickiness (Anderson et al., 2003; Banker, Byzalov, & Chen, 2013).

Not all CSR investments, however, share the same characteristics. CSR involvement in voluntary corporate actions designed to improve social conditions (Mackey, Mackey, & Barney, 2007) may be worth the investments. Positive CSR investment allows firms to tap into valuable resources and to attract and retain high quality employees, among other positive factors. However, some firms will be associated with a "…set of corporate actions that negatively affects an identifiable social stakeholder's legitimate claims in the long run" (Strike, Gao, & Bansal, 2006, p. 852). Negative CSR can be considered as a cost-saving strategy at the cost of reduced stakeholder value (Kotchen & Moon, 2012). Although these distinctions can be relevant for cost stickiness, we employ another variant of CSR investments: strategic versus tactical CSR

investments (Bansal, Jiang, and Jung, 2015). The former includes environment-related CSR, employee-related CSR, product-related CSR and diversity-oriented CSR. Strategic CSR is costly, long-term in nature, and often irreversible. The irreversibility characteristic, in particular, is theoretically aligned with cost stickiness, because of stakeholder demand for firms to continue support for environment, employees, and product aspects. Tactical CSR, e.g., donation to charities, housing support and the like, on the other hand, requires fewer resources and is often reversible and, hence, less amenable to cost stickiness. We, therefore expect that, investments in strategic CSR will exhibit costs stickiness.

Given that CSR investment requires resources, it is important to understand the implications for CSR-related cost stickiness of the prevailing state of the economy. It is natural to expect that managers would be more inclined to cut back resources, including investments in CSR, during periods of economic recession. Campbell (2007) studies the economic and institutional conditions that matter for shaping the socially responsible behavior of firms. He argues that firms' slack resources are important determinants of CSR investment and, as such, proposes that ''corporations will be less likely to act in socially responsible ways where they are currently experiencing relatively weak financial performance'' (p. 952). Cheng, Hong, and (2013) model a firm's optimal choice of CSR activities subject to financial constraints, and confirm that less-constrained firms spend more on CSR activities. We test whether cost stickiness associated with CSR investments decreases during periods of economic recession. As long as managerial resource adjustment costs are negligible, we would expect a proportionate decrease in CSR with decreases in revenue. However, as argued before, CSR, particularly strategic CSR, is not easily reversible and, hence, may continue exhibiting stickiness during recessionary periods as well.

We use firm-level CSR scores from *Kinder, Lydenberg, Domini Research & Analytics (*KLD*)* database. Although KLD does not provide the actual dollar investments associated with CSR activities, KLD derive their scoring after careful evaluation of firm-level CSR activities. Waddock & Graves (1997), note that "…where possible, KLD uses quantitative criteria to determine the rating (e.g., $ amount paid in fines or penalties; % of employees receiving certain kinds of benefits)." Kempf and Osthoff (2007) also used KLD data in exploring the effect of socially responsible investing on portfolio performance. Some other papers that use KLD data to proxy for CSR involvement include Kim and Statman (2012) and deVilliers, Naiker, & van Staden (2011). Firms demonstrating CSR strengths are characterised by the KLD scoring system as using innovative remediation products, providing environmental services, manufacturing products that promote the efficient use of energy, and having in place strong pollution prevention programs including both emissions reduction and toxic-use reduction programs. These activities require continued investments that are part of the firm-level operating costs (the outcome variable in the cost stickiness model).

We use a number of CSR proxies including strategic and tactical CSR (Bansal et al. 2015), and find that CSR investments, on average, exhibit cost stickiness that is more pronounced for strategic CSR than for tactical CSR. We also evidence variation in cost stickiness related to CSR investments across environmentally sensitive versus other industries. We then include economic recession as a contextual variable and fail to find cost stickiness across CSR proxies, suggesting that economic recession has a profound effect on managerial deliberate resource adjustment decisions for CSR activities, including strategic CSRs.

Our study has implications for understanding managerial decisions to commit scarce resources into voluntary CSR activities. Although research on the revenue side of strategic CSR

abounds, there is a paucity of research examining the association between operating costs and CSR involvement[2,3] and, to the best of our knowledge, no research on the behavior of CSR-related costs. This is rather surprising since the decision to engage in CSR involvement is as much as a response to stakeholder demand as to the managerial trade-offs involved in balancing stakeholder demand for sustainable development with shareholder demand for short-term profit maximization that requires, among other features, a reduction in costs. The notion of CSR involvement appears to cater to a broader stakeholder group, who constantly demand an increased level of CSR involvement irrespective of associated costs that could be non-trivial. This may have been the thesis behind Friedman's (1970) argument that CSR involvement is detrimental to shareholders' interests.

Our findings suggest that stakeholders need to evaluate managerial decisions regarding sustainability investments in light of the fact that once committed, it is not always easy to adjust resources downwards in the event of a shock, for example, an economic recession. Furthermore, the type of CSR investment is also important in terms of making a trade-off between long-term CSR commitments versus short-term profit maximization. If mangers want to sacrifice resources for delivering short-term profit goals, then the natural response would be to reduce tactical CSR investments.

We contribute to extant literature in a number of important ways. First, our findings enrich the CSR literature by documenting managerial trade-offs regarding resource adjustments.

[2] Di Giuli and Kostovetsky (2014) examine the association between CSR and SG&A expense and document a significantly positive association between the two. In terms of economic significance of the coefficient on CSR, the finding reveals a 6.4% increase in SG&A with a one standard deviation increase in CSR score. However, they did not investigate the cost behavior pattern associated with CSR involvement.

[3] A stream of research has examined CSR costs but not in terms of firms' investment in CSR activities, rather penalties imposed on firms for violating environmental regulations. For example: Karpoff, Lott Jr., and Wehrly (2005) evidence that environmental law violating firms suffers significant losses in the market value and the losses are of similar magnitude to the legal penalties imposed. Muoghalu, Robison, & Glascock (1990) found that in hazardous waste lawsuits that allege damages from improper hazardous waste disposal, defendant firms suffered significant losses.

To the best of our knowledge, ours is the first study to use CSR as a contextual variable affecting cost stickiness. Second, we follow recent research on CSR to theoretically and empirically distinguish strategic versus tactical CSR (Bansal et al. 2015), and investigate the CSR-related cost behavior patterns for these two aspects separately. Third, we contribute to the managerial decision to adjust CSR resources according to the prevailing state of the economy. We extend Bansal et al. (2015) who documented a decrease in both strategic and tactical CSR during economic recession but did not investigate the cost behaviour pattern across CSR types and economic conditions.

The remainder of the paper proceeds as follows. Section 2 reviews the related literature and develops testable hypotheses. Section 3 explains research design issues. The following section provides our sample selection procedure and descriptive statistics. We report the main test results in Section 5. Section 6 concludes the paper.

2. Literature review and hypotheses development

CSR reflects the extent to which a firm actively responds to a host of stakeholder demands (Freeman, 1984; Hillman & Keim, 2001; Rowley & Berman, 2000) including shareholders, employees, suppliers, customers, and the broader community. CSR demands might include ensuring pollution-free environments, workplace diversity and good working conditions for employees, support for education and housing, and high quality products. CSR activities are often referred to as an effective tool to obtain support from the stakeholders, ensure effective use of an organization's resources, obtain favourable coverage from the media, signal legitimacy to the community, and lessen the scrutiny from investors and employees (Orlitzky, Schmidt, & Rynes, 2003). Alexander and Buchholz (1978) suggest that stakeholders may recognise CSR

activities as a management skill, and a firm perceived as having constructive CSR may face relatively few conflicts with stakeholders, including the firm's customer base.[3] CSR can have a positive impact on firm performance through the provision of better access to valuable resources (Cochran & Wood, 1984; Waddock & Graves, 1997), attracting and retaining higher-quality employees (Greening & Turban, 2000; Turban & Greening, 1997), allowing for better marketing of products and services (Fombrun, 1996; Moskowitz, 1972), and contributing toward the gaining of social legitimacy.

Concerns about CSR, however, have grown considerably in last two and half decades among the business press, business and political leaders, customers, suppliers, community groups and government (McWilliams & Siegel, 2001). The dramatic growth in the number of institutes and mutual funds screening stocks based on positive CSR behavior encourages corporations to be socially responsive. To cope with the increased attention given to corporations' impact on society, more than half of the Fortune 1000 companies in the US issue CSR reports regularly, and nearly 10% of US investments are screened to ensure that they meet CSR-related criteria (Galema et al., 2008).[4] Moreover, a growing number of firms worldwide have undertaken serious efforts to integrate CSR into various aspects of their businesses (Harjoto & Jo, 2011; Jo & Harjoto, 2011). According to *Sustainable and Responsible Investing (SRI)* report 2014[5], SRI assets grew by 76 percent since the beginning of 2012 to a total $6.57 trillion,

[3] We refrain from providing a comprehensive review of the voluminous literature on the determinants and consequences of CSR (see Orlitzky et al. 2003, Mattingly 2015; Wang, Dou, & Jia 2015) Recent evidence suggests that firms with better CSR practices enjoy a lower cost of capital (Dhaliwal, Li, Tsang, & Yang, 2011; El Ghoul, Guedhami, Kwok, & Mishra, 2011), are prone to lower crash risk (Kim, Li , & Li 2014), and report better quality earnings (Kim, Park, & Wier, 2012) compared to firms with poor CSR practices.

[4] In a recent public opinion survey on CSR (Epstein-Reeves, 2010), consumers and employees show overwhelming interest in CSR compliance. The survey show that 88% of consumers think companies should try to achieve their business goals while improving society and the environment. About 83% of employee respondents would seriously consider leaving their jobs if their employer violated labor standards and practice.

[5] http://www.ussif.org/files/Publications/Annual_%20Report_14_FINAL.PDF.

which manifests the dramatic increase in CSR investment as well as CSR-related disclosures in recent years.

Although highly desirable, CSR investments are costly, and there remain divergent views on the desirability of CSR investments. Proponents argue that CSR involvement generates a number of benefits as discussed above and inadequate engagement in CSR may endanger organization legitimacy (Kondra & Hinings, 1998; Salancik & Pfeffer, 1978). Opponents, however, argue that CSR involvement is a waste of scarce resources and hence detrimental to shareholders' interests (Friedman 1970; Preston & O'Bannon 1997; Benabou & Tirole, 2010). Despite these alternative perspectives, there appears to be a consensus that investments in CSR are value generating in the long run. McWilliams and Siegel (2001) developed a simple theoretical model in which two firms sell identical goods, except that one company decides to add an additional CSR-targeted feature to its product expecting this feature to be valued by some consumers. This firm-based model proposes that managers conduct a cost/benefit analysis to determine the level of resources to devote to CSR activities, i.e., simultaneously assessing the demand for CSR and the cost of satisfying this demand in determining the optimal CSR investment.

Costs associated with CSR investments can be categorised into sunk costs and recurrent costs. Generally speaking, environment-related CSR activities cause costs mainly in terms of capital (e.g. new equipment, improvement of energy use etc.), but cause only minor recurrent costs (such as equipment update and maintenance). By contrast, recurrent costs of CSR activities that aim to improve the social aspects of business operations often exceed capital costs. The cost behavior pattern of CSR involvement has implications for managerial intentions to commit scarce resources into CSR activities, since the sticky cost phenomenon is a product of adjustment

costs, magnitude of economic activity change, anticipations of future sales and managerial empire-building behaviour (Banker & Byzalov, 2014).

The conventional model of cost accounting, as well as activity-based costing, posits that costs are proportional to the cost drivers (Noreen, 1991). However, subsequent research has found a more complex relationship between cost and activities, whereby some costs rise more when activity increases but do not fall proportionately with a decrease in activity (Cooper & Kaplan, 1998). The theoretical perspective on cost stickiness relies on the notion that many costs, including investments on CSR-related activities, arise from managers' deliberate resource commitment decisions, whereby the adjustment costs associated with changing resource commitments in response to a decline in activity make costs 'sticky' (e.g., Anderson et al., 2003). Adjustment costs encompass "economic sacrifices, social, contracting or psychological costs which emerge during the resource-adjustment process (e.g. severance payments, diminished morale, disruptions to on-going work, or human resource development costs relating to increasing demand)" (Venieris, Naoum, and Vlismas, 2015, p.55). A high level of adjustment costs prevents managers from reducing discretionary-resource consumption, including CSR investments that are long-term and irreversible in nature, in proportion to the reductions in the firm's level of economic activity. For example, a "hybrid" version of an automobile would be more environment-friendly than a standard automobile, and might command a price premium in the market, given the social value of reduced pollution. If the sales of hybrid automobiles go down because of an economic crisis, management will not necessarily abandon or cut down resources to the same extent as the decline in sales, as long as the demand shock is considered temporary. Therefore, to the extent that managers recognize the tradeoffs that arise because of adjustment costs, they will reduce CSR investments to a lesser extent when activity decreases

than they will expand CSR investments when activity increases, generating cost stickiness (Anderson et al., 2003; Banker et al., 2013). The following hypothesis tests this proposition:

H1: Costs-related to CSR activities are sticky in nature.

We expect the above hypothesis to be more pronounced for companies demonstrating socially responsible behavior (positive CSR involvement). The rationale for this stems from the fact that firms that demonstrate socially responsible behaviour also invest more on CSR activities, e.g., ongoing investments in R&D for pollution reduction, investments in carbon emissions, investment in products that promote the efficient use of energy, and maintenance of property, plant, and equipment with above average environmental performance for the particular industry. All these initiatives reflect managers' deliberate resource adjustment decisions, and entail long-term committed costs that and cannot be adjusted downwards easily in the event of revenue shocks.

On the other hand, firms that have demonstrated CSR concerns may have committed fewer resources into pro-CSR activities. For example, controversies relating to environmental contamination,[6] water rights disputes, and plant closings might emanate from lack of adequate investment. Given the long-term benefits of CSR investments, lack of investment on pro CSR activities will affect their profitability adversely, which might require these firms to reduce costs at a faster rate than the corresponding decrease in sales. For example, a reduction in the workforce by 15% in the most recent year, or by 25% during the past two years, is considered by

[6] Environmental disasters, such as Exxon's oil spill in 1989 (the *Exxon Valdez* oil spill) and BP's Gulf of Mexico oil spill in 2010, illustrate that environmental issues can result in billions of dollars in cleanup costs, fines, and settlements for implicated firms. The resulting cleanup bill for the BP Gulf of Mexico spill is estimated to be more than $40 billion.

KLD to be an issue of CSR concern. Since workforce reduction reduces costs, this might give rise to cost anti-stickiness.

However, recent studies have observed that both positive and negative CSR activities sometimes occur simultaneously (Fombrun et al., 2000; Muller & Kräussl, 2011; Strike et al., 2006). Tang, Qian, Chen, & Shen (2015, p.1342) observe that "A firm that engages more in socially responsible activities does not necessarily participate in fewer socially irresponsible ones, despite the fact that engagement in socially irresponsible activities is more likely to attract the attention of observers". These two aspects of CSR are conceptually distinct and have different implications for firms (Godfrey et al., 2009; Strike et al., 2006). The positive aspect of CSR increases corporate investments and associated expenses (e.g., increased training costs; expenses on R&D for developing environment-friendly equipment), giving rise to cost stickiness. The negative CSR, on the other hand, can be considered as a cost-saving strategy at the cost of reduced stakeholder value (Kotchen & Moon, 2012), and gives rise to cost anti-stickiness, (e.g., exploitative labor practices to lower costs). Therefore, we hypothesize the following:

H2: Firms with positive CSR involvement (*CSR_STR*) will display cost stickiness, but firms with negative CSR involvement (*CSR_CON*) will exhibit cost anti-stickiness.

We also examine H2 for the CSR components. Following Bansal et al. (2015), we categorize CSR into strategic and tactical CSR, whereby strategic CSR is defined as "corporate social activities that require long time horizons, large resource commitments, and significant adjustments to organizational structures." Strategic actions are more difficult to implement and often non-reversible. Tactical CSR, on the other hand, often require fewer resources and shorter

implementation times, and are often reversible. Since strategic CSR requires resource commitments and is non-reversible in nature, the concept of cost stickiness is more appropriately linked to this category of CSR rather than to tactical CSR.[7] Some examples of strategic CSR include increasing employee diversity; ensuring product safety; and implementing environmental management systems, all of which have a profound cost implications and will give rise to more cost stickiness. Examples of tactical CSR might include donating a small percentage of profits to charities or supporting special purpose NGOs: acts that can be reversed easily and, hence, will generate less cost stickiness. We further expect this effect to be more pronounced for firms operating in environmentally sensitive industries (e.g., automobiles, pharmaceuticals, oil & gas). From a CSR disclosure perspective, prior research has found, industry, together with size, as the most common variable for explaining the content and extent of CSR disclosures (Cowen, Ferreri, & Parker, 1987; Gray, Kouhy, & Lavers, 1995; Adams, Hill, & Roberts, 1998). The results from these studies show that corporations from industries whose manufacturing process have a negative influence on the environment disclose and report considerably more information than do corporations from other industries. In contrast, other industries, particularly newer manufacturing industries and the service sector have significantly lower environmental impacts and are associated with fewer visible environmental issues. As a result, we would expect firms in these industries to be subject to significantly less stakeholder pressure regarding their environmental performance, and would be more-pressed to satisfy the interests of their financial

[7] Another perspective for categorizing CSR stems from a stakeholder viewpoint, whereby stakeholders have been defined, albeit narrowly, as primary stakeholders (e.g., capital and other resource suppliers, employees, customer, community residents, and the natural environment) that are directly affected, by firms' operations and activities (Carroll, 1989; Hillman & Keim, 2001; Clarkson 1995). CSR investments can be viewed as a tool for gaining and maintaining social legitimacy from these primary stakeholders that may be jeopardized if resources devoted to CSR investments are reduced. Such a perspective suggests that costs stickiness would prevail for those CSR components targeted at maintaining a valuable relationship with primary stakeholders. However, we find Bansal et al. (2015) to be more appropriate for our cost stickiness test because of its prediction regarding the reversibility of the CSR investments.

stakeholders, as opposed to other stakeholders (Reverte, 2009). Based on preceding discussion we develop the following set of hypotheses:

H2A: Strategic (tactical) *CSR* will exhibit more (less) cost stickiness.

H2B: Cost stickiness would vary across environmentally sensitive versus other industries.

Since CSR involvement entails resources, it is important to consider the availability of resources to managers for committing into CSR investments. The extent to which availability of economic resources determines the level of CSR investments has not been extensively studied despite a reasonable amount of research on the effect of the business cycle on real economic decisions (Braun and Larrain, 2005; Karabarbounis, Macnamara, and McCord, 2014; Covas and Haan, 2011, 2012). In economic expansion, there are many lucrative investment opportunities that allow firms to capitalize on the favorable economic conditions, expand operations and boost earnings and desired growth. Thus, economic expansion may reduce the uncertainty of future cash flows and, therefore, might prompt managers to increase CSR investments with a concomitant increase in activity level. Contrary to this, during recession corporate sales decline, profits shrink, and dividends may slump, or disappear entirely. Firms with above-average profits in one period might not maintain the same level of profit in subsequent periods since profits will be eroded by competitors (Glen, Lee, & Singh, 2001). As a result, during a recession, cash flow uncertainty increases, and managers may cut back resources on CSR as neither consumers nor shareholders feel that the marginal utility of social expenditure outweighs its marginal costs (Campbell, 2007; Kitzmueller and Shimshack 2011). Bansal et al. (2015) provides empirical support for this proposition by documenting that managers reduced both tactical and strategic

CSR during the recent crisis, but the magnitude was greater for tactical than for strategic CSR.[8] A direct implication of the Bansal et al. (2015) study for cost stickiness is that stickiness will decrease for strategic CSR during economic recession (implying that downward resource adjustment as a response to a decline in sales during recession will be higher compared to a sales decline during expansion periods). Tactical CSR, on the other hand, may be reduced disproportionately more than the corresponding decline in sales during a recessionary period (cost anti stickiness behaviour). The following hypothesis tests this proposition:

H3: Cost stickiness associated with strategic CSR will decrease during recession and tactical CSR exhibits cost anti stickiness.

3. Research design

3.1 Measurement of CSR

We use information from one of the most widely adopted CSR scoring standards, that is, the *Kinder, Lydenberg, and Domini Research & Analytics*, Inc. (hereby KLD). KLD compiles annual ratings of over 3,000 publicly traded U.S. firms, including Standard and Poor (S&P) 500 firms and 150 firms from the Domini Social Index. KLD rates companies on a wide range of activities that reflect how well companies perform in social responsibility and in building relationships with various stakeholders. KLD captures over 94 measurement items along seven social dimensions: community, diversity, employee relations, environment, corporate governance, human rights, and product safety. For each measure, KLD offers "strength" and "concern" (e.g., Waddock & Graves, 1997; Waldman, Siegel, & Javidan, 2006) for each firm year. A drawback of this measure is that it weights all strengths and concerns, as well as each

[8] Evidence suggesting the opposite has been documented by Strugatch (2011). A plausible explanation for this finding relate to the fact that firms may shift their sustainability strategy in innovative ways, enabling them to continue investing ion CSR during hard times as well (Barnett, Darnall, & Husted, 2015).

social dimension, equally.[9] Following prior studies (Attig et al., 2014; Kim et al., 2014), we exclude the corporate governance dimension from our CSR score because it is distinct from the other social and environmental dimensions. We calculate a net score for each of the remaining six dimensions of CSR as the number of strengths minus the number of concerns. Thus, our primary dependent variable, *CSR_NET*, is the sum of the net score from each of the six CSR dimensions. For testing H2, we sum the CSR strength scores of the environment, employee, product, and diversity categories to obtain the *strategic CSR*, and use the CSR strength score of the community category as *tactical CSR*, following Bansal et al. (2015).

3.2 **Measurement of sticky costs**

The following model proposed by Anderson et al. (2003) is used to capture asymmetric cost behaviour:

$$\ln \frac{OC_t}{OC_{t-1}} = \gamma_0 + \gamma_1 \ln \left[\frac{Revenue_t}{Revenue_{t-1}} \right] + \gamma_2 Decrease\_dum * \ln \left[\frac{Revenue_t}{Revenue_{t-1}} \right] + \varepsilon \text{.....(1)}$$

where *OC* is operating costs. We use two versions of OC. *OC1* is operating costs defined as sales revenue minus income before extraordinary items. *OC2* is defined as sales revenue minus operating income after depreciation for firm *i* in year *t*. Given the qualitatively similar results, we report results based on *OC1* only. $Decrease\_dum_t$ takes the value of one when sales revenues in year *t* are less than those in year *t-1* and zero otherwise. Coefficient γ_1 measures the percentage increase in OC costs with a 1 percent increase in sales revenue. The sum of the

[9] In an early work on the construct validity of the KLD database, Sharfman (1996) documents a positive correlation ranging from a low of 0.18 to a high of 0.55 between the KLD ratings and other available CSR measures (e.g., Fortune corporate reputation survey). Chatterji, Levine, & Toffel (2009) find the KLD "concern" ratings to be fairly good summaries of past environmental performance. In addition, firms with more KLD concerns appear to be involved in more pollution and regulatory compliance violations in subsequent years. KLD environmental strengths, in contrast, fail to perform satisfactorily on both dimensions for those firms.

coefficient ($\gamma_1 + \gamma_2$) measures the percentage decrease in *OC*, with a 1 percent decrease in sales revenue. A significantly positive coefficient on γ_1 and a significantly negative coefficient on γ_2 would confirm cost stickiness.

3.3 **Empirical model**

We estimate the following comprehensive model that incorporates cost stickiness, CSR effects on cost stickiness, and other determinants unrelated to CSR on cost stickiness (Anderson et al., 2003; Chen, Lu, & Sougiannis, 2012).

$$\ln\frac{OC_t}{OC_{t-1}} = \gamma_0 + \gamma_1 \ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right] + \gamma_2 Decrease\_dum * \ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right] + \gamma_3 CSR_t + \gamma_4 CSR_t * \ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right] + \gamma_5 CSR_t * Decrease\_dum * \ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right] + \sum_{m=6}^{10} \gamma_m Econ\_Var * Decrease\_dum * \ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right] + \sum_{n=11}^{15} \gamma_n Econ\_Var_{n,t} + \varepsilon \text{.....(2)}$$

In the above regression the coefficient on γ_2 is our proxy for cost stickiness; CSR is our main variable of interest. We use four different specifications of CSR, net CSR (*CSR_NET*), industry-adjusted CSR (*CSR_IND*); CSR strengths (*CSR_STR*), and CSR concerns (*CSR_CON*). We also use strategic and tactical CSR scores (defined in 3.1 above). *ECON_VAR* are economic variables, and include: asset intensity (*ASST_INTEN*) measured as total assets divided by sales revenue for year t; employee intensity (*EMP*) is the ratio of total number of employees over sales; successive decrease (*SUC_DEC*) which is an indicator variable that is equal to 1 if revenue in year t-1 is less than revenue in t-2, and 0 otherwise; stock performance (*RETURN*) measured as the raw stock return (from Centere for Research in Security Prices (CRSP); and free cash flow (*FCF*) measured as cash flow from operating activities less common and preferred dividends, scaled by total assets. All these standalone economic variables are interacted with γ_2.

4. Sample selection and descriptive statistics

We began with an initial sample of 40,518 firm-year observations from 1991 to 2013 available on the KLD database. We matched this data with COMPUSTAT and lost 4,033 firm-year observations. We then excluded 9,203 firm-year observations pertaining to utility (2-digit SIC codes 48 & 49) and financial institutions (2-digit SIC codes 60-69), as is consistent with prior literature. Finally, we lost another 5,325 firm-year observations because of missing values for the regression variables. Our final sample for conducting the regressions is 21,957 firm-year observations.

Panel A, Table 1 provides descriptive statistics for the variables used for regression analyses. The mean (median) of the log of both the operating cost and the revenue ratio is 0.09 (0.08). The average *CSR_NET* is -0.03 with a large standard deviation, although the overall median is zero, suggesting a relatively balanced distribution of firms with negative and positive CSR performance. *CSR_STR* is lower than *CSR_CON* (an average of 1.31 and 1.60 respectively). However, firm-year observations with *CSR_STR>CSR_CON* are more profitable (*ROA* of 0.09 versus 0.05, t-stat 9.84, $p<0.001$); and larger (log of *MVE* is 7.93 versus 7.10, t-stat 34.00, $p<0.001$), two key determinants for CSR investments. Average CSR components range from a low of -0.02 (*EMP_NET*) to a high of 0.11 (*COM_NET*). Sample firms use $1.33 million (median = 0.71) of assets to support each million dollars in sales revenue. The median firm has not experienced two consecutive years of sales decreases in the past two years (median = 0.00, mean = 0.24), and the average raw stock return in the year is 0.19 (median = 0.12). On average, free cash flow accounts for 9 percent of total assets (median = 9 percent) for our sample firms. Firm-year observations come from a wide variety of industries with two digit SIC codes 35-39

and 70-79 commanding the largest industry representation in our sample, as is evident from Panel B.

[TABLE 1 ABOUT HERE]

5. Multiple regression results

5.1 CSR involvement and cost stickiness

Table 2, Panel A, presents regression results for the effect of CSR investments on cost stickiness. We estimate the asymmetrical adjustment of operating costs at the firm level with firm-clustered standard errors (Petersen, 2009; Gow, Ormazabal & Taylor, 2010). Industry and year dummies are included in all our regression models. Model (1) shows that the coefficient on γ_1 is 0.87 (t-stat 56.96, p<0.001). This indicates that operating costs increase by about 0.87 percent for a 1 percent increase in sales revenue. The estimated value of γ_2 is -0.08 (t=-1.64). The combined value of $\gamma_1+\gamma_2$ = 0.79 indicates that operating costs decrease by about 0.79 percent per 1 percent decrease in sales revenue, reflecting cost stickiness. Our reported coefficients vary significantly from Anderson et al. (2001) probably because of our use of operating income before extraordinary items instead of SG&A as the cost measure and our use of a different sample period than Anderson et al. (2001). The coefficient on CSR itself is negative and significant although intuitively it should have been positively related to costs. This finding is explained by the fact that, although the dependent variable is expressed in a change version, the CSR variable is not (the correlation between *LN_OC* and ΔCSR is 0.03, significant at p<0.01).

We incorporate different specifications of CSR variables into the regression and an interactive variable, $\gamma_5, CSR_t * Decrease\_dum * \ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right]$. We should expect a negative

and significant coefficient on the interactive variable γ_5 to support our hypothesis that CSR-related investments generate cost stickiness. We find support for our prediction, as the coefficient on γ_5 is negative and significant in Model (1) (coefficient -0.037, t-stat -3.77, p<0.001). Given the difficulties associated with interpreting a three-way interaction term of continuous variables, we follow another procedure for evaluating the significance of the coefficient. We create an indicator variable coded 1 if the *CSR_NET* is greater than or equal to the sample mean, and zero otherwise. We then interact this dummy variable with $\Delta SALES$ and γ_2 (sticky measure) and rerun the regression. Untabulated results document the coefficient on the interactive variable to be -0.16 (t-stat -3.08, p<0.01) and that on $\Delta SALES$ to be 0.83 (t-stat 34.12, p<0.001) implying cost stickiness for firms with above-average CSR involvement. For firm-year observations with below average CSR, there is no evidence of cost stickiness (coefficient on $\gamma 2$ is 0.02, generating a combined coefficient of 0.85).

Cost stickiness is also evident for alternative CSR proxy, namely industry-adjusted CSR involvement (*CSR_IND*). The coefficient on *CSR*γ2* is found to be -0.20 with a t-statistic of -1.83 (p<0.10). Models (3) and (4) report results for equation (2) for the positive CSR (*CSR_STR)* and negative CSR (*CSR_CON)* sub-categories. We hypothesized in H2 that cost stickiness would be more pronounced for *CSR_STR* observations, and find support for our hypothesis. The coefficient on γ_5 is negative and significant for *CSR_STR* (coefficient -0.032, t-stat -3.01). We hypothesized an anti-stickiness pattern for *CSR_CON* observations, suggesting a more than proportionate decrease in costs with a decrease in revenues. This would result in a positive and significant coefficient on γ_5 for *CSR_CON* observations, as is evident in Model (4) (coefficient 0.024, t-stat 2.46, p<0.05). Finally, models (5) and (6) report results for costs behavior of *strategic CSR* and *tactical CSR* respectively. The coefficient on γ_5 is negative and significant for

the former (coefficient -0.03, t-stat -2.56, p<0.05) but insignificant for the latter group (coefficient -0.05, t-stat -1.44). Again for interpreting the significance of the interactive coefficient we create a dummy variable coded 1 if the Strategic CSR >= mean, interact this variable with Δ*SALES* and γ_2 (sticky measure) and rerun the regression. The coefficient on the interactive variable is -0.09 and that on Δ*SALES* is 0.85, evidencing cost stickiness. This supports H2A: that it would be more costly to adjust resources devoted to *strategic CSR* than to *tactical CSR*.

With respect to the economic determinants of cost stickiness we observe a significantly negative coefficient on $ASSTINT*\gamma_2$, implying a greater degree of cost stickiness for firms that require relatively more assets to support their operations. The coefficient on $SUC\_DEC*\gamma_2$ is significantly positive, suggesting a lower degree of operating cost asymmetry in firms experiencing negative demand shocks in two consecutive years. However, unlike Anderson et al. (2003), we find a significantly positive coefficient on employee intensity $EMP*\gamma_2$, suggesting a lower degree of cost asymmetry in firms that require relatively more employees to support operations. This finding is consistent with Chen et al. (2012) and Dierynck et al. (2012).[10] The positive coefficient on the interactive variable $FCF*\gamma_2$ is inconsistent with the agency theory argument, which proposes that cost stickiness will be greater because managers with free cash flows tend to invest in negative NPVs with the intention of empire building (Chen et al. 2012). Such inefficient investments increase operating costs but, with a decline in sales demand, managers do not make downward resource adjustments, giving rise to asymmetric cost

[10] See footnote 7 in Chen et al. (2012) for a likely explanation of the inconsistent findings.

behaviour. The coefficient on $RET*\gamma_2$ is insignificant. The explanatory power of the four models ranges from 56% to 59%.[11]

[TABLE 2 ABOUT HERE]

Panel B, rerun regression equation (2) but separately for environmentally sensitive (models 1 & 2) versus other industries (models 3 & 4). We report results for *CSR_NET* and *Strategic CSR* categories. Firms operating in environmentally sensitive industries would be more concerned about CSR investments in the environment, employee, and product safety categories, because of greater stakeholder, including government, scrutiny emanating from the risks posed by these industries to the external environment. On the other hand, companies that do not operate in environment-sensitive industries may find a greater need to satisfy the interests of their financial stakeholders as opposed to other stakeholders in order to ensure continued access to financial resources and, thus, survival of their business.

We find support for H2B, as firms operating in environmentally sensitive industries exhibit greater cost stickiness compared to firms operating in other industries. Coefficients on γ_5 are negative and significant for both the *CSR_NET* (coefficient -0.04, t-stat -3.05, $p<0.01$) and *Strategic CSR* (coefficient -0.04, t-stat -2.66, $p<0.05$). Cost stickiness is evident for other industries, too, but only for *CSR_NET* category (coefficient -0.04, t-stat -2.71, $p<0.01$) but not for Strategic CSR category.

[11] Our results remain qualitatively similar if we use operating income after depreciation as our operating costs measure. Untabulated results show that the coefficients on *CSR_NET* is -0.027 (t-stat -3.14), *CSR_IND* is -0.18 (t-stat -1.79) and that on *CSR_STR* is -0.03 (t-stat -2.96) respectively.

5.2 CSR involvement and costs stickiness and business cycle

We now present evidence of differential cost stickiness behaviour related to CSR investments during different economic cycles. During a recession, cash flow uncertainty increases requiring mangers to cut back resources, including CSR, as neither consumers nor shareholders feel that the marginal utility of social expenditure outweighs its marginal costs (Campbell, 2007; Kitzmueller and Shimshack 2011). Bansal et al. (2015) find that managers reduced both tactical and *strategic CSR* during the recent crisis but the magnitude was greater for *tactical* than for *strategic CSR*. We extend Bansal et al. (2015) by investigating the changes in cost stickiness behavior for these two categories of CSR during expansion and recessionary periods. We use a well-accepted measure based on the National Bureau of Economic Research (NBER) business cycle classification in identifying different states of economic activity (i.e., expansion and contraction). Results are presented in Table 3. The coefficients on $\gamma 5$ are negative and significant for both *CSR_NET* and s*trategic CSR* categories during expansion period (coefficients -0.04 and -0.031, t-stat -3.69 and -2.40 respectively). The coefficient, however, is insignificant for *tactical CSR*. An interesting result emerges for recessionary period analysis. None of the coefficients on the two categories of CSR is significant suggesting a decline in stickiness during recessionary period. This is consistent with Bansal et al. (2015) who document a decline in CSR investments during recession. Such an act could explain a decline in stickiness during economic recession.

We also investigated the sum of (γ_1 and γ_2) for *strategic CSR*>=mean, and *strategic CSR* <mean, during recession periods, and find that cost stickiness is not observable for the former group (coefficient on γ_1 is 0.85 and that on γ_2 is 0.01). On the other hand, firm-year observations with *strategic CSR*< mean, reveal different coefficients (a coefficient of 0.80 on γ_1 and -0.07 on

γ_2 with a combined coefficient of 0.73).

[TABLE 3 ABOUT HERE]

5.3 Endogeneity test

Our analysis so far suggests that CSR involvement is positively associated with cost stickiness. However, the sign, magnitude and statistical significance of these estimates may be biased if cost stickiness associated with CSR activities (γ_5:CSR^* γ_2) and the error term (ε) are correlated. To alleviate this concern, we adopt a two stage instrumental variable approach to re-examine the findings reported in Tables 2. Motivated by prior studies (e.g., Harjoto and Jo 2011; Zhang, Zhu, Yue, & Zhu, 2010), that firm advertising intensity is positively associated with both the probability and the amount of corporate social responsibility, we use advertising intensity as an instrumental variable. Moreover, we use industry level mean CSR-related cost stickiness as an instrument since industry and firm level cost stickiness is highly correlated. Table 4 (Section I) reports the first-stage regression results in which the endogenous variable, γ_5: CSR^* γ_2, is regressed on the selected instruments and the exogenous variables from our analyses in Table 2. As expected, the coefficient of the instrumental variables are significant at conventional level, suggesting that γ_5:CSR^* γ_2 is associated significantly with the selected instrumental variables.

In support of the instruments, we also conduct under-identification, weak identification, over identifying restrictions, and Hausman's endogeneity tests. In Table 4, under-identification test results (LM statistic) reveal that the excluded instruments are "relevant". The weak instrument test results show that the excluded instruments are correlated with the endogenous regressors, because the Cragg-Donald Wald F statistic is greater than Stock and Yogo's (2002) critical value (i.e., 19.93) at 10%. Thus, the Cragg-Donald Wald F statistic shows that a weak instrument is not a concern with our estimates. Results from Hansen's over identifying

restrictions tests do not reject the null hypothesis (p>.10), suggesting that instruments are uncorrelated with the error term and are correctly excluded from the second stage regressions, a finding that reflects the validity of the instruments used for the 2SLS regression. Finally, Hausman's (1978) test suggests that endogeneity is not a concern for our analysis.

[TABLE 4 ABOUT HERE]

5.4 Additional analysis

5.4.1 Non-zero CSR observations

Our main analysis is based on a sample that includes missing CSR data (coded as zero in the database). We rerun our main regression (equation 2) retaining only non-zero CSR observations. Untabulated results provided results qualitatively similar to those in the main analysis. For example, the coefficient on the interactive variable for *CSR_NET* is -0.036 (t-stat -3.71, p<0.001) and for *CSR_STR* is -0.036 (t-stat -3.17, p<0.001).

5.4.2 Decile ranking of CSR and cost stickiness

A potential concern relating to the KLD database is that KLD has been adding and deleting item ratings over time. For instance, reporting on South African CSR strengths and concerns in the area of qualitative human rights was stopped in 1995, while labor rights strengths in the same area were added in 2002, and a volunteer program pertaining to a community strength, was added in 2005. As a result, the CSR scores may not be comparable over time. To address this concern, we transform the respective CSR issues area scores and the *CSR_NET* score into decile ranks for each year. A higher value of this decile rank indicates higher level of CSR performance. Regression results using decile rank of CSR corroborate our earlier findings. More clearly, we find that the coefficient on *CSR_DECILE*γ_2* to be negative and significant

(coefficient -0.018, t-stat -2.03, p<0.05). For the *CSR_STR* category the coefficient is -0.017 with an associated t-stat of -2.45 (p<0.05).

5.4.3 Alternative costs measure and cost stickiness

In our main analysis, we used operating costs as our cost proxy. We run a sensitivity test using SG&A as our costs proxy, consistent with bulk of the empirical literature on cost stickiness. Results are reported in Table 5. As is evident from the table, results are largely consistent with the main results. For example, the coefficient on the interactive variable is -0.032 (t-stat -3.12) using SG&A, while it is -0.037 (t-stat -3.77) for the operating cost model.

[TABLE 5 ABOUT HERE]

Balakrishnan, Labro, and Soderstrom (2014) suggest scaling the dependent variable with lagged sales rather than with lagged total cost. The rationale is to avoid the non-constant cost response to activity changes, which is useful under varying proportions of fixed costs across firms. In this specification, the coefficient /i, is interpreted as the variable cost ratio. The Linear ABJ Model is:

$$\frac{COST_t - COST_{t-1}}{REVENUE_{t-1}} = \gamma_0 + \gamma_1 \frac{REVENUE_t - REVENUE_{t-1}}{REVENUE_{t-1}} + \gamma_2 REV\_DEC * \frac{REVENUE_t - REVENUE_{t-1}}{REVENUE_{t-1}} + \gamma_3 CSR + \gamma_4 CSR * \gamma_1 + \gamma_5 CSR * \gamma_2$$

Variables are defined as before. If CSR-related costs are sticky, then we should expect the coefficient γ_5 to be negative and significant in this specification, too. Untabulated results find the coefficient on *CSR*STICKY* ($\gamma 5$) to be negative and significant (coefficient -0.02, t-stat -3.67, p<0.001). For *strategic CSR*, the coefficient is again negative and significant (coefficient -0.019,

t-stat -2.46, p<0.05). We therefore conclude that our results are robust to alternative cost stickiness specifications.

5.4.4 Annual regressions

We reran the regressions using the Fama and MacBeth (1973) cross-sectional regression method. Results are reported in Table 6. We find comparatively weaker evidence of cost stickiness using the FM regression in contrast to the pooled regression. The coefficient on $\gamma 5$ is negative and significant for *CSR_NET* (coefficient -0.046, t-stat -3.34, p<0.01), *CSR_STR* (coefficient -0.05, t-stat -2.75, p<0.01), and *strategic CSR* (coefficient -0.048, t-stat -2.51, p<0.05). However, the coefficients are not significant for *CSR_IND*, *CSR_CON*, and *tactical CSR*.

[TABLE 6 ABOUT HERE]

6. Conclusion

This paper explores the cost behaviour of CSR activities, and investigates whether firm's CSR involvement gives rise to cost stickiness. Since CSR involvement is long term in nature and firms engage in CSR activities to satisfy diverse stakeholders, we argue that managers may be reluctant to downsize CSR investment, even when activity levels decrease. On the other hand, when activity levels increase, managers have to make additional investments on CSR-related activities. Thus, owing to the fact that managers expand CSR investments when activity increases, but are less likely to reduce CSR investments when activity decreases, CSR investment is likely to be sticky. Using two proxies for CSR, we show that CSR-related costs exhibit cost stickiness, because they decrease less with a decrease in firm revenue. We

decompose the CSR scores into strategic versus tactical CSR and find that cost stickiness is more pronounced for the strategic as opposed to tactical CSR. Strategic CSR is long-term and often irreversible in nature and, hence, managers are reluctant to downsize resources devoted to strategic CSR, e.g., environment, employees, and product-related CSRs. Tactical CSR, e.g., donation to charities, housing support and the like, on the other hand, require fewer resources and are often reversible and, hence, less amenable to cost stickiness.

Our study has implications for understanding managerial decisions to commit scarce resources into voluntary CSR activities. Although research on the revenue side of strategic CSR abounds, scant research examines the costs associated with CSR investments and, to the best of our knowledge, none on the behavior of CSR-related costs. This is rather surprising since the decision to engage in CSR involvement is as much a response to stakeholder demand as it is to managerial trade-offs involved in balancing stakeholder demand for sustainable development with shareholder demand for short-term profit maximization. The notion of CSR involvement appears to cater to a broader stakeholder group, who demand an increased level of CSR involvement irrespective of associated costs that could be significant.

We contribute to the extant cost stickiness and CSR literature by documenting the sticky cost behaviour of CSR related investment. While prior literature focuses on economic and agency explanations for the cross-sectional variation in the degree of cost stickiness (Anderson et al., 2003; Chen et al., 2012), ours is the first to provide evidence of firm-level CSR involvement as another source of cost stickiness. Our results reveal that firms do not reduce their investment in CSR, even when their activity levels decrease. However, during economic recession, managers need to adjust their trade-off decision and reduce both strategic and tactical CSR, albeit more so for the later than the former type of CSR.

We acknowledge that our study did not use actual CSR costs to measure stickiness but, instead, assumed that operating costs include firms' investments in CSR activities. However, companies seldom disclose detailed cost figures associated with CSR activities, and no database yet exists that summarizes CSR costs. However the observation of Waddock & Graves (1997), that KLD uses quantitative criteria to determine their rating (e.g., $ amount paid in fines or penalties; % of employees receiving certain kinds of benefits), mitigates some of the criticisms.

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TABLE 1: Descriptive statistics, industry distribution, and correlation results
PANEL A: Descriptive statistics

Variables	Mean	SD	1st qrt	Median	3rd quartile
Ln [OC_t/OC_{t-1}]	0.09	0.24	0.00	0.08	0.18
Ln [$Revenue_t/Revenue_{t-1}$]	0.09	0.21	0.00	0.08	0.18
DEC_DUM	0.25	0.43	0.00	0.00	0.00
CSR_NET	-0.03	2.41	-1.00	0.00	1.00
CSR_IND	0.39	0.25	0.20	0.33	0.55
CSR_STR	1.31	2.04	0.00	1.00	2.00
CSR_CON	1.60	1.50	1.00	1.00	2.00
Strategic CSR	1.24	2.01	0.00	0.00	2.00
Tactical CSR	0.16	0.50	0.00	0.00	0.00
ASST_INTEN	1.33	1.10	0.71	1.05	1.59
EMP	8.38	1.73	7.16	8.39	9.54
SUC_DEC	0.24	0.42	0.00	0.00	0.00
RETURN	0.19	0.55	-0.12	0.12	0.40
FCF	0.09	0.08	0.05	0.09	0.13

Note: Operating costs (*OC*) are defined as sales minus income before extraordinary items. *DEC_DUM* takes the value of one when sales revenues in year t are less than those in year t-1 and zero otherwise. *CSR_NET*: The net CSR score is estimated as the total strengths minus total concerns across the main six social rating areas: community, diversity, employee relations, environment, human rights, and product. *CSR_IND* is the industry-level CSR score that ranges from zero to one to and is calculated using the formula below:

$$CSR\_IND_{i,t} = \frac{CSR\_NET_{i,t} - MIN.\_CSR\_NET_{j,t}}{MAX.\_CSR\_NET_{j,t} - MIN.\_CSR\_NET_{j,t}}$$

Where, i, j, t denote firm i, industry j (two digit SIC codes) and year t, respectively. Moreover, MIN. and MAX. refer to the minimum and maximum *CSR_NET* for firm i's industry in year t, respectively. *CSR_STR*: The CSR total strength score, estimated as the sum of the strength score from the community, diversity, employee, environment, human rights, and product characteristics qualitative issues. *CSR_CON*: The CSR total concern score, estimated as the sum of the concern score from the community, diversity, employee, environment, human rights, and product characteristics qualitative issues. *Strategic CSR* is the sum of the strengths in the diversity, employee, environment, and product characteristics while *Tactical CSR* is the total CSR strength score from the community category following Bansal et al. (2015). Asset intensity (*ASST_INTEN*) is total assets divided by sales revenue for year t; employee intensity (*EMP*) is the ratio of total number of employees over sales; successive decrease (*SUC_DEC*), is an indicator variable that is equal to 1 if revenue in year t-1 is less than revenue in t-2, and 0 otherwise; stock performance (*RETURN*) is the raw stock return (from CRSP); and free cash flow (*FCF*) is measured as cash flow from operating activities less Common and preferred dividends scaled by total assets.

PANEL B: Industry distribution

Code	Industry	Observations	% observations
1-14	Agriculture & mining	1,397	0.06
15-17	Building construction	331	0.02
20-21	Food & kindred products	844	0.04
22-23	Textile mill products & apparels	349	0.02
24-27	Lumber, furniture, paper, and printing	1,177	0.05
28-30	Chemical, petroleum, and rubber & allied products	2,373	0.11
31-34	Metal	986	0.04
35-39	Machinery, electrical, computer equipment	6,454	0.29
40-49	Railroad and other transportation & utilities	1,180	0.05
50-51	Wholesale goods, building materials	841	0.04
53-59	Store merchandise, auto dealers, home furniture stores	2,168	0.10
70-79	Business services	3,212	0.15
80-99	Others	645	0.03
	Total	21,957	1.00

PANEL C: Correlation analysis

	LN_OC	*ΔSALE*	*STICKY*	*CSR_NET*	*CSR_STR*	*CSR_CON*	*CSR_IND*	*Strategic CSR*	*Tactical CSR*
LN_OC	1.00								
ΔSALE	***0.74***	1.00							
STICKY	***0.49***	***0.66***	1.00						
CSR_NET	***-0.03***	***-0.04***	***0.04***	1.00					
CSR_STR	***-0.05***	***-0.07***	0.007	***0.75***	1.00				
CSR_CON	***-0.05***	***-0.05***	***-0.04***	***-0.30***	***0.27***	1.00			
CSR_IND	***-0.03***	***-0.04***	-0.02**	***0.66***	***0.54***	***-0.19***	1.00		
Strategic CSR	***-0.06***	***-0.08***	0.001	***0.77***	***0.93***	***0.27***	***0.54***	1.00	
Tactical CSR	***-0.04***	***-0.05***	0.02**	***0.51***	***0.69***	***0.21***	***0.38***	***0.53***	1.00

Note: The negative correlation between *LN_OC* and different categories of *CSR* would be positive if we had used changes in CSR categories.

TABLE 2: Regression results

Panel A: CSR investments and cost stickiness

$$\ln\frac{OC_t}{OC_{t-1}} = \gamma_0 + \gamma_1 \ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right] + \gamma_2 Decrease\_dum * \ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right] + \gamma_3 CSR_t + \gamma_4 CSR_t * \ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right] +$$

$$\gamma_5 CSR_t * Decrease\_dum * \ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right] + \sum_{m=6}^{10} \gamma_m Econ\_Var * Decrease\_dum * \ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right] + \sum_{n=11}^{15} \gamma_n Econ\_Var_{n,t} + \varepsilon \text{.....(2)}$$

		Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)
Variables	**Predicted sign**	**CSR_NET**	**CSR_IND**	**CSR_STR**	**CSR_CON**	**Strategic CSR**	**Tactical CSR**
γ_1: $\ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right]$	+	0.871***	0.815***	0.838***	0.873***	0.845***	0.818***
		[56.96]	[26.51]	[43.13]	[42.45]	[44.46]	[53.94]
γ_3: *CSR*	?	-0.003***	-0.019**	-0.004***	-0.001	-0.003***	-0.007***
		[-4.01]	[-2.38]	[-5.56]	[-0.71]	[-4.79]	[-4.82]
Two-way interaction terms							
γ_2: $Decrease\_dum * \ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right]$	-	-0.08*	0.021	-0.023	-0.091*	-0.036	0.035
		[-1.64]	[0.33]	[-0.45]	[-1.68]	[-0.70]	[0.88]
γ_4:$CSR * \ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right]$	?	0.020***	0.130**	0.028***	-0.006	0.022***	0.074***
		[3.17]	[1.98]	[4.47]	[-0.57]	[3.28]	[5.07]
Three-way interaction terms							
γ_5:$CSR * \gamma_2$	-	-0.037***	-0.202*	-0.032***	0.024**	-0.029**	-0.05
		[-3.77]	[-1.83]	[-3.01]	[2.46]	[-2.56]	[-1.44]
γ_6:$ASSTINT * \gamma 2$	-	-0.024*	-0.023*	-0.023*	-0.022*	-0.062**	-0.066***
		[-1.76]	[-1.73]	[-1.74]	[-1.66]	[-2.49]	[-3.28]
γ_7:$EMP * \gamma 2$	-	0.060***	0.062***	0.060***	0.066***	0.048***	0.033**
		[6.02]	[6.32]	[5.73]	[6.12]	[3.01]	[2.34]
γ_8:$SUCDEC * \gamma 2$	+	0.160***	0.164***	0.163***	0.164***	0.077**	0.056**
		[5.02]	[5.11]	[5.11]	[5.07]	[2.15]	[1.96]
γ_9:$RET * \gamma 2$	?	0.005	0.008	0.006	0.006	0.095***	0.043*
		[0.27]	[0.39]	[0.29]	[0.31]	[3.39]	[1.81]

γ_{10} *:FCF* γ2*	-	0.288*	0.326**	0.296*	0.293*	0.700***	0.476***
		[1.87]	[2.05]	[1.92]	[1.90]	[4.12]	[3.04]
Main terms							
γ_{11} *:ASSTINT*	?	0.006**	0.006**	0.006**	0.006**	-0.000	0.000
		[2.30]	[2.35]	[2.51]	[2.41]	[-0.14]	[0.07]
γ_{12} *:EMP*	?	0.001*	0.001*	0.002***	0.002**	0.003***	0.002***
		[1.74]	[1.81]	[2.66]	[2.51]	[3.63]	[2.69]
γ_{13} *:SUCDEC*	?	-0.034***	-0.034***	-0.033***	-0.033***	-0.029***	-0.024***
		[-11.84]	[-12.03]	[-11.77]	[-11.84]	[-9.42]	[-10.72]
γ_{14} *:RET*	?	-0.023***	-0.023***	-0.023***	-0.022***	-0.047***	-0.033***
		[-8.29]	[-8.11]	[-8.26]	[-8.07]	[-14.07]	[-14.65]
γ_{15} *:CF*	?	0.125***	0.130***	0.129***	0.129***	0.021	0.025
		[7.02]	[7.24]	[7.17]	[7.12]	[1.02]	[1.57]
Constant		0.005	0.016	0.004	0.007	0.011	0.018**
		[0.35]	[0.97]	[0.24]	[0.46]	[1.03]	[2.07]
Industry FE		YES	YES	YES	YES	YES	YES
Year FE		YES	YES	YES	YES	YES	YES
Observations		21,957	21,957	21,957	21,957	21,957	21,957
Adj. R^2		0.56	0.58	0.59	0.58	0.59	0.74

Note: Robust t-statistics in brackets. *** p<0.01, ** p<0.05, * p<0.10. Variable definitions are in Table 1.

Panel B: CSR investments, industry orientation, and cost stickiness

Wolf (1996) notes that all companies with manufacturing facilities under Standard Industrial Classification (SIC) codes 20 through 39 are subject to both the Environmental Protection Agency's (EPA) TRI program and the Occupational Safety and Health Administration's Hazard Communication Standards. Hence in the following analysis, sensitive industries are defined as observations belonging to these industries.

		Sensitive industries		Other industries	
		Model (1)	Model (2)	Model (3)	Model (4)
Variables	**Predicted sign**	**CSR_NET**	**Strategic CSR**	**CSR_NET**	**Strategic CSR**
γ_1: $\ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right]$	+	0.85***	0.81***	0.91***	0.90***
		[41.14]	[31.75]	[39.59]	[35.40]
γ_3: *CSR*	?	-0.003***	-0.004***	-0.003***	-0.007*
		[-3.34]	[-4.17]	[-3.08]	[-1.78]
Two-way interaction terms					
γ_2: $Decrease\_dum * \ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right]$	-	-0.15**	-0.10	0.05	0.073
		[-2.19]	[-1.45]	[0.60]	[0.88]
γ_4:*CSR*$* \ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right]$	?	0.03***	0.026***	0.012*	0.06**
		[2.76]	[2.90]	[1.81]	[2.33]
Three-way interaction terms					
γ_5:***CSR* γ_2***	-	-0.04***	-0.038**	-0.035***	-0.10
		[-3.05]	[-2.66]	[-2.71]	[-0.87]
Economic determinants γ_2*		YES	YES	YES	YES
Economic determinants	?	YES	YES	YES	YES
Year FE		YES	YES	YES	YES
Observations		11,955	11,955	9,922	9,922
Adj. R^2		0.63	0.63	0.55	0.55

Note: The coefficient on γ_5 is not statistically different from zero between model (2) and (4) [chi^2, 0.21, $p<0.64$]. Same with model (1) and (3) [0.18, p=0.67]

TABLE 3: Business cycle, CSR, and cost stickiness

$$\ln\frac{OC_t}{OC_{t-1}} = \gamma_0 + \gamma_1 \ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right] + \gamma_2 Decrease\_dum * \ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right] + \gamma_3 CSR_t + \gamma_4 CSR_t * \ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right] +$$
$$\gamma_5 CSR_t * Decrease\_dum * \ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right] + \sum_{m=6}^{10} \gamma_m Econ\_Var * Decrease\_dum * \ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right] + \sum_{n=11}^{15} \gamma_n Econ\_Var_{n,t} + \varepsilon \text{.....(2)}$$

		NBER		**NBER**		**NBER**	
		Expansion	**Recession**	**Expansion**	**Recession**	**Expansion**	**Recession**
Variables	*Sign*	***CSR_NET***	***CSR_NET***	***Strategic CSR***	***Strategic CSR***	***Tactical CSR***	***Tactical CSR***
γ_1: $\ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right]$	+	0.862***	0.849***	0.844***	0.792***	0.591***	0.582***
		[56.73]	[16.46]	[42.82]	[13.06]	[34.86]	[15.01]
γ_3: *CSR*	?	-0.002***	-0.003*	-0.003***	-0.005**	-0.016***	-0.010*
		[-3.18]	[-1.82]	[-4.57]	[-2.29]	[-3.35]	[-1.73]
Two-way interaction terms							
γ_2: $Decrease\_dum * \ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right]$	-	-0.050	-0.089	-0.014	-0.028	-0.216***	-0.234***
		[-0.70]	[-0.90]	[-0.20]	[-0.26]	[-3.30]	[-3.78]
γ_4:*CSR*$* \ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right]$	?	0.021***	0.018	0.022***	0.030	0.102**	0.058
		[3.12]	[0.91]	[3.07]	[1.31]	[2.23]	[0.96]
Three-way interaction terms							
γ_5:***CSR* γ_2***	-	-0.043***	-0.042	-0.031**	-0.038	-0.143	0.021
		[-3.69]	[-1.62]	[-2.40]	[-1.20]	[-1.35]	[0.24]
Economic determinants γ_2*		YES	YES	YES	YES	YES	YES
Economic determinants	?	YES	YES	YES	YES	YES	YES
Industry FE		YES	YES	YES	YES	YES	YES
Observations		17,932	3,945	17,932	3,945	17,932	3,945
Adj. R-squared		0.59	0.55	0.59	0.55	0.47	0.50

Table 4: Endogeneity Test

Section I: First-Stage Regressions		
	Model (1) CSR_NET	Model (2) CSR_IND
Explanatory Variable	***CSR* γ_2***	***CSR* γ_2***
Instrument		
Advertising intensity (***Adv_Int***)	0.050*	0.010**
	[1.78]	[2.40]
Industry Mean *CSR* γ_2*	0.945***	0.203***
	[11.68]	[9.42]
Unreported Control Variables Included in Regression		
All Variables in Main Test	Yes	Yes
Year FE	Yes	Yes
Industry FE	Yes	Yes
Observation (N)	21780	21731
Adjusted R^2	0.716	0.875
Underidentification Test		
Kleibergen-Paap rk LM statistic	138.212	89.803
p-value	0.000	0.000
Weak Identification Test		
Corrected Cragg-Donald Wald F statistic	84.358	286.271
Stock and Yogo (2005)10% maximal IV size (Critical Value)	19.93	19.93
Test of Overidentifying Restrictions		
Hansen J statistic	0.524	1.290
p-value	0.469	0.256
Section II: Second-Stage Regressions		
	$Ln(OC_t/OC_{t-1})$	**$Ln(OC_t/OC_{t-1})$**
Potentially Endogenous Instrumented Variable		
CSR* γ_2	**-0.041****	**-1.491*****
	[-2.36]	**[-2.86]**
All Variables in Main Test	Yes	Yes
Year FE	Yes	Yes
Industry FE	Yes	Yes
Hausman Test for the Effect of Life Cycle (Coefficient 2SLS = Coefficient OLS)		
Cluster-robust F- statistic	0.050	6.265
p-value	0.823	0.012

Table 5: Alternative costs measure and cost stickiness

$$\ln\frac{SG\&A_t}{SG\&A_{t-1}} = \gamma_0 + \gamma_1 \ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right] + \gamma_2 Decrease\_dum * \ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right] + \gamma_3 CSR_t + \gamma_4 CSR_t * \ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right] +$$
$$\gamma_5 CSR_t * Decrease\_dum * \ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right] + \sum_{m=6}^{10} \gamma_m Econ\_Var * Decrease\_dum * \ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right] + \sum_{n=11}^{15} \gamma_n Econ\_Var_{n,t} + \varepsilon \text{.....(2)}$$

	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)
						Expansion	**Recession**
Variables	**CSR_NET**	**CSR_STR**	**CSR_CON**	**Strategic CSR**	**Tactical CSR**	**Strategic CSR**	**Strategic CSR**
γ_1: $\ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right]$	0.615***	0.572***	0.602***	0.579***	0.596***	0.577***	0.569***
	[39.83]	[33.17]	[27.15]	[33.47]	[37.77]	[30.52]	[12.69]
γ_3: *CSR*	-0.004***	-0.005***	-0.003**	-0.005***	-0.014***	-0.005***	-0.006***
	[-5.01]	[-5.91]	[-2.39]	[-5.35]	[-3.30]	[-4.71]	[-3.49]
Two-way interaction terms							
γ_2: $Decrease\_dum * \ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right]$	-0.250***	-0.204***	-0.229***	-0.209***	-0.232***	-0.199***	-0.213***
	[-6.15]	[-4.79]	[-4.89]	[-4.97]	[-5.70]	[-3.00]	[-3.07]
γ_4:*CSR**γ_1	0.032***	0.032***	-0.000	0.029***	0.098**	0.031***	0.017
	[4.80]	[3.97]	[-0.03]	[3.29]	[2.37]	[3.18]	[0.93]
Three-way interaction terms							
γ_5:*CSR** γ_2	-0.032***	-0.039***	-0.011	-0.040***	-0.079	-0.040**	-0.032
	[-3.12]	[-2.72]	[-0.66]	[-2.60]	[-0.95]	[-2.03]	[-1.30]
*Economic determinants** γ_2	YES	YES	YES	YES	YES	YES	YES
Economic determinants	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES
Observations	21,957	21,957	21,957	21,957	21,957	17,932	3,945
Adj. R-squared	0.49	0.49	0.49	0.49	0.49	0.48	0.51

Note: Robust t-statistics in brackets. *** p<0.01, ** p<0.05, * p<0.10. Variable definitions are in Table 1.

TABLE 6: FM regression

$$\ln\frac{SG\&A_t}{SG\&A_{t-1}} = \gamma_0 + \gamma_1 \ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right] + \gamma_2 Decrease\_dum * \ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right] + \gamma_3 CSR_t + \gamma_4 CSR_t * \ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right] +$$
$$\gamma_5 CSR_t * Decrease\_dum * \ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right] + \sum_{m=6}^{10} \gamma_m Econ\_Var * Decrease\_dum * \ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right] + \sum_{n=11}^{15} \gamma_n Econ\_Var_{n,t} + \varepsilon \text{.....(2)}$$

Variables	*Sign*	***CSR_NET***	***CSR_IND***	***CSR_STR***	***CSR_CON***	***Strategic CSR***	***Tactical CSR***
γ_1: $\ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right]$	+	0.663***	0.641***	0.633***	0.663***	0.637***	0.660***
		[23.66]	[14.07]	[20.21]	[16.24]	[19.35]	[20.47]
γ_3: *CSR*	?	-0.003***	-0.016**	-0.004***	-0.004***	-0.004***	-0.013***
		[-3.50]	[-2.07]	[-4.42]	[-3.06]	[-3.54]	[-4.53]
Two-way interaction terms							
γ_2: $Decrease\_dum * \ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right]$	-	-0.201	-0.158	-0.140	-0.166	-0.109	-0.169
		[-1.28]	[-0.92]	[-1.09]	[-1.23]	[-0.87]	[-1.22]
γ_4:$CSR * \ln\left[\frac{Revenue_t}{Revenue_{t-1}}\right]$	?	0.035***	0.060	0.031***	0.021	0.032***	0.081***
		[4.12]	[0.92]	[3.28]	[0.96]	[3.21]	[3.15]
Three-way interaction terms							
γ_5:***CSR* γ_2***	-	-0.046***	-0.038	-0.051*	-0.035	-0.048**	-0.083
		[-3.34]	[-0.26]	[-2.75]	[-1.12]	[-2.51]	[-1.35]
Economic determinants γ_2*		YES	YES	YES	YES	YES	YES
Economic determinants		YES	YES	YES	YES	YES	YES
Number of groups		23	23	23	23	23	23

Note: Robust t-statistics in brackets. *** p<0.01, ** p<0.05, * p<0.10. Variable definitions are in Table 1.

Appendix: KLD description of CSR strengths and concerns across CSR categories

COMMUNITY STRENGTHS: • Charitable Giving: The company has consistently given over 1.5% of trailing three-year net earnings before taxes (NEBT) to charity. The company has a notably innovative giving program that supports non-profit organizations. • Support for Housing: The company is a prominent participant in public/private partnerships that support housing initiatives for the economically disadvantaged, e.g., the National Equity Fund or the Enterprise Foundation. • Support for Education: The company has either been notably innovative in its support for primary or secondary school education, or the company has prominently supported job-training programs for youth. • Non-US Charitable Giving: The company has made a substantial effort to make charitable contributions abroad, as well as in the U.S. To qualify, a company must make at least 20% of its giving, or have taken notably innovative initiatives in its giving program, outside the U.S.	**COMMUNITY CONCERNS:** • Investment Controversies: The company is a financial institution whose lending or investment practices have led to controversies. • Negative Economic Impact: The company's actions have resulted in major controversies concerning its economic impact on the community. These controversies can include issues related to environmental contamination, water rights disputes, and plant closings. • Disputes: The company has recently been involved in major tax disputes involving Federal, state, local or non-U.S. government authorities, or is involved in controversies over its tax obligations to the community.
EMPLOYEE RELATIONS STRENGTHS: • Cash Profit Sharing: The company has a cash profit-sharing program through which it has recently made distributions to a majority of its workforce. • Employee Involvement: The company strongly encourages worker involvement and/or ownership through stock options available to a majority of its employees, gain sharing, stock ownership, sharing of financial information, or participation in management decision-making. • Health and Safety Strength: The company is noted by the US Occupational Health and Safety Administration for its safety programs.	**EMPLOYEE RELATIONS CONCERNS:** • Health and Safety Concern: The company recently has either paid substantial fines or civil penalties for wilful violations of employee health and safety standards, or has been otherwise involved in major health and safety controversies. • Workforce Reductions: The company has reduced its workforce by 15% in the most recent year or by 25% during the past two years, or it has announced plans for such reductions. • Retirement Benefits Concern: The company has either a substantially underfunded defined benefit pension plan, or an inadequate retirement benefits program.
ENVIRONMENTAL STRENGTHS: • Beneficial Products and Services: The company derives substantial revenues from innovative remediation products, environmental services, or products that promote the efficient	**ENVIRONMENTAL CONCERNS:** • Hazardous Waste: The company's liabilities for hazardous waste sites exceed $50 million, or the company has recently paid substantial fines or civil penalties for waste management violations.

use of energy, or it has developed innovative products with environmental benefits. • Pollution Prevention: The company has notably strong pollution prevention programs including both emissions reductions and toxic-use reduction programs. • Recycling: The company either is a substantial user of recycled materials as raw materials in its manufacturing processes, or a major factor in the recycling industry. • Clean Energy: The company has taken significant measures to reduce its impact on climate change and air pollution through use of renewable energy and clean fuels or through energy efficiency. • Property, Plant, and Equipment: The company maintains its property, plant, and equipment with above average environmental performance for its industry.	• Regulatory Problems: The company has recently paid substantial fines or civil penalties for violations of air, water, or other environmental regulations. • Ozone Depleting Chemicals: The company is among the top manufacturers of ozone depleting chemicals. The company's legal emissions of toxic chemicals from individual plants into the air and water are among the highest of the companies followed by KLD. • Climate Change: The company derives substantial revenues from the sale of coal or oil and its derivative fuel products, or the company derives substantial revenues indirectly from the combustion of coal or oil and its derivative fuel products.
PRODUCT STRENGTHS: • Quality: The company has a long-term, well-developed, company-wide quality program, or it has a quality program recognized as exceptional in U.S. industry. • R&D/Innovation: The company is a leader in its industry for research and development (R&D), particularly by bringing notably innovative products to market. • Benefits to Economically Disadvantaged: The company has as part of its basic mission the provision of products or services for the economically disadvantaged.	**PRODUCT CONCERNS:** • Product Safety: The company has recently paid substantial fines or civil penalties, or is involved in major recent controversies or regulatory actions, relating to the safety of its products and services. • Marketing/Contracting Concern: The company has recently been involved in major marketing or contracting controversies, or has paid substantial fines or civil penalties relating to advertising practices, consumer fraud, or government contracting. • Antitrust: The company has recently paid substantial fines or civil penalties for antitrust violations such as price fixing, collusion, or predatory pricing, or is involved in recent major controversies or regulatory actions relating to antitrust allegations.