

# Stakeholder Information and Shareholder Value

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## Abstract

This paper examines the relationship between incidents of social responsibility (positive and negative) and shareholder value in an event study setting. I find significant negative abnormal returns when third parties such as newspapers, non-governmental organizations or regulatory authorities publicly report about negative social responsibility. Negative returns are particularly strong for information concerning product safety and the firm's impact on communities and the wellbeing of employees. In contrast, positive news do not generate a systematic reaction. Analyzing positive events in greater detail, I nonetheless identify two causal mechanisms relating positive social responsibility and shareholder value. On the one hand, events containing signals about past and likely future economic performance bring about positive abnormal returns. As such, charitable donations to communities, profit distribution to employees and the appointment of women or members of minority groups to senior executive positions or the board are rewarded by investors. On the other hand, positive events indicative of higher company expenses due to the use of alternative energy or (non)-monetary benefits to employees generate a significantly negative reaction.

JEL-Classification: M14, G14, G24, D21, L21

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# 1 Introduction

## Motivation

The question of whether managers should attend to the interests of shareholders, stakeholders or both is longstanding in the economics, finance and management literature. As Kacperczyk (2009) notes, two opposing theoretical views have generated separate streams of research concerned with the purpose of the firm. On the one hand, shareholder value theory (see Jensen and Meckling (1976), Fama and Jensen (1983), Jensen (2001) or Tirole (2001)) is based on the argument that the only objective of the firm is to attend to the interests of those owning the claims to the firm's residual profit or assets. On the other hand, stakeholder theory advances the idea that managers running a firm should balance the interests of all stakeholders, because not one group of stakeholders has a priority over other groups (see Freeman et al. (2007)). In a similar spirit Allen et al. (2009) show that under certain circumstances, stakeholder oriented firms can be more valuable.

In order to answer the unresolved question of whether attending to stakeholders' interests increases shareholder value, a myriad of studies has examined the empirical relationship between profitability and responsible business practices (see Orlitzky et al. (2003)).

However, the majority of these studies have not been able to account for the problem of reverse causality: It is still not clear whether attending to stakeholders, that is acting in a more (socially) responsible way, increases profitability, or whether causality runs from profitability to responsible firm behavior.

In the present study, I revisit this salient question in an event study setting. I analyze how the public release of information concerning a broad set of different stakeholders influences shareholder value. The examination of changes in shareholder value due to exogenous changes in a firm's consideration of non-shareholding stakeholders provides insights into the question of whether companies should only pursue their fiduciary duty vis à vis shareholders, or explicitly account for interests of non-shareholding stakeholders.

## The issue

More precisely, I study whether the stock market systematically reacts whenever third parties such as newspapers, regulatory authorities or non governmental organizations report about incidents of positive or negative (social) responsibility. In the business, finance and economics literature, there remains a high level of disagreement as to what constitutes (socially) respon-

sible firm behavior. While some argue that a company is acting in a socially responsible way whenever it is sacrificing profits for the general public good (see Friedman (1970) or more recently Reinhardt et al. (2008)), others (see Campbell (2007)) think of a firm as being socially responsible whenever its actions (1) do not knowingly harm stakeholders and (2) indemnify harmed stakeholders once irresponsible behavior is brought to the firm's attention.

The first definition is conceptually rooted in shareholder value oriented theories and builds on the idea that only stakeholder benefiting actions which go beyond what is legally required from the firm should be considered socially responsible. In contrast, the second definition explicitly includes illegal firm actions within the set of socially irresponsible firm behavior.

In this study, I rely on data and definitions from social investment research firm Kinder, Lydenberg and Domini Research and Analytics<sup>2</sup> (KLD). KLD's data are widely considered to be the gold standard in empirical research concerned with corporate social responsibility and as such, their data definitions have been employed extensively in previous empirical studies (see Waddock and Graves (1997), Deckop et al. (2006) or Kempf and Osthoff (2007)). At present, KLD focuses on seven different stakeholder issue areas (e.g. employee relations, community relations, environment, etc.). Since some of the issues make explicit reference to the extent to which a company is breaching the law, KLD's interpretation of social (ir)responsibility is closer to one including illegal company behavior (see Campbell (2007)). As an example, KLD records whether a company has been at odds with regulatory or other legal authorities.

Under a scheme known as *@KLD*, the social investment research firm sends out irregularly spaced newsletters which contain references to publicized incidents of social responsibility. Broadly speaking, the disseminated events relate to a company's relationship with its various stakeholders. Negative events (concerns) are reflective of matters such as product safety, environmental accidents or workplace safety violations. Positive events (strengths) make reference to corporate philanthropy, the use of alternative energy or family benefits offered to employees. I study how the stock market reacts to the events relevant to KLD's analysis.

## Main results

A descriptive analysis reveals that KLD included more negative than positive events in the newsletters. Furthermore, the relative importance of each issue area (e.g. communities, environment, human rights, etc.)<sup>3</sup> differs substantially for the set of negative and positive events. As an example, issues related to a company's diversity, the environment or the relationship with

communities make up more than 60 per cent of the positive events. By contrast, negative ones are largely dominated by matters related to economic aspects of the firm (e.g. product safety, governance or the extent to which fraudulent marketing and contracting practices are being employed). The latter result sheds doubts on whether events of negative social responsibility recorded by KLD are solely measuring the extent to which a company ignores the interests of stakeholders, or more generally inferior and/or illegal corporate behavior. Since negative news of economic nature is of interest to KLD's social analysts, one could be inclined to think that the same set of corporate behavior adversely affects both shareholder value and a company's attendance to stakeholders. Put differently, companies ignoring potentially adverse effects on stakeholders by cutting corners might not be maximizing shareholder value either. This idea is at odds with the common perception in shareholder value oriented theories that attending to stakeholders must necessarily be related to sacrificing profits.

Relying on content analysis, a technique from linguistics employed for the systematic analysis of textual data, I add to the result that negative events are reflective of illegal firm behavior. Statistical evidence shows that negative events are often concerned with legal actions taken by stakeholders (employees, customers, regulatory authorities). I also find that negative event descriptions contain significantly more quantitative information than positive ones, suggesting that negative events are often related to fines by legal authorities and/or indemnity payments to employees and other stakeholders.

In a second step, I study the implications of the events for shareholder wealth. I take the day on which third parties release a piece of information relevant to KLD's analysts as the event date. Since I rely on KLD's classification which is known with certainty only three weeks after the event, I have to address a problem of endogeneity: A priori, it is not clear whether abnormal share price movements draw the attention of KLD's analysts to record an event. Stated differently, if KLD's analysts are responding to observed changes in stock prices in order to identify events of social responsibility, event study methodology is no longer valid (see Viswanathan and Wei (2008)). For this reason, I test whether changes in shareholder value are affecting the way KLD's analysts classify events by comparing ordinary least squares (OLS) and two stage least squares (2SLS) estimates. Regression based Hausman tests reject the hypothesis that KLD's analysts respond to observed changes in shareholder value. Since the tests reject the hypothesis of endogenously sampled events, I subsequently identify what kind of stakeholder information has a significant impact on shareholder value.

I find a strong and significantly negative stock market reaction whenever

negative stakeholder information is released. In contrast, positive news does not affect stock prices in a systematic way.

Analyzing the stock price reaction conditional on KLD's seven issue areas, I find that negative news related product safety and a company's relations with communities reduces shareholder value substantially. Furthermore, negative news concerning governance or employee related issues also generate statistically significant negative abnormal returns. I also provide statistical evidence (marginally significant) that negative news related to a firm's diversity bring about negative abnormal returns.

Turning to positive events, I find some weak evidence that investors do respond positively to human rights and negatively to environmental issues.

## Literature

This paper is related to the large literature examining the relationship between social responsible business practices and financial performance. Relying on meta-analysis, Orlitzky et al. (2003) find a positive association between financial and corporate social performance. Kempf and Osthoff (2007) and Statman and Glushkov (2008) study the impact of KLD screens on the performance of investment portfolios. Both studies find significant excess returns for portfolios long socially responsible, and short socially irresponsible companies. In contrast, Schröder (2007) finds no differences in risk adjusted returns between social and conventional benchmarks. My paper is different since I do not study long term investment performance of socially responsible trading strategies. In contrast, I focus on the short term implications of socially (ir)responsible firm behavior for shareholder value. My results suggest that excess returns of trading strategies based on KLD's indicators like those documented by Kempf and Osthoff (2007); Statman and Glushkov (2008)) are largely driven by the short component of the strategy.

Bechetti et al. (2007) analyze market reaction to entry (exit) announcements to (from) KLD's Domini 400 Social Index Index<sup>4</sup> in an event study setting. Their results suggest that the exclusion from the index causes significantly negative abnormal returns. The negative reaction following a firm's exclusion from the index is most likely explained to passive social fund managers tracking the index. My paper differs from their study, since I rely on events of social responsibility other than the exclusion or inclusion of companies in KLD's index.

On the theoretical side, Heinkel et al. (2001) show that with the presence of ethical investors, prices of stocks of irresponsible companies are lower, driving up their expected returns. This is consistent with evidence in Hong and Kacperczyk (2009) showing that returns on sin stocks (alcohol, gambling,

etc.) are higher than those of other companies. Relying on KLD data, Hong and Kostovetsky (2009) examine whether political values influence investing and show that Democrat fund managers overweight firms with positive social characteristics (good employee relations and superior environmental performance).

Finally, there is a recent literature examining the validity and impact of social responsibility ratings. Chatterji et al. (2009) investigate the predictive power of KLD's environmental ratings and find that KLD's negative environmental ratings are fairly good summaries of past environmental performance, whereas positive ratings do not significantly forecast future levels of pollution or compliance violations.

The rest of the paper is organized as follows. The next section presents the sources of the data. Section 3 briefly reviews the methodology. In section 4, I present and discuss the results before concluding in section 5.

## 2 Data

### 2.1 KLD

Social analysts at KLD monitor current affairs via customized press searches. In this process, the analysts single out information relevant to socially responsible investors. If an event (e.g. a newspaper article about a socially controversial topic) concerning a company contained in the Russel3000<sup>5</sup> index is considered sufficiently important, the analysts will record, classify and privately disseminate it in the form of a social rating. The present study uses events between 2001 and 2007 concerning 836 companies different companies.

At present, KLD classifies (social) events according to two different sets of criteria. On the one hand, it records incidents relevant for stakeholders in its *Environmental, Social and Governance* (ESG) catalog. Table 1 provides an overview of relevant issues.

[Table 1 (see page 26) about here.]

On the other hand, the *Controversial Business Involvement* (CBI) catalog documents a company's level of involvement in industries such as gambling, tobacco or pornography. I focus on events belonging to the first catalog, which covers the following stakeholder issue areas:

1. Community
2. Diversity
3. Employee Relations

4. Human Rights
5. Product
6. Corporate Governance
7. Environment

Some representative examples of the analyzed events can be found in appendix A.

## 2.2 Concerns and Strengths

For each category, KLD has identified mutually exclusive positive and negative social indicators. Positive indicators are referred to as **Strengths**, and negative ones are known as **Concerns**. For instance, on July 17th 2003, Raleigh (North Carolina) based newspaper *The News & Observer* and other information service providers<sup>6</sup> made reference to a press release issued by *West Pharmaceutical Services, Inc.* In the press release the company announced that it had settled a citation issued by the North Carolina Department of Labor, Occupational Safety and Health Division (NCOSHA) following an investigation of an accident at one of the company's facilities in January 2003. The citation was issued by the NCOSHA on July 16th, 2003. Subsequent to this event, KLD generated a negative *Employee Relations* rating<sup>7</sup>, which it worded as follows:

Following the January 2003 explosion at its manufacturing plant near Raleigh, North Carolina, in July 2003, West Pharmaceutical Services agreed to pay a penalty of \$100,000 to the North Carolina Department of Labor to settle allegations that the company had **violated North Carolina's Occupational Safety and Health Act**. The company also **agreed to pay \$300,000** to local charities and groups that had assisted with rescue work following explosion.

For an overview of the positive and negative social indicators under which the analyzed events were filed, please refer to tables 2 and 3.

[Tables 2 and 3 (see pages 27 and 29) about here.]

## 2.3 @KLD Newsletters

In addition to maintaining a database with company ratings of the abovementioned form, KLD sends out irregularly spaced newsletters. The newsletters contain the most noteworthy additions and modifications of social ratings and inform about recent incidents of corporate social responsibility. I analyze the information content of 92 such newsletters disseminated between

August 2001 and April 2007 concerning 836 different companies. During this time frame, any two newsletters were separated by three weeks on average. Figure 1 (see page 30) provides an example of the format and layout of a typical @KLD newsletter.

[Figure 1 (see page 30) about here.]

From each newsletter I extract all social ratings and the date on which the newsletter was privately disseminated, which I refer to as the **Sent date**.

[Figure 2 (see page 30) about here.]

Figure 2 shows the typical format of the ratings, which consist of the following information:

- Company Name (Allied Capital Corporation)
- Company Ticker (ALD)
- KLD Category (Corporate Governance)
- KLD Social Indicator (Other Concern)
- Rating Text
- **Source Date** (11/12/2007)

The last item deserves further explanation. The **Source Date** refers to the point in time when socially relevant information leading to a subsequent KLD rating is publicly released. For example, this date might coincide with the date a newspaper article on a socially controversial topic is published, a regulatory filing is made or irresponsible corporate behavior is reported by a non-governmental organization. In the example given above, the **Source Date** was the day *The News & Observer* reported about the settlement. Analysts at KLD systematically collect this kind of information and file it under the respective reference date (**Source Date**).

## 2.4 Event selection

Whenever a positive and a negative event for a company fall on the same **Source Date**, I drop both events from the analysis. Furthermore, I randomly drop one of any pair of two events which are separated by less than 15 calendar days. I also remove events for which the three day average closing price around the **Source Date** is less than \$3. Ignoring penny stocks reduces possible biases due to stocks with extreme return movements. Finally, some of the references KLD disseminates do not make reference to a specific event. For instance, in March 2002, KLD's analysts sent out a newsletter containing the following rating:

”As of December 2001, five of *Honeywell’s* facilities had received a Star certification under the federal OSHA’s Voluntary Protection Program [VPP]. The VPP recognizes a plant for excellence in safety and health management. The Star certification is the highest award under the VPP. (12/31/2001)”

While the analysts filed this event with the **Source Date** being December 31st, 2001, a manual check on Dow Jones Factiva<sup>8</sup> database reveals that on and around that day no information concerning Honeywell’s health and safety management was released in the press. I check and remove all events with ambiguous time stamps. For a randomly chosen subset of 200 events, I manually check on Factiva (1) for confounding events and (2) whether KLD’s **Source Date** coincides with the date the information is publicly released. I remove events with confounding events and in most of the cases the event date in Factiva coincides with the **Source Date**. This procedure yields a final sample of 2142 events. Table 4 provides an overview of events conditional on stakeholder issue area.

[Table 4 (see page 32) about here.]

The table allows for two interesting observations. First, the newsletters referenced substantially more negative than positive events. Second, the relative importance of each issue area differs for positive and negative events. While traditional stakeholder issues related to the community, the diversity and the environment make up more than 60 % of the positive events, these categories only account for about 30 % of the negative ones. In contrast, the set of negative events is dominated by issue areas of substantial economic relevance: The product, employee relations and corporate governance categories account for more than 70 % of all negative ratings. Overall, the product category is the most important in absolute and relative terms: Approximately 34 % (733) of all disseminated events pertain to this category. The second most important category with approximately 22 % (490) of all disseminated events are employee relations. Purely social issues such as community, human rights and diversity only make up for approximately 25 % of all ratings. Similarly, only about 10 % (203) of all events are concerned with the company’s impact on the environment.

## 2.5 Content analysis

Besides categories and indicators, I also extract the event descriptions from the newsletters. Analyzing these might deliver additional insights into what differentiates KLD’s perception of negative and positive social responsibility.

Recent work in accounting and finance has focussed on the systematic analysis of qualitative information in the form of textual data. Tetlock (2007) uses a simple word counting algorithm to construct a market sentiment measure from systematically analyzing Wall Street Journal’s ”Abreast of the Market” column. Other studies have analyzed the information content of earnings announcements (see Demers et al. (2008)) or the extent to which 10-Q and 10-K forms contain incremental information beyond financial measures such as earnings surprises (see Feldman et al. (2008)). Here, I examine whether the language used to describe the events differs systematically between positive and negative events. This form of content analysis seeks to extract characteristics contained in text data in a systematic way. As Ole R. Holsti puts it, content analysis is defined as ”any technique for making inferences by objectively and systematically identifying specified characteristics of messages” (see Holsti (1969)). In mathematical terms, the technique boils down to creating a quantitative profile of a text by mapping the words of the message to predefined word categories. I focus on the following three predefined word categories based on the Harvard IV-4 dictionary<sup>9</sup>:

- *Econ@* 510 words of an economic, commercial, industrial, or business orientation, including roles, collectivities, acts, abstract ideas, and symbols, including references to money. Includes names of common commodities in business. (e.g. ANTI-TRUST, AUCTION, BANKRUPT)
- *Legal* 192 words relating to legal, judicial, or police matters. (e.g. ACCUSE, ALLEGATION, AMENDMENT)
- *Quan* 314 words indicating the assessment of quantity, including the use of numbers. (e.g. ADDITIONAL, ACCUMULATION, CONSIDERABLE)

First, I examine to what extent event descriptions contain language belonging to a certain institution (e.g. economic or legal language). Second, I test whether the presence of words used for the assessment of quantities or indicating the presence of numbers differs systematically between positive and negative event descriptions and across social categories. I start by comparing negative and positive event descriptions independently from their social category. Let  $w_\tau$  denote the total number of words and  $n_{k,\tau}$  the number of words pertaining to word category  $k$  describing event  $\tau$ . I am interested in the statistical properties of  $r_{k,\tau} = \frac{n_{k,\tau}}{w_\tau}$ , that is the relative importance of word category  $\mathbf{k}$  in the description of event  $\tau$ . Since the fraction of words belonging to a certain word category is non-negative and thus not normally distributed, I rely on non parametric statistics and rank the data. I apply Kruskal-Wallis

Analysis of Variance (ANOVA) on the ranked data (see chapter 6 of Daniel (1990) for details).

First, I find that negative event descriptions contain significantly more legal terms, indicating that KLD's negative ratings are more reflective of legal issues (e.g. product litigation, regulatory concerns or lawsuits related to affirmative actions). The difference between average ranks for positive and negative event descriptions is  $-293.11$  and significant at the 0.1% level. Second, the difference in the fraction of words with an economic connotation is not statistically different for positive and negative event descriptions. This indicates that economic language is equally important in both the description of positive and negative events. Finally, negative event descriptions seem to contain more words indicating the assessment of quantities. Descriptions of positive events contain significantly less words indicating the assessment of numbers and quantities. The difference in mean ranks is about  $-87.06$  and statistically significant at the 5 % level. This finding suggests that negative event descriptions contain more quantitative information than positive ones.

### 3 The Methodology

An event study analyzes the distribution of stock returns for a sample of firms experiencing a common event. Good reviews of the methodology can be found in Kothari and Warner (2007), Brown and Warner (1980, 1985), MacKinlay (1997) and Campbell et al. (1997). Let  $\tau$  denote the event date. The event period runs from  $\tau_j$  to  $\tau_k$  with  $j < k$  and the estimation period from  $\tau_h$  to  $\tau_i$ , with  $h < i$ .

#### 3.1 Abnormal return

Normal returns are generated by a market model. The equilibrium return for firm  $i$  on day  $t$  is given by

$$r_{it} = \alpha_i + \beta_i r_{mt} + \epsilon_{it} \quad (1)$$

where  $r_{mt}$  is the return on the market portfolio on day  $t$  and  $\epsilon_{it}$  is a disturbance term with  $E[\epsilon_{it}] = 0$  and  $Var[\epsilon_{it}] = \sigma_i$ .  $\alpha_i$ ,  $\beta_i$  and  $\sigma_i$  are the parameters of the market model which are estimated for an estimation period running from  $\tau_h = -300$  to  $\tau_i = -45$ . The return on the market portfolio is approximated by the Center for Research in Security Prices (CRSP) Value Weighted Market Index.

**Abnormal return:** Given the parameter estimates of the market model  $\hat{\alpha}_i$  and  $\hat{\beta}_i$ , daily abnormal returns are computed for each company and for each day from the event period as the difference between realized and expected returns:

$$AR_{it} = r_{it} - E[r_{it}] = r_{it} - (\hat{\alpha}_i + \hat{\beta}_i r_{mt}). \quad (2)$$

Abnormal return (AR) may be interpreted as the disturbance term of the market model calculated on an out of sample basis. If the model (1) is well specified, the cross sectional mean AR should equal zero.

**Cumulative abnormal return:** Cumulative Abnormal Return (CAR) of firm  $i$  between day  $\tau_j$  and  $\tau_k$  of the event period is computed as

$$CAR_i(\tau_j, \tau_k) = \sum_{t=\tau_j}^{\tau_k} AR_{it}. \quad (3)$$

CAR is a measure of abnormal return which takes into account that security prices might not adjust to new information during one single period. CAR represents the cumulative change in shareholder value induced by the event under analysis. Throughout the study, I will focus on examining the statistical properties of the cross sectional distribution of cumulative abnormal return for different event windows. Furthermore, concerns due to event day uncertainty are mitigated by analyzing CAR, instead of focusing on a single event day.

### 3.2 Test statistics for mean and median cumulative abnormal returns

There are several ways to test for statistical significance of (cumulative) abnormal returns, and both parametric and non-parametric have been developed in the literature. The tests differ with respect to the assumptions made about the statistical properties of abnormal returns. Parametric tests make assumptions about the distribution under the null hypothesis, whereas non-parametric tests require less stringent assumptions about the underlying abnormal return distribution. The latter have better power, especially in cases where the observed sample of firms is small. I use one parametric and two non-parametric test statistics. First, I compute a test statistic due to Boehmer et al. (1991), which uses the standard deviation from both the estimation and the event period. This test is preferable to a standard t-test

or the refined test statistic proposed by Patell (1976) because it accounts for both levels of, and changes in event period variances. On the non-parametric side, I report a rank (see Corrado (1989) or Corrado and Zivney (1992)) and a sign (see Cowan (1992)) based test. Given the underlying assumptions, all test statistics are distributed unit normal.

### 3.3 Endogeneity of Events

A crucial and often implicitly stated assumption of the event study methodology is that events are exogenous. Whenever an event is triggered by changes in the market value, however, commonly used event study methods and interpretations do not apply. Even though it is known and verifiable when incidents of social responsibility occur, the date on which the events are categorized by KLD's analysts is not. Since I rely on KLD's classification of social indicators in order to examine the relationship between shareholder value and social responsibility, I have to address a potential problem of endogeneity. Reflecting on the timing of the rating process (see figure 3), the categorization could have occurred on any date between the **Source** and **Sent date**.

[Figure 3 (see page 31) about here.]

Figure 4 plots the histogram of trading days separating the **Source** and **Sent Date** for all events. It shows that in about 60% of the cases it takes the analysts 11 trading days or less to classify, create and disseminate the ratings.

[Figure 4 (see page 33) about here.]

Figure 4 conveys, that for all events, KLD's classification does not pertain to the information set of the **Source date**. In fact, this information is only known for sure at the **Sent date**, which is on average 3 weeks later. One might be inclined to ask to what extent (abnormal) stock returns resulting from the event at the **Source Date** will influence the way the analysts classify an event.

### 3.4 Testing for endogeneity

#### 3.4.1 Instrumental variables

In order to address the issue of whether classifications are triggered by changes in shareholder value, I construct two instrumental variables based

on information known in the two years prior to the year of the **Source Date**. In related research, I find that social events are highly serially correlated and that a Poisson regression model is reasonably suited to describe the data generating process. Taking this finding into account, I specify positive ( $s_{i,t-1}$ ) and negative social events ( $c_{i,t-1}$ ) for firm  $i$  in period  $t - 1$  conditional on events from period  $t - 2$  to follow two univariate Poisson distributions. Letting  $y_{i,t-1} \in (c_{i,t-1}, s_{i,t-1})$ , the densities describing the likelihood of observing social events for firm  $i$  in year  $t - 1$  are given by

$$P(y_{i,t-1}|y_{i,t-2}) = \frac{e^{-\mu_{i,t-1}} \mu_{i,t-1}^{y_{i,t-1}}}{y_{i,t-1}!}. \quad (4)$$

where the mean or intensity parameter  $\mu_{i,t-1}$  of the Poisson distribution is exponentially parameterized as  $\mu_{i,t-1} = \exp\{\alpha + \gamma y_{i,t-2}\}$ .

Given this specification, the cumulative Poisson probability function of observing  $k$  negative or  $k$  positive events in year  $t - 1$  for firm  $i$  is given by

$$F(y_{i,t-1} = k) = \sum_{j=0}^k \frac{\exp\{-\mu_{i,t-1}\} \mu_{i,t-1}^j}{j!}. \quad (5)$$

Relying on the cumulative distribution function, I compute the Poisson probabilities of observing zero positive (negative) ratings in year  $t - 1$  for company  $i$ , that is

$$P_{i,t-1}^y = F(y_{i,t-1} = 0) = \exp\{-\mu_{i,t-1}\} \quad (6)$$

for  $y = s, c$ . I then define the following two indicator variables

$$\mathbb{1}_{i,t,\tau}^c = \begin{cases} 1 & \text{if event on } \mathbf{Source\ Date} \ \tau \text{ in year } t \text{ concerning} \\ & \text{company } i \text{ is classified as a } \mathbf{Concern}. \\ 0 & \text{otherwise} \end{cases} \quad (7)$$

and

$$\mathbb{1}_{i,t,\tau}^s = \begin{cases} 1 & \text{if event on } \mathbf{Source\ Date} \ \tau \text{ in year } t \text{ concerning} \\ & \text{company } i \text{ is classified as a } \mathbf{Strength}. \\ 0 & \text{otherwise} \end{cases} \quad (8)$$

For  $P_{i,t-1}^y$  to be valid instruments for the two indicator variables, two conditions must be fulfilled. First, it must be that  $\rho_y = \text{corr}(P_{i,t-1}^y, \mathbb{1}_{i,t,\tau}^y) \neq 0$

for  $y = s, c$ . Second,  $P_{i,t-1}^y$  must be independent from shocks to the abnormal return process on and after the **Source Date**. The second condition is true by construction because the instruments are calculated using data prior to the year of the event. Computing correlation coefficients between the instruments and the potentially endogenous indicator variables, I find statistically significant correlations of  $\rho_s = -14.45\%$  and  $\rho_c = -14.34\%$  validating the instruments.

### 3.4.2 Hausman: 2SLS vs OLS

In order to test for endogeneity of classifications, I regress the cumulative abnormal return for firm  $i$  and **Source Date**  $\tau$  between event days  $\tau_j$  and  $\tau_k$  on the indicator variables by ordinary least squares, that is

$$CAR_i(\tau_j, \tau_k) = \beta_{c,\tau_k} \mathbf{1}_{i,t,\tau}^c + \beta_{s,\tau_k} \mathbf{1}_{i,t,\tau}^s + \epsilon_{i,\tau_k}. \quad (9)$$

I let  $j = 0$  and  $k \in 5, 10, 15, 20$ . If the classifications are in fact endogenous and triggered by abnormal returns for the specific firms on the **Source Date** or thereafter, any inference based on parameters  $\beta_{c,\tau_k}$  and  $\beta_{s,\tau_k}$  will be misleading because of biased coefficient estimates. In order to test whether endogeneity is present, I estimate the same equation relying on two stage least square, that is

$$CAR_i(\tau_j, \tau_k) = \gamma_{c,\tau_k} \hat{\mathbf{1}}_{i,t,\tau}^c + \gamma_{s,\tau_k} \hat{\mathbf{1}}_{i,t,\tau}^s + \nu_{i,\tau_k}, \quad (10)$$

where  $\hat{\mathbf{1}}_{i,t,\tau}^y$  are the predicted values from a linear projection of each indicator variables on its instrument, that is  $\mathbf{1}_{i,t,\tau}^y = \alpha + \delta P_{i,t-1}^y + \theta_{i,t,\tau}^y$  (see Wooldridge (2002)) for  $y = c, s$ .  $\theta_{i,t,\tau}^y$  is a standard disturbance term. If classifications are determined by shocks on the cumulative average return process throughout the event period, each parameter estimate pair  $(\hat{\beta}_{y,\tau_k}, \hat{\gamma}_{y,\tau_k})$  for  $y = c, s$  should differ systematically. A series of Hausman (1978) tests for all four event windows  $k$  does not reject the hypothesis that endogenous regressors' effects on the estimates are meaningful. Hence, there is statistical evidence that events are not endogenously triggered by changes in shareholder value. Thus, there is no additional gain from evaluating event effects, that is cumulative abnormal returns, by relying on more sophisticated estimation techniques such as 2SLS. I do not report the test results, but they are available upon request.

## 4 Results

### Pooled analysis

Relying on KLD's exogenous classification, I start by examining the stock market reaction by separating the events into positive and negative ones. I ignore social issue areas (e.g. community, employee relations, etc.) and consider the abnormal returns of portfolios containing all negative and all positive incidents.

[Table 5 (see page 34) about here.]

I find a strong negative reaction whenever events of negative social responsibility are publicly reported (see Panel A of table 5). Negative abnormal returns are statistically significant for all event windows and all considered parametric and non-parametric test statistics. It should be noted that some of the negative incidents have generated substantial destruction of shareholder value. As such, the most negative event generated a cumulative abnormal return between event days  $[-1,1]$  of about -50 %. The latter reduction of shareholder value is related to a lawsuit then General Attorney of New York, Elliot Spitzer, brought against *Marsh & McLennan Companies, Inc.*. The suit alleged that the company had been cheating its customers. By contrast, the most extreme positive reaction due to the occurrence of a negative event is an instance in which the Occupational Safety and Health Administration [OSHA] proposed penalties against *Gold Kist Inc.* for workplace safety violations. A manual check on Factiva reveals that extremely high abnormal returns following negative events are often related to the market anticipating much higher penalties, giving a rationale for extremely positive stock market reactions. Picking up the results from the content analysis (see section 2.5), another reason for the pronounced and systematic negative stock market reaction is that negative events are often related to legal matters (fines, indemnities, product litigation, etc.) and contain substantial quantitative information.

On the contrary, the stock market does not systematically react when events of positive social responsibility are publicly revealed (see Panel B of table 5). Even though the public reporting of positive events generates a slightly negative reaction for an event window of  $[-5,10]$ , it is unlikely that the reaction is due to the event reported at date  $t = 0$ , because the power of test statistics decreases substantially with the size of the event window.

## Conditional analysis<sup>10</sup>

Pooling all negative and positive incidents is a crude way of analyzing the relationship between shareholder value and stakeholder information, because it assumes that all seven categories are equally relevant. Therefore, I proceed by testing for statistically significant cumulative abnormal returns conditional on KLD's social issue area. Again, I consider the reaction of positive and negative events separately.

[Table 6 on page 35 about here.]

Examining the set of negative events conditional on social categories, I find that the negative stock market reaction is particularly strong whenever negative news related to the products of the company are reported (see Panel G of table 6). Furthermore, negative news related to a company's diversity, its community and employee relations as well as news related to its corporate governance characteristics generates significantly negative abnormal returns. The most rational reaction is found in the corporate governance category (see Panel B of table 6), which shows particularly negative abnormal returns for small event windows, i.e.  $[-1,1]$  and  $[-2,2]$ . Surprisingly, negative news about the company's impact on the environment (see Panel E of table 6) does not generate a statistically significant reaction in the short run. Yet, the abnormal returns are found to be negative.

[Table 7 (see page 36) about here.]

Repeating the same exercise for positive events, I study whether the process of pooling all positive events together is overlaying statistically significant effects. It might be the case that a portfolio containing all positive events does not generate statistically significant abnormal return, whereas positive events from a certain category actually do. I find a significant negative stock market reaction for positive events pertaining to the environment category (see Panel E of table 7). A possible explanation here is that positive environmental events are related to substantial investments and negative current cash-flows which are difficult to value in the short run. Short term oriented investors might not reward these long term oriented strategies. Therefore, the information is not appropriately processed by stock markets in the short run. The significantly negative reaction is also consistent with an interpretation stressing myopic investors: immediate reductions in profits are relatively more important than potential benefits in the distant future. (for a theoretical account of myopia see Stein (1989)).

There is weak evidence that positive events relating to human rights issues are creating positive shareholder value for a short event window (see Panel F of table 7). However, the test portfolio is quite small and non-parametric tests do not confirm statistical significance.

## Social indicators

In a final step, I refine the analysis even further by separating the events from the different social categories into their respective social indicators. In total, the sample contains events related to 69 different social indicators. Tables 2 and 3 provided an overview.

Within the set of positive events, I focus on testing hypotheses about two mechanisms. First, it might be the case that positive events with implications for profitability serve as signals about future dividend payments. In that case, events related to corporate philanthropy or profit distribution to employees should generate significant positive abnormal returns. Second, I examine which social indicators might be relevant for value creation. For instance, one could hypothesize that events related to cleaner business strategies, e.g. the use of recycled raw materials, generate positive shareholder value.

## Positive events as signals

By looking more carefully at the set of positive events, I find that social events with a signalling function generate significant positive changes in shareholder value. In table 8, I report positive social indicators for which statistically significant abnormal returns are found according to at least one of the three test statistics.

[Table 8 (see page 37) about here.]

Events related to corporate philanthropy in the form of donations to communities (COM-str-A, COM-str-F) or profit sharing with employees (EMP-str-C) do generate significantly positive stock price reactions (see Panel A and C of table 8). In the case of socially motivated profit distributions, the causal mechanism between social responsibility and shareholder value seems to be that companies which are being generous to communities are more likely to be more profitable as well. Hence, investors might be inclined to expect higher dividends, pushing up stock prices in the short run. The positive diversity indicators *Promotion* (DIV-str-B) and *Board of Directors* (DIV-str-C) (see Panel B of table 8) are concerned with events related to the appointment of women and members of minority groups to the board of

directors or other senior executive positions. Again, a signalling mechanism seems to be at work, since these appointments contain substantial economic information about the past, and likely future performance of the firm, explaining a significantly positive stock market reaction. The result of positive abnormal returns are in contrast to Farrell and Hersch (2005), who find no significant abnormal return to the appointment of women directors. However, it is not clear whether the positive stock market reaction is due to the race or sex of the appointee, or rather due to his reputation in the market for directorships and/or senior executive positions. Moreover, the set of events is fairly small for the *Board of Directors* indicator ( $N = 3$ ).

Investigating *Other Human Rights Strengths* (HUM-str-X) reveals that the positive stock market reaction vis à vis events from this category is largely due to voluntary self compliance of companies with non legally binding guidelines and efforts to increase transparency, which could signal managerial quality (see Panel E of table 8). However, the result should be interpreted with caution, as the number of companies in the test portfolio is quite small ( $N = 4$ ).

### **Positive events and value creation**

Interestingly, positive events related to environmental indicators *Recycling* (ENV-str-C), *Alternative Fuels* (ENV-str-D) and *Pollution Prevention* (ENV-str-B) seem to be relevant for shareholder value (see Panel D of table 8). While the use of recycled materials in the production process seems to be rewarded by investors, the use of potentially more costly clean energy and measures to reduce the company's negative impact on the environment in the form of reducing emissions and the use of toxic materials (*Pollution Prevention* (ENV-str-B) does not. In the case of cleaner energy, the causal mechanism seems to be that relying on environmentally more favorable sources of energy is also more costly and thus detrimental to shareholder value at least in the very short run. There might also be a valuation issue in the sense that it is difficult to determine the exact present value of using clean energy. Moreover, diversity events (see Panel B of table 8) related to the indicator *Family Benefits* (DIV-str-D) generate significantly negative shareholder value. Most of the events are related to the inclusion of the respective company on a list of favorable places for mothers to work at. As such, the events are indicative of both monetary and non-monetary benefits to the employees, and imply higher costs for the company (childcare, longer maternal and paternal leaves, higher pay). There is weak evidence that some of the company's shareholders are unwilling to bear the additional costs, hence the negative stock market reaction. The same mechanism seems to be at work

for wealth transfers towards gay or lesbian employees and their domestic partners. *Progressive Gay/Lesbian Policies* (DIV-str-G) are not rewarded by investors, even though a positive reaction could have been expected, since the gay and lesbian workforce might have more time and willingness to work. The same applies to employees having access to childcare and eldercare and it is interesting that the market does not reward the benefits from a potentially higher willingness to work.

[Table 9 (see page 38) about here.]

### **Negative externalities on communities**

Events pertaining to the *Negative Economic Impact* (COM-con-B) indicator from the community (see Panel A see table 9) category relate to various cases of litigation concerned with negative externalities companies have imposed on their surrounding communities. For instance, the set of events includes legal actions by plaintiffs such as individual residents and/or entire cities. Litigation is most often related to contamination of drinking water, leakage of toxic chemicals, explosions of plants and other events severely harming the safety and/or health of members living within the communities the companies operate in. This documents that choosing a corporate strategy which ignores the well being of community members can turn out to generate instances in which shareholder value of a company is severely reduced. Put differently, even a profit maximizing manager should be interested in pursuing responsible business strategies in order to reduce the likelihood of socially and financially adverse outcomes.

### **Treatment of employees**

Negative payouts related to substantial fines or civil penalties as a result of affirmative action controversies (DIV-con-A) or other major controversies involving bad treatment of the workforce are found to be highly relevant for shareholder value (see Panel C of table 9). As such, events related to the *Other Concerns* (EMP-con-X) indicator generate significantly negative abnormal return. This indicator captures instances of not compensating employees properly, smuggling of immigrants and falsifying diversity data. Events concerned with *International Labor Standards* (HUM-con-F) from the human rights category (see Panel E of table 9) turn out to generate significantly negative abnormal returns aswell. Hence, the non-respect of international labor norms and negative news concerning a company's relationship with unions (EMP-con-A) can be costly for the firm.

## Climate Change

Events from the *Climate Change* (ENV-con-F) indicator are mainly concerned with shareholder resolutions calling for significant reduction or public reporting of greenhouse emissions (see Panel D of table 9). The mechanism here seems to be that shareholder resolutions requesting substantial investments and/or more transparency signal a laggard position of the concerned company with respect to its environmental policies, putting downward pressure on the company's shares.

## Unsafe products and fraudulent marketing and contracting practices

Finally, I evaluate which negative social indicators within the product category are driving the substantially negative abnormal returns (see Panel G of table 9). Substantial abnormal returns are found for incidents regarding *Product Safety* (PRO-con-X), which include instances related to the deployment of unsafe pharmaceutical products. Furthermore, the *Other Concerns* (PRO-con-X) category picks up all sorts of controversies related to a company's products and services, including incidents of illegal trading activity, misuse of customer data or bribery.

## 5 Conclusion

In this paper, I have examined the relationship between shareholder value and a set of positive and negative social indicators commonly used in empirical research concerned with the (social) responsibility of the firm, namely ratings issued by *KLD Research and Analytics Inc.* I have relied on event study methodology in order to systematically document which kind of stakeholder information influences shareholder value.

A mainly descriptive first analysis establishes that KLD is biased towards disseminating more negative than positive ratings. A possible reason for this bias is that it might be less costly for KLD to collect negative news about companies because negative news is abundantly supplied by third parties such as newspapers and/or regulatory authorities. Another rationale would be that the bias is due to a clientele effect through which KLD is servicing socially responsible investors' demand for negative screens. A third explanation is that it might be the case that firms generate more negative externalities and as such there is simply more negative than positive information.

Moreover, I find that the relevant issues differ substantially for the set of negative and positive events. Economic matters dominate the negative indi-

cators, whereas softer issues, e.g. incidents related to diversity or community relations, dominate the set of positive ones. Relying on content analysis, I also document that negative incidents of social responsibility are more related to legal matters and contain significantly more quantitative information. The first result sheds doubts on whether the metrics provided by KLD do in fact measure social responsibility only, or more broadly inferior company behavior. The second finding might explain the pronounced stock market reaction whenever negative information is publicly released.

In the second part of the study, I examine how the stakeholder information relevant to KLD affects shareholder value. I find that the stock market reacts systematically whenever negative information is reported, whereas the release of positive information does not result in significant abnormal returns. Since incidents of negative social responsibility reduce shareholder value, they are costly not only to the concerned stakeholders but also to shareholders. The negative reaction with respect to the release of negative information is particularly pronounced in areas of economic relevance, such as negative events relating to employees or products. This result suggests that even a profit maximizing manager should be interested in the wellbeing of stakeholders (customers, employees). It should be a manager's aim to reduce the likelihood of socially adverse outcomes by increasing workplace and product safety and by reducing a company's negative impact on both the environment and the communities.

To some extent, the negative stock market reaction following the release of negative stakeholder information provides a necessary condition for a manager to become interested in responsible business practices since negligence creates incidents which can turn out to be quite detrimental to shareholder value. However, the study does not provide an answer to the question of whether the additional effort required by the manager to reduce the likelihood of socially adverse outcomes outweighs the expected benefits. As such, the study is unable to provide a sufficient condition for socially responsible business practices.

In the last part, I identify two major mechanisms relating positive incidents of social responsibility to shareholder value. For instance, positive events with substantial signalling value about past and likely future economic performance increases shareholder wealth, whereas strategies implying higher expenses (e.g. benefits to employees or the use of possibly inefficient sources of energy) are not rewarded by investors. In the latter case the benefits of responsible corporate behavior accrue to stakeholders at the direct expense of shareholders.

## A Events

### Community:

#### *Negative Economic Impact (COM-con-B)*

"In August 2002, nineteen neighbors of the company's Wagerup refinery in West Australia, mostly from the town of Yarloop, filed a claim asserting that emissions from the facility's liquor-burner had made them ill, and that Alcoa was negligent because it knew about the risk and could have prevented it."

#### *Generous Giving (COM-str-A):*

"In July 2003, Affymetrix participated in a public/private partnership to facilitate the study of Severe Acute Respiratory Syndrome [SARS] by an initial grant of its GeneChip brand SARS arrays to a nonprofit group under contract with the National Institute for Allergy and Infectious Diseases [NIAID]. The Institute for Genomic Research [TIGR] will provide access to the arrays to qualified researchers."

### Corporate Governance:

#### *Other Concern (CGOV-con-X):*

"In March 2003, Gold Banc Corporation replaced its chief executive officer, Michael Gullion, after irregularities were discovered in his personal bank accounts."

### Diversity:

#### *Promotion (DIV-str-B):*

"In September 2002, a woman joined InterMune's five senior line executives. Sharon Surrey-Barbari was appointed chief financial officer and senior vice president of finance and administration."

#### *Family Benefits (DIV-str-D):*

In 2003 for the first time, Working Mother magazine included Microsoft on its list of the 100 best workplaces for working mothers. Microsoft offers 20 weeks maternity leave, some with full pay, which is eight weeks longer than the federally mandated 12 weeks of unpaid leave. In addition, the company offers four weeks of paternity leave."

#### *Employee Discrimination (DIV-con-A):*

"In October 2002, an African American employee filed a discrimination lawsuit against Williams Companies. The suit, which claims that the company fired the employee because of his race, seeks \$253 million in lost wages."

## **Employee Relations:**

### ***Other Concern (EMP-con-X):***

"In August 2001, an Alameda County, California Superior Court ordered PeopleSoft to pay \$5.45 million to a former employee who had been fired in 1995, after reporting to her bosses that the company was falsifying its employee diversity data in order to keep government contracts. A jury concluded that the company had acted maliciously in firing the employee."

### ***Cash Profit Sharing (EMP-str-C):***

"In January 2002, the company announced that it would distribute \$32 million to 29,800 U.S. employees in April 2002 as part of its wage dividend program."

## **Environment:**

### ***Regulatory Problems (ENV-con-B):***

"In July 2002, West Virginia environmental officials ordered the company's Alex Energy subsidiary to close its Summersville coal mine. The West Virginia Department of Environmental Protection's order required Alex Energy to shut down its entire mining operation until the company controlled pollution from a suspected willful release of 20,000 gallons of contaminated mine water into a Mingo County creek and lake."

### ***Climate Change (ENV-con-F):***

"In January 2003, the Wall Street Journal reported that Cinergy was one of five power generating companies to receive resolutions filed by religious shareholders asking for reports on company greenhouse-gas emissions and plans for reducing those emissions. Cinergy and another firm, AEP, asked the Securities and Exchange Commission to dismiss the resolutions against them, partly because the companies say they already provide the information the resolutions request."

## **Human Rights:**

### ***Labor Rights Strengths (HUM-str-G):***

"In August 2003, AES Corporation announced that it would withdraw from the controversial Bujagali Falls hydroelectric project in eastern Uganda. The company said it made the decision to withdraw because of concerns over its ability to recover its investment in the 250 megawatt power plant and dam on the Nile River."

***Other Concern (HUM-con-X):***

In April 2003, two human rights groups sued Occidental and a security contractor for allegedly helping to plan and support a December 1998 aerial bombing carried out by the Colombian military. The bombing killed 17 civilians in the Colombian village of Santo Domingo. The human rights groups brought the suit on behalf of a Colombian citizen who had family members that were killed in the incident. Occidental denied involvement, stating that it "does not provide lethal aid to Colombia's armed forces".

**Product:**

***Marketing and Contracting Concern (PRO-con-D):***

"In June 2003, Pediatrix disclosed that the federal government had launched a civil investigation into its Medicaid billing practices nationwide. The company said it expected to cooperate fully with the investigation and defended its billing practices as appropriate."

***Other Concern (PRO-con-X):***

"In late June 2002, news reports indicated that the Department of Justice in New Jersey was conducting a criminal investigation into whether or not Schering-Plough imported ingredients that had not been approved by the Food and Drug Administration for use in the U.S."

## B Tables and Figures

**Table 1** – Environmental, social and governance issues covered by KLD.

Environment	Governance	Social
Alternative Energy	Accounting	Community Relations
Climate Change	Compensation	Diversity
Liabilities	Ownership	Employee Relations
Management Systems	Political Accountability	Human Rights
Regulatory Problems	Transparency	Product

**Table 2** – This table shows the relative and absolute importance of each **negative** social indicator. Descriptions are taken from KLD’s data manual (Rating Criteria Definitions) available in WRDS. Appendix A contains some representative descriptions of events pertaining to different social indicators.

Social Indicator	Description	Number	Proportion
Panel A: Community			
COM-con-A	Investment Controversies	21	1.17%
COM-con-B	Negative Economic Impact	59	3.28%
COM-con-C	Indigenous Peoples Relations Concern	4	0.22%
COM-con-X	Other Concern	10	0.56%
Panel B: Corporate Governance			
CGOV-con-E	Tax Disputes	14	0.78%
CGOV-con-F	Ownership Concern	3	0.17%
CGOV-con-G	Accounting Concern	22	1.22%
CGOV-con-I	Political Accountability Concern	1	0.06%
CGOV-con-X	Other Concern	129	7.17%
Panel C: Diversity			
DIV-con-A	Employee Discrimination	193	10.73%
DIV-con-X	Other Concern	13	0.72%
Panel D: Employee Relations			
EMP-con-A	Union Relations Concern	92	5.11%
EMP-con-B	Health and Safety Concern	47	2.61%
EMP-con-C	Workforce Reductions	190	10.56%
EMP-con-D	Pension/Benefits Concern	11	0.61%
EMP-con-X	Other Concern	88	4.89%
Panel E: Environment			
ENV-con-A	Hazardous Waste	6	0.33%
ENV-con-B	Regulatory Problems	75	4.17%
ENV-con-D	Substantial Emissions	5	0.28%
ENV-con-E	Agricultural Chemicals	2	0.11%
ENV-con-F	Climate Change	12	0.67%
ENV-con-X	Other Concern	30	1.67%
Panel F: Human Rights			
HUM-con-C	Burma	10	0.56%
HUM-con-F	International Labor Concern	21	1.17%
HUM-con-G	Indigenous Peoples Relations	4	0.22%
HUM-con-X	Other Concern	34	1.89%
Panel G: Product			
PRO-con-A	Product Safety	180	10.01%
PRO-con-D	Marketing/Contracting Controversy	319	17.73%
PRO-con-E	Antitrust	102	5.67%
PRO-con-X	Other Concern	102	5.67%
Total		1799	100%

**Table 3** – This table shows the relative and absolute importance of each **positive** social indicator. Descriptions are taken from KLD’s data manual (Rating Criteria Definitions) available in WRDS. Appendix A contains some representative descriptions of events pertaining to different social indicators.

Key	Description	Number	Proportion
Panel A: Community			
COM-str-A	Generous Giving	10	2.92%
COM-str-B	Innovative Giving	5	1.46%
COM-str-C	Support for Housing	16	4.66%
COM-str-D	Support for Education	9	2.62%
COM-str-E	Indigenous Peoples Relations Strength	2	0.58%
COM-str-F	Non-U.S. Charitable Giving	10	2.92%
COM-str-X	Other Strength	13	3.79%
Panel B: Corporate Governance			
CGOV-str-A	Limited Compensation	2	0.58%
CGOV-str-D	Transparency Strength	2	0.58%
CGOV-str-X	Other Strength	3	0.87%
Panel C: Diversity			
DIV-str-A	CEO	11	3.21%
DIV-str-B	Promotion	41	11.95%
DIV-str-C	Board of Directors	3	0.87%
DIV-str-D	Family Benefits	12	3.50%
DIV-str-E	Women/Minority Contracting	3	0.87%
DIV-str-F	Employment of the Disabled	9	2.62%
DIV-str-G	Progressive Gay/Lesbian Policies	7	2.04%
DIV-str-X	Other Strength	5	1.46%
Panel D: Employment			
EMP-str-A	Union Relations Strength	3	0.87%
EMP-str-C	Cash Profit Sharing	8	2.33%
EMP-str-D	Involvement	27	7.87%
EMP-str-F	Strong Retirement Benefits	1	0.29%
EMP-str-G	Health and Safety Strength	2	0.58%
EMP-str-X	Other Strength	21	6.12%
Panel E: Environment			
ENV-str-A	Beneficial Products & Services	8	2.33%
ENV-str-B	Pollution Prevention	3	0.87%
ENV-str-C	Recycling	5	1.46%
ENV-str-D	Alternative Fuels	34	9.91%
ENV-str-E	Communications	4	1.17%
ENV-str-G	Management Systems	9	2.62%
ENV-str-X	Other Strength	10	2.92%
Panel F: Human Rights			
HUM-str-D	Indigenous Peoples Relations	2	0.58%
HUM-str-G	Labor Rights Strength	9	2.62%
HUM-str-X	Other Strength	4	1.17%
Panel G: Product			
PRO-str-A	Quality	12	3.50%
PRO-str-B	R&D/Innovation	4	1.17%
PRO-str-C	Benefits to Economically Disadvantaged	1	0.29%
PRO-str-X	Other Strength	13	3.79%
Total		343	100%



Figure 1 – A typical @KLD newsletter.

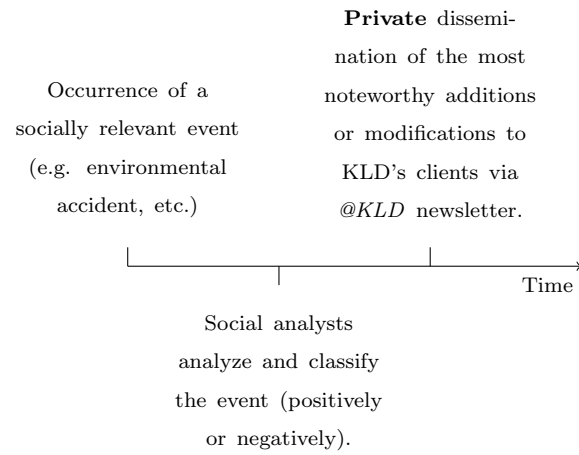
### **Allied Capital Corporation (ALD)**

#### **Corporate Governance -> Other Concerns (New Rating!)**

In January 2007, federal prosecutors indicted the former CEO of the company's Business Loan Express subsidiary and 18 other individuals who were not employees of the company. The indictment alleged the individuals defrauded the Small Business Association out of approximately \$77 million in guaranteed loans. The charges are alleged to have occurred while the employee led Business Loan Express. (1/12/2007)

Figure 2 – A typical rating.

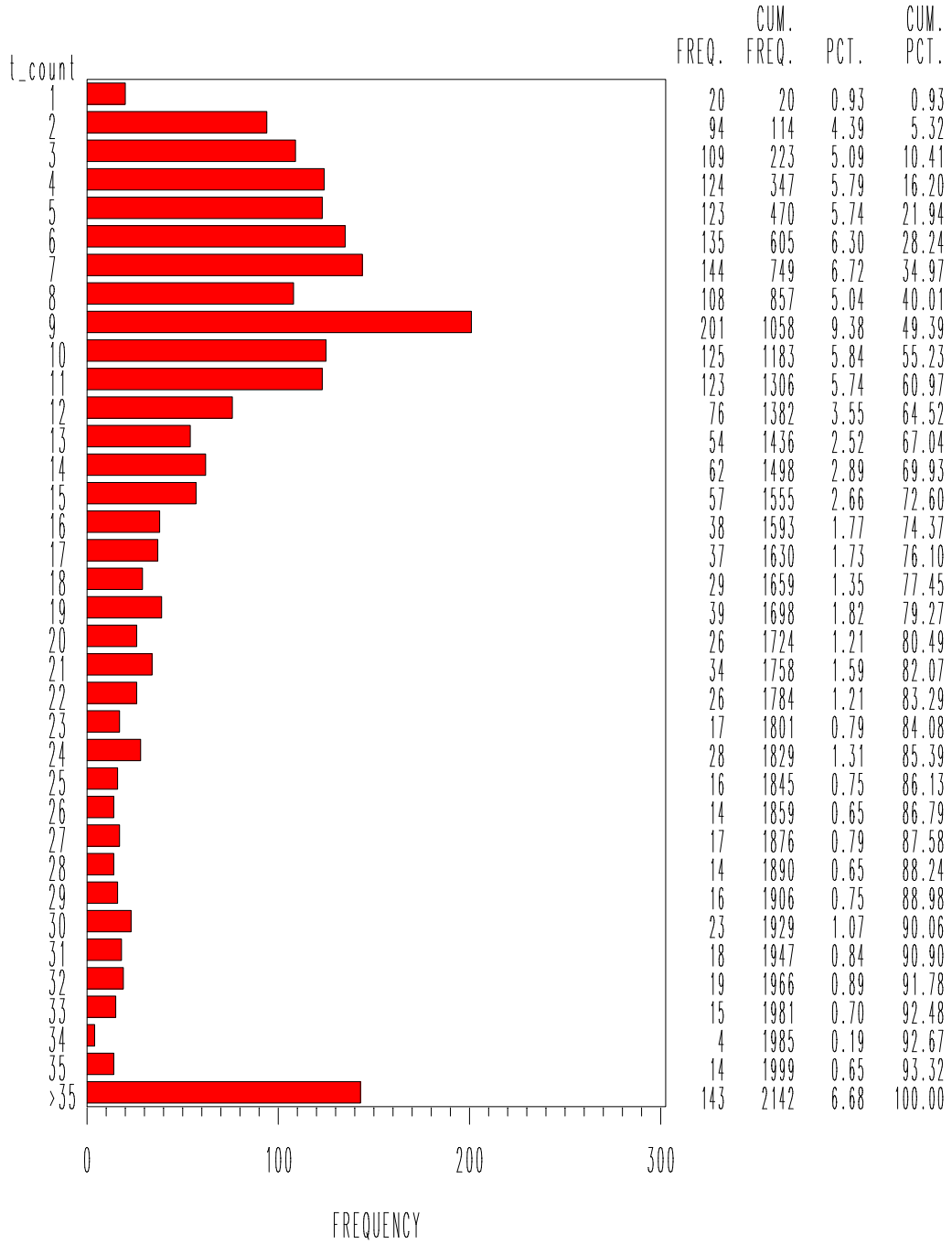
**Figure 3** – Rating process of KLD.



**Table 4** – Ratings by Category.

	Positive Events		Negative Events		All Events	
	Number	Proportion	Number	Proportion	Number	Proportion
Community	65	18.95%	94	5.23%	159	7.42%
Corporate Governance	7	2.04%	169	9.39%	176	8.22%
Diversity	91	26.53%	206	11.45%	297	13.87%
Employee Relations	62	18.08%	428	23.79%	490	22.88%
Environment	73	21.28%	130	7.23%	203	9.48%
Human Rights	15	4.37%	69	3.84%	84	3.92%
Product	30	8.75%	703	39.08%	733	34.22%
Sum	343	100%	1799	100%	2142	100%

**Figure 4** – Trading days between the release of socially relevant information and the dissemination of the rating. (Truncated at 35 trading days)



**Table 5** – This table reports cumulative abnormal return around the event date for different event windows. The two test portfolios contain all positive and all negative events. The t-statistic accounts for event induced changes in volatility and are calculated according to Boehmer et al. (1991). The null hypothesis being tested is the absence of mean cumulative abnormal return. For large  $N$ , the test statistic is distributed unit normal under the null. Since the central limit theorem does not hold for small  $N$ , two non-parametric test statistics are reported as well. The generalized sign test (see Cowan (1992)), which is a test statistic based on the percentage of positive abnormal returns in the event and estimation period. The tested hypothesis is whether the proportion of positive abnormal returns in the event period exceeds what would be expected from the estimation period and should be interpreted as a test of the median cumulative abnormal return. The rank test (see Corrado (1989)) is based on the mean rank of cumulative abnormal returns in the event period. Ranks are calculated on the joint estimation and event period. The rank test evaluates the hypothesis of mean cumulative abnormal return being equal to zero. Both non-parametric statistics are distributed unit normal. (\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ )

Window	Mean (%)	t-stat	MIN (%)	MED (%)	MAX (%)	Perc. Pos (%)	Gen. Sign Test	Rank Test	N
Panel A: All Negative Events									
[-1, 1]	-0.49***	-4.95	-52.96	-0.27	49.29	44.69	-3.55	-3.73	1795
[-2, 2]	-0.51***	-4.37	-57.40	-0.35	52.60	45.41	-2.93	-2.99	1795
[-3, 3]	-0.53***	-4.37	-52.97	-0.38	58.73	46.30	-2.18	-2.54	1795
[-5, 5]	-0.83***	-4.76	-60.64	-0.47	66.66	46.13	-2.32	-2.62	1795
[-5, 10]	-0.98***	-5.26	-55.11	-0.62	73.26	45.69	-2.70	-2.86	1795
Panel B: All Positive Events									
[-1, 1]	0.27	0.63	-28.59	0.21	20.42	52.77	1.33	0.82	343
[-2, 2]	-0.02	-0.21	-26.33	-0.02	29.64	49.56	0.14	0.26	343
[-3, 3]	-0.07	-0.55	-24.90	-0.19	38.09	46.65	-0.94	0.01	343
[-5, 5]	-0.24	-1.44	-37.68	-0.58	33.54	44.90	-1.59	-0.98	343
[-5, 10]	-0.39*	-1.83	-41.36	-0.48	44.74	46.06	-1.15	-1.35	343

**Table 6** – This table reports cumulative abnormal return for event days subject to the release of **negative** social information. The test portfolios are formed according to KLD’s seven issue areas. For details on the test statistics, please refer to table 5. For representative events belonging to each issue are, see Appendix A. Table 2 provides an overview of the negative social indicators pertaining to each category. (\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ )

Window	Mean (%)	t-stat	MIN (%)	MED (%)	MAX (%)	Perc. Pos. (%)	Sign Test	Rank Test	N
Panel A: Community									
[-1, 1]	-0.60**	-2.14	-11.93	-0.10	12.32	47.42	-0.39	-1.14	96
[-2, 2]	-0.15	-0.75	-21.97	-0.32	28.38	43.30	-1.20	-0.24	96
[-3, 3]	-0.62	-1.30	-24.21	-0.39	16.16	44.33	-1.00	-1.18	96
[-5, 5]	-1.50*	-1.92	-39.99	-0.85	15.93	41.24	-1.61	-1.27	96
[-5, 10]	-2.27***	-2.77	-29.17	-1.35	20.27	34.02	-3.03	-1.71	96
Panel B: Corporate Governance									
[-1, 1]	-1.52***	-3.37	-40.98	-0.85	17.98	37.95	-3.02	-3.50	166
[-2, 2]	-1.23***	-2.70	-33.63	-0.56	52.41	43.37	-1.62	-2.58	166
[-3, 3]	-1.02**	-2.55	-31.99	-0.57	58.73	44.58	-1.31	-2.36	166
[-5, 5]	0.09	-0.95	-33.03	-0.02	66.66	50.00	0.09	-0.21	166
[-5, 10]	0.73	-0.19	-40.62	0.84	73.26	53.01	0.86	0.45	166
Panel C: Diversity									
[-1, 1]	-0.27	-1.36	-14.99	-0.21	13.88	45.63	-0.91	-0.91	206
[-2, 2]	-0.23	-0.50	-16.73	-0.05	23.30	49.51	0.20	-0.35	206
[-3, 3]	-0.28	-0.43	-17.72	0.20	17.08	51.94	0.90	-0.22	206
[-5, 5]	-0.50	-0.91	-49.00	-0.14	20.32	48.54	-0.07	-0.26	206
[-5, 10]	-0.79*	-1.73	-36.59	-0.42	33.79	45.63	-0.91	-0.78	206
Panel D: Employee Relations									
[-1, 1]	-0.11	-0.65	-36.54	-0.15	49.29	47.65	-0.15	-0.95	425
[-2, 2]	-0.06	-0.58	-56.65	-0.33	52.60	46.71	-0.54	-0.84	425
[-3, 3]	-0.14	-0.91	-52.97	-0.44	52.16	46.48	-0.63	-0.95	425
[-5, 5]	-1.25**	-2.43	-60.64	-0.81	55.93	44.37	-1.51	-1.89	425
[-5, 10]	-1.54***	-2.65	-55.11	-1.45	54.12	43.43	-1.89	-1.78	425
Panel E: Environment									
[-1, 1]	-0.11	-0.32	-15.30	-0.02	27.94	49.23	0.07	0.02	130
[-2, 2]	0.01	-0.02	-22.58	0.20	35.04	53.08	0.95	0.52	130
[-3, 3]	-0.34	-0.37	-40.16	-0.18	46.01	47.69	-0.28	0.40	130
[-5, 5]	-0.81	-0.91	-43.69	-0.15	22.27	48.46	-0.11	-0.38	130
[-5, 10]	-1.52	-1.07	-54.95	-0.25	23.51	47.69	-0.28	0.02	130
Panel F: Human Rights									
[-1, 1]	0.02	-0.37	-8.35	-0.26	9.67	44.93	-0.69	-0.44	69
[-2, 2]	0.31	0.34	-6.59	-0.36	11.51	46.38	-0.45	0.22	69
[-3, 3]	0.89	1.05	-7.40	-0.06	27.08	49.28	0.03	0.85	69
[-5, 5]	0.90	1.37	-7.62	0.68	20.40	56.52	1.23	0.37	69
[-5, 10]	0.70	0.69	-11.69	0.61	20.72	50.72	0.27	-0.11	69
Panel G: Product									
[-1, 1]	-0.65***	-3.63	-52.96	-0.29	28.25	42.96	-3.26	-2.61	703
[-2, 2]	-0.91***	-4.09	-57.40	-0.47	23.60	42.67	-3.42	-2.67	703
[-3, 3]	-0.89***	-3.96	-52.77	-0.56	25.96	44.67	-2.36	-1.62	703
[-5, 5]	-0.98***	-3.86	-50.89	-0.62	39.45	44.81	-2.28	-1.26	703
[-5, 10]	-1.00***	-3.98	-46.67	-0.78	51.37	46.09	-1.60	-1.41	703

**Table 7** – This table reports cumulative abnormal return for event days subject to the release of **positive** social information. The test portfolios are formed according to KLD’s seven issue areas. For details on the test statistics, please refer to table 5. (\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ )

Window	Mean (%)	t-stat	MIN (%)	MED (%)	MAX (%)	Perc. Pos. (%)	Sign Test	Rank Test	N
Panel A: Community									
[-1, 1]	0.42	1.56	-6.02	0.51	12.62	61.54	1.87	0.77	65
[-2, 2]	0.50	1.42	-9.92	0.69	14.01	63.08	2.12	1.09	65
[-3, 3]	0.43	0.54	-9.37	0.06	25.69	53.85	0.63	0.62	65
[-5, 5]	-0.21	-0.51	-9.55	-0.66	19.78	44.62	-0.86	-0.81	65
[-5, 10]	-0.42	-1.07	-14.50	-0.63	19.70	41.54	-1.35	-1.29	65
Panel B: Corporate Governance									
[-1, 1]	-4.46	-1.13	-28.59	-0.67	1.75	28.57	-1.21	-1.57	7
[-2, 2]	-3.86	-1.06	-26.33	-0.42	2.76	28.57	-1.21	-0.73	7
[-3, 3]	-3.84	-1.10	-24.90	-0.94	5.67	28.57	-1.21	-0.79	7
[-5, 5]	-2.22	-0.39	-24.05	-1.22	8.07	42.86	-0.45	-0.14	7
[-5, 10]	-1.78	-0.29	-24.55	-2.23	10.33	42.86	-0.45	-0.30	7
Panel C: Diversity									
[-1, 1]	0.31	0.54	-17.24	-0.29	20.42	43.96	-0.93	0.58	91
[-2, 2]	-0.16	-0.47	-21.34	-0.36	29.64	46.15	-0.51	0.05	91
[-3, 3]	0.14	-0.28	-21.99	-0.13	38.09	47.25	-0.30	0.22	91
[-5, 5]	0.37	-0.35	-24.53	-0.27	33.54	48.35	-0.09	-0.00	91
[-5, 10]	0.37	0.14	-37.04	0.53	44.74	53.85	0.96	0.44	91
Panel D: Employee Relations									
[-1, 1]	0.60	0.61	-7.13	0.34	19.86	56.45	1.15	0.21	62
[-2, 2]	0.13	0.21	-8.51	-0.37	20.52	43.55	-0.88	-0.23	62
[-3, 3]	-0.23	0.05	-12.86	-0.44	20.43	43.55	-0.88	-0.10	62
[-5, 5]	-0.90	-0.95	-37.68	-1.41	19.51	43.55	-0.88	-0.50	62
[-5, 10]	-0.10	-0.15	-41.36	0.29	17.40	53.23	0.65	0.02	62
Panel E: Environment									
[-1, 1]	0.01	-0.90	-6.97	0.08	7.82	50.68	0.28	-0.30	73
[-2, 2]	-0.37*	-1.67	-10.34	-0.38	7.61	45.21	-0.66	-0.71	73
[-3, 3]	-0.59	-1.43	-12.72	-0.39	8.36	39.73	-1.60	-0.78	73
[-5, 5]	-0.56	-1.27	-12.71	-0.99	17.93	39.73	-1.60	-0.69	73
[-5, 10]	-1.79***	-3.18	-17.13	-1.73	10.60	34.25	-2.53	-1.89	73
Panel F: Human Rights									
[-1, 1]	0.81	1.30	-2.79	0.77	4.00	66.67	1.31	1.24	15
[-2, 2]	0.74*	1.88	-1.40	0.49	3.32	66.67	1.31	0.88	15
[-3, 3]	-0.14	-0.22	-3.58	-0.13	5.56	46.67	-0.24	-0.38	15
[-5, 5]	-1.06	-1.37	-8.36	-1.05	5.55	40.00	-0.76	-1.08	15
[-5, 10]	-0.22	-0.35	-8.80	-1.44	6.71	40.00	-0.76	-0.78	15
Panel G: Product									
[-1, 1]	0.66	0.71	-6.06	0.45	12.33	56.67	0.94	0.71	30
[-2, 2]	0.31	0.40	-6.80	-0.16	7.54	50.00	0.20	0.41	30
[-3, 3]	0.76	0.88	-9.40	0.07	18.59	56.67	0.94	0.73	30
[-5, 5]	0.90	0.70	-9.56	0.79	17.71	53.33	0.57	0.65	30
[-5, 10]	0.40	0.18	-11.75	-0.02	9.72	50.00	0.20	0.23	30

**Table 8** – This table reports cumulative abnormal return for event days subject to the release of **positive** social information. The test portfolios are formed according to KLD’s social indicators (see table 3). Only social indicators with statistically significant mean or median cumulative abnormal returns are reported. For details on the test statistics, please refer to table 5.

Key	Description	Window	Mean (%)	t-stat	MIN (%)	MED (%)	MAX (%)	Perc. Pos. (%)	Sign Test	Rank Test	N
Panel A: Community											
COM-str-A	Generous Giving	[-3, 3]	2.54*	1.86	-6.63	3.23	8.11	80.00	1.97	0.88	10
COM-str-F	Non-U.S. Charitable Giving	[-2, 2]	0.95**	2.25	-1.91	0.74	3.97	70.00	1.31	0.87	10
Panel B: Diversity											
DIV-str-B	Promotion	[-5, 5]	1.03	0.66	-24.53	1.76	21.19	56.10	1.07	1.68	41
DIV-str-B	Promotion	[-5, 10]	1.93	1.62	-24.67	2.46	25.44	68.29	2.64	2.47	41
DIV-str-C	Board of Directors	[-2, 2]	10.35	1.20	0.41	1.00	29.64	100.00	1.76	1.29	3
DIV-str-C	Board of Directors	[-3, 3]	13.15	1.19	0.32	1.03	38.09	100.00	1.76	1.47	3
DIV-str-D	Family Benefits	[-5, 10]	-3.60*	-1.73	-14.50	-4.87	6.93	33.33	-1.12	-1.27	12
DIV-str-G	Progressive Gay/Lesbian Policies	[-3, 3]	-1.98*	-1.67	-6.76	-1.74	1.34	28.57	-1.11	-1.57	7
Panel C: Employee Relations											
EMP-str-A	Union Relations Strength	[-2, 2]	-2.37**	-2.26	-4.63	-2.11	-0.36	0.00	-1.70	-1.23	3
EMP-str-A	Union Relations Strength	[-3, 3]	-2.49*	-1.95	-5.45	-1.38	-0.63	0.00	-1.70	-0.73	3
EMP-str-A	Union Relations Strength	[-5, 5]	-3.18***	-3.87	-5.51	-2.06	-1.97	0.00	-1.70	-0.73	3
EMP-str-A	Union Relations Strength	[-5, 10]	-2.99**	-1.96	-4.92	-4.08	0.02	33.33	-0.55	-0.40	3
EMP-str-C	Cash Profit Sharing	[-1, 1]	2.44**	2.00	-0.35	2.34	8.35	87.50	2.17	1.29	8
Panel D: Environment											
ENV-str-B	Pollution Prevention	[-1, 1]	-2.31*	-1.93	-3.61	-2.79	-0.53	0.00	-1.71	-1.56	3
ENV-str-B	Pollution Prevention	[-2, 2]	-3.64*	-1.76	-6.43	-4.18	-0.33	0.00	-1.71	-1.78	3
ENV-str-B	Pollution Prevention	[-3, 3]	-5.51**	-2.05	-8.90	-6.30	-1.33	0.00	-1.71	-2.31	3
ENV-str-B	Pollution Prevention	[-5, 5]	-4.86*	-1.66	-8.80	-3.06	-2.72	0.00	-1.71	-2.33	3
ENV-str-B	Pollution Prevention	[-5, 10]	-6.93***	-2.62	-8.85	-6.61	-5.35	0.00	-1.71	-2.67	3
ENV-str-C	Recycling	[-5, 5]	1.48***	3.16	-0.12	1.97	2.32	80.00	1.38	0.93	5
ENV-str-D	Alternative Fuels	[-5, 5]	-1.22*	-1.80	-10.66	-1.54	7.85	32.35	-1.96	-1.19	34
ENV-str-D	Alternative Fuels	[-5, 10]	-2.10***	-2.61	-15.38	-1.84	7.85	29.41	-2.30	-1.49	34
ENV-str-X	Other Strength	[-1, 1]	-0.75*	-1.68	-5.66	-0.24	0.95	40.00	-0.62	-0.59	10
Panel E: Human Rights											
HUM-str-X	Other Strength	[-1, 1]	1.95***	4.27	0.77	2.05	2.94	100.00	2.00	1.60	4
HUM-str-X	Other Strength	[-2, 2]	1.34***	3.15	0.40	1.31	2.36	100.00	2.00	0.74	4

**Table 9** – This table reports cumulative abnormal return for event days subject to the release of **negative** social information. The test portfolios are formed according to KLD’s social indicators (see table 2). Only social indicators with statistically significant mean or median cumulative abnormal returns are reported. For details on the test statistics, please refer to table 5.

Key	Description	Window	Mean (%)	t-stat	MIN (%)	MED (%)	MAX (%)	Perc. Pos. (%)	Sign. Test	Rank Test	N
Panel A: Community											
COM-con-B	Negative Economic Impact	[-1, 1]	-0.70**	-1.98	-11.93	0.10	12.32	52.54	0.35	-1.37	59
COM-con-B	Negative Economic Impact	[-5, 5]	-2.45***	-2.58	-39.99	-1.34	15.93	35.59	-2.25	-2.16	59
COM-con-B	Negative Economic Impact	[-5, 10]	-2.69**	-2.53	-29.17	-1.37	20.27	33.90	-2.51	-2.00	59
Panel B: Corporate Governance											
CGOV-con-E	Tax Disputes	[-2, 2]	-1.80**	-2.34	-8.38	-0.93	2.95	21.43	-1.72	-0.28	13
CGOV-con-E	Tax Disputes	[-3, 3]	-1.62**	-2.02	-7.69	-1.70	4.49	21.43	-1.72	0.36	13
CGOV-con-E	Tax Disputes	[-5, 10]	-1.48	-0.92	-16.09	0.50	9.67	50.00	0.43	1.92	13
CGOV-con-X	Other Concern	[-1, 1]	-1.75***	-3.04	-40.98	-0.80	17.98	39.53	-2.33	-2.86	129
CGOV-con-X	Other Concern	[-2, 2]	-1.18**	-2.18	-33.63	-0.44	52.41	44.96	-1.10	-1.59	129
CGOV-con-X	Other Concern	[-3, 3]	-0.91**	-2.06	-31.99	-0.10	58.73	48.84	-0.22	-1.44	129
Panel C: Employee Relations											
EMP-con-A	Union Relations Concern	[-5, 5]	-0.69*	-1.85	-27.60	-0.83	24.46	45.65	-0.51	-0.95	92
EMP-con-X	Other Concern	[-1, 1]	-1.12***	-3.69	-9.74	-0.89	8.11	32.95	-2.91	-3.39	88
EMP-con-X	Other Concern	[-2, 2]	-1.13***	-3.31	-14.79	-0.96	9.83	35.23	-2.48	-2.77	88
EMP-con-X	Other Concern	[-3, 3]	-1.31***	-3.28	-16.91	-1.04	13.54	36.36	-2.27	-2.53	88
EMP-con-X	Other Concern	[-5, 5]	-2.54***	-3.48	-25.83	-1.29	26.25	37.50	-2.06	-2.61	88
EMP-con-X	Other Concern	[-5, 10]	-2.64***	-3.56	-23.14	-1.75	32.63	31.82	-3.12	-2.62	88
Panel D: Environment											
ENV-con-F	Climate Change	[-3, 3]	-1.55*	-1.87	-9.16	-0.31	3.67	41.67	-0.58	-0.40	12
ENV-con-F	Climate Change	[-5, 5]	-2.22**	-2.40	-13.05	-2.03	7.47	16.67	-2.31	-0.72	12
Panel E: Human Rights											
HUM-con-F	International Labor Concern	[-2, 2]	-0.78*	-1.90	-6.59	-1.27	11.51	33.33	-1.52	-2.13	21
HUM-con-X	Other Concern	[-3, 3]	1.17**	2.02	-4.79	0.97	10.64	58.82	1.30	1.93	34
Panel F: Product											
PRO-con-A	Product Safety	[-2, 2]	-0.75**	-2.05	-47.47	-0.45	17.76	44.44	-1.23	-0.43	180
PRO-con-A	Product Safety	[-3, 3]	-0.81**	-2.23	-48.61	-0.58	20.90	43.33	-1.53	-0.23	180
PRO-con-A	Product Safety	[-5, 5]	-0.72*	-1.83	-42.52	-0.49	21.89	47.22	-0.48	0.35	180
PRO-con-A	Product Safety	[-5, 10]	-1.05**	-2.30	-46.67	-0.31	23.54	47.78	-0.33	-0.16	180
PRO-con-D	Marketing/Contracting Controversy	[-1, 1]	-0.76**	-2.41	-52.96	-0.42	28.25	40.13	-3.19	-2.42	319
PRO-con-D	Marketing/Contracting Controversy	[-2, 2]	-0.93**	-2.44	-57.40	-0.52	23.60	42.01	-2.51	-2.16	319
PRO-con-D	Marketing/Contracting Controversy	[-3, 3]	-0.90**	-2.28	-52.77	-0.69	25.96	45.45	-1.28	-1.32	319
PRO-con-D	Marketing/Contracting Controversy	[-5, 5]	-1.13**	-2.55	-50.89	-0.72	38.34	44.20	-1.73	-1.51	319
PRO-con-D	Marketing/Contracting Controversy	[-5, 10]	-0.94**	-2.32	-43.26	-1.00	51.37	43.57	-1.95	-1.26	319
PRO-con-X	Other Concern	[-1, 1]	-1.27***	-3.13	-20.44	-0.61	7.00	37.25	-2.45	-2.66	102
PRO-con-X	Other Concern	[-2, 2]	-1.32***	-2.96	-22.95	-0.32	8.26	42.16	-1.46	-2.00	102
PRO-con-X	Other Concern	[-3, 3]	-1.43***	-2.99	-28.35	-0.63	17.83	39.22	-2.05	-1.94	102
PRO-con-X	Other Concern	[-5, 5]	-1.43**	-2.57	-30.36	-0.85	39.45	43.14	-1.26	-1.64	102
PRO-con-X	Other Concern	[-5, 10]	-1.43**	-2.57	-39.43	-1.60	40.91	44.12	-1.06	-1.72	102

## Notes

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<sup>2</sup><http://www.kld.com>

<sup>3</sup>See section 2.1 for details

<sup>4</sup>A market index composed by companies considered to be more socially responsible.

<sup>5</sup><http://www.russell.com/>

<sup>6</sup>Reuters Significant Developments, Associated Press Newswires, Dow Jones News Service

<sup>7</sup>The incident was recorded under the Health and Safety Concern (EMP-con-B) social indicator.

<sup>8</sup><http://www.factiva.com>

<sup>9</sup>See <http://www.wjh.harvard.edu/~inquirer/> for more details.

<sup>10</sup>Please refer to appendix A for a list of representative events.

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