Stakeholder relations and stock returns: on errors in investors' expectations and learning

Arian Borgers[a], Jeroen Derwall[a,b], Kees Koedijk[a,c], Jenke ter Horst[a]

First version: October 2011; This version: March 2013

Abstract: A significant number of institutional investors publicly state the belief that corporate stakeholder relations are associated with firm value in a manner that the financial market fails to understand. We investigate whether stakeholder information predicted risk-adjusted returns due to errors in investors' expectations and ultimately ceased to do so as attention for such information increased. We build a stakeholder-relations index (*SI*) for a wide range of U.S. firms over the period 1992-2009 and provide evidence that the *SI* explained errors in investors' expectations about firms' future earnings. The *SI* was positively associated with long-term risk-adjusted returns, earnings announcement returns, and errors in analysts' earnings forecasts over the period 1992-2004. However, as attention for stakeholder issues became more widespread, subsequently, these relationships diminished considerably. The results are consistent with the idea that increased investor attention for stakeholder issues eventually eliminates mispricing.

Borgers, a.c.t.borgers@uvt.nl, +3113466307; Derwall, jderwall@uvt.nl and j.derwall@maastrichuniversity.nl, +31433884875; Koedijk, c.koedijk@uvt.nl, +31134663048; and Ter Horst, j.r.terhorst@uvt.nl, +31134668211. a) Tilburg University, School of Economics and Management, P.O. Box 90153, 5000 LE Tilburg, The Netherlands. b) Maastricht University, European Centre for Corporate Engagement, P.O. Box 616, 6200 MD Maastricht, The Netherlands. c) Centre for Economic Policy Research, 77 Bastwick Street, London EC1V 3PZ, UK.
The financial support of the BSI Gamma Foundation and MISTRA are gratefully acknowledged. We thank Nadja Guenster, seminar participants at Maastricht University, Tilburg University, ESCP Europe (Paris), APG Asset Management, and conference participants at the Berkeley-ECCE Conference on Finance and The Responsible Business, the BSI Gamma Conference on Socially Responsible Investing, and the PRI-CERN Conference, for valuable comments on earlier versions of this paper. All errors are our own.

"... we believe that, in the long run, an investment approach that identifies and invests in companies with sustainable business models serves shareholders best. Towards that end, we have developed a process that combines thorough financial analysis with another, critically important set of factors that most investment managers ignore..."

(PAX World Investments[1])

1. Introduction

Financial institutions spend considerable time aligning their investment goals with the wellbeing of non-financial stakeholders and the community at large, by integrating environmental, social, and corporate governance (ESG) criteria with their investment decisions. Almost all institutions publicly justify those investments based on the argument that ESG information positively contributes to their investment performance. For example, more than 850 institutional investors worldwide, representing about $25 trillion assets under management, are signatories of the United Nations-backed Principles for Responsible Investing (PRI). According to PRI, institutional investors have a fiduciary duty to act in the long-term interests of beneficiaries, and ESG factors are relevant in this context because of their effect on the performance of investment portfolios.[2] Many of these investors are enamored with the idea that when firms improve their stakeholder relations they create intangible long-run economic benefits that are neither adequately reflected in firms' financial statements nor properly valued by the capital market.

[1] http://www.paxworld.com/investment-approach/ (retrieved in 2010)
[2] See for example http://www.unpri.org/about-pri/the-six-principles/

This performance-oriented motivation for integrating stakeholder information into investments is nevertheless ambitious and remarkable. The notion that such information provides investors with a long-term competitive advantage goes against conventional economic wisdom and a large body of empirical evidence that active investors fail to beat the market consistently (e.g., Carhart 1997).[3] Even if better stakeholder relations are associated with higher future earnings in a manner that the market has not properly understood, economic logic predicts that such information provides investors with a competitive advantage *in the short-run, but not in the long-run.* Both theory and empirical evidence indicate that the documentation of profitable investment opportunities attracts investor attention and eventually contributes to market efficiency (e.g., Schwert, 2003; Chordia, Subrahmanyam and Tong (2012); Bebchuk, Cohen, and Wang, forthcoming). Superior risk-adjusted returns that investors can earn by exploiting "mispriced" information, if any, should eventually cease to exist as the capital market learns and understands the earnings implications of this information.

This paper provides evidence that the quality of stakeholder relations originally did convey information about future risk-adjusted returns due to errors in investors' expectations, but less so as soon as the capital market paid more attention to stakeholder issues. The evidence on expectational errors is based on three common analyses that are considered complements in empirical studies on stock market anomalies (see Core, Guay, and Rusticus (2006); Edmans (2011); Bebchuk et al. (forthcoming)). We first construct an annual stakeholder-relations index (*SI*) for U.S. firms and then estimate risk-adjusted returns on stock portfolios that are formed using the *SI* over the period 1992-2009. We subsequently investigate whether stakeholder information predicts future earnings announcement returns. We complement these studies with an

[3] Moreover, equilibrium models of asset prices predict that firms with strong stakeholder relations may even have lower expected returns if socially responsible investors drive up their stock prices (see, Heinkel, Kraus, and Zechner 2001, Hong and Kacperczyk 2009).

analysis of the association between stakeholder relations and errors in analysts' forecasts of firms' long-term earnings growth.

While our analyses suggest that stakeholder information was associated with risk-adjusted returns because of unexpected earnings, they also point out that evidence of errors in investors' expectations has weakened in recent times. While the *SI* positively related to risk-adjusted portfolio returns, earnings announcement returns, and analysts' long-term forecast errors over the period 1992-2004, these relationships diminished once stakeholder issues arguably attracted substantially greater attention in the capital market.

The conclusion that follows from the analyses is consistent with the learning hypothesis of Bebchuk et al. (forthcoming), and has implications for those institutional investors that pursue both financial and social goals. On the one hand, the results imply that a performance-oriented investment case for integrating stakeholder issues in investment decisions has weaker empirical foundations than before, at least when it leans on easily obtainable information and rather elementary trading rules. But the conclusion that stakeholder management nowadays does not contribute to errors in expectations incentivizes company managers to place stakeholder issues higher on the corporate agenda. The results also expand on those studies on socially responsible investing (SRI) that present evidence to support the notion that certain stakeholder information is mispriced.[4] Especially Edmans (2011) presents comprehensive evidence that the stock market does not entirely value the intangible assets that companies create through strong relations with their employees. Our results suggest that such "mispricing" has diminished over time as the capital market eventually learned about the implications of stakeholder relations for corporate valuation.

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[4] See Derwall, Guenster, Bauer, and Koedijk (2005), Kempf and Osthoff (2007), Galema, Plantinga, and Scholtens (2008), Statman and Glushkov (2009), Edmans (2011), Derwall, Koedijk, and Ter Horst (2011).

This study proceeds as follows. The theoretical foundations of this study are discussed in Section 2 of the paper. Section 3 describes the data and variables that we use to measure the quality of stakeholder relations. Section 4 covers the main empirical analyses, and Section 5 discusses additional tests. Section 6 concludes this study.

2. Theoretical background

The idea that firms with better stakeholder relations have higher future earnings can be justified by both instrumental stakeholder theory (e.g., Cornell and Shapiro 1987, Zingales 2000) and the resource based-view of the firm (e.g., Wernerfelt 1984, Barney 1991, Hart 1995, Russo and Fouts 1997). That these advantages are often intangible, not readily quantifiable, and materialize in the long-term provides investors in search of underpriced assets with one argument for integrating stakeholder information into investment decisions. Several institutional investors, such as various signatories of PRI, contend that financial markets do not appreciate these intangibles. For example, the Enhanced Analytics Initiative (EAI) is an investor initiative (now merged with PRI) that incentivizes analysts to routinely consider so-called "extra-financial information", so that their investment recommendations are improved (O'Loughlin and Thamotheram 2006). According to EAI, extra-financial factors are "*those which are likely to have at least a long-term effect on business results but which seldom get integrated into investment decisions*…", ranging from "*corporate governance and executive remuneration, to occupational health and safety and human capital practices, and to the environmental and social impacts of corporate activity*" (O'Loughlin and Thamotheram 2006, p. 6).

Whether such factors reflect intangibles that are not properly reflected in stock prices has also attracted considerable attention in empirical studies over the last years. On the academic front, several relatively recent studies have suggested that stocks of companies with better stakeholder relations have produced anomalously positive average returns in the U.S. stock market. See, for example, Derwall et al. 2005; Kempf and Osthoff 2007; Statman and Glushkov 2009, Edmans 2010; Derwall et al. 2011. In particular Edmans (2010) showed that companies with stronger employee satisfaction not only had higher risk-adjusted returns in the stock market but also exhibited both higher earnings announcement returns and higher long-term earnings surprises.

As Derwall, Koedijk and Ter Horst (2011) point out, if these findings indeed reflect mispricing, then it is questionable that they will persist in the long run. Standard economic theory predicts that mispriced information eventually disappears as investors learn about the anomaly. Prior studies provide evidence that many widely publicized anomaly variables were able to predict stock returns during the sample period in which they were first identified, but less so after their discovery (e.g., Schwert, 2003; Chordia, Subrahmanyam and Tong, 2012). There are at least two reasons to expect that the capital market has come to better understand the value-relevance of corporate stakeholder relations.

First, anecdotal evidence points out that investor attention for stakeholder issues has risen substantially in recent years. Industry surveys consistently conclude that the amount of assets managed by institutional investors that integrate so-called environmental, social and governance (ESG) issues has grown considerably over the last decade. For example, according to the U.S. social investment forum (2010), about 55 mutual funds (representing US$ 12 billion under management) integrated ESG factors into investment choices in 1995, while almost 500 funds with US$ 569 billion under management employed such investment criteria in 2010. Outside the U.S., several investor initiatives, such as EAI in 2004 and PRI in 2006 contributed to the worldwide mainstreaming of ESG, encouraging mainstream investors to routinely integrate stakeholder issues with investment decisions.[5]

Second, in a closely related study, Bebchuk et al. (forthcoming) show that the corporate governance index of Gompers, Ishii and Metrick (2003) originally related significantly to risk-adjusted stock returns, analysts' earnings forecast errors, and abnormal earnings announcement returns—but not after 2001, when governance issues attracted structurally greater attention among financial media, academic studies, and shareholder proposals issued by institutional investors. Consequently, they conclude that investors learned about the association between governance indexes and firms' profitability as a result of this heightened attention for corporate governance. The conclusion of Bebchuk et al. (forthcoming) has potentially important implications for our study because many investors learn about the value-relevance of governance issues in tandem with stakeholder issues, in particular via the ESG acronym.

In summary, the growth of investors who employ corporate stakeholder information for pursuing the goal of superior returns raises two empirical questions. The first question addressed in this paper is whether there is justification for the belief that errors in expectations causes firms' stock returns to be associated with the quality of stakeholder relations ("the errors-in-expectations hypothesis"). If so, the natural follow-up question is whether risk-adjusted stock returns stemming from errors in investors' expectations eventually cease to exist following investors' heightened attention for stakeholder information, in the spirit of the "learning hypothesis" of Bebchuk et al. (forthcoming). The goal of this study is to investigate whether both hypotheses

[5] The "ESG" acronym became widespread due to summits involving large investment companies, and is an explicit outcome of investors seeking to "mainstream" the use of stakeholder information by the investment community. For a review of alternative terminologies, see also Bessire and Onnée (2010).

find support in analyses of risk-adjusted portfolio returns, earnings announcement returns, and errors in analysts' earnings forecasts.[6]

3. Evaluating corporate stakeholder relations

We evaluate annually firms' stakeholder relations using the STATS database from Kinder, Lydenberg and Domini and co. (KLD), which is the longest-running source of stakeholder information and used extensively by investors. STATS summarizes this information for mostly Standard & Poor's (S&P) 500 constituents as of 1991, the 1,000 largest publicly traded U.S. companies from 2001 to 2002, and the 3,000 largest publicly traded U.S. companies every year thereafter.

KLD specializes in evaluating firms regarding issues such as environmental performance (e.g., hazardous waste, regulatory problems, emissions and pollution prevention, and environmental management systems), community involvement (e.g., charitable and innovative giving, support for housing and education, and volunteer programs), diversity (e.g., women on the board of directors, CEO gender, the promotion or contracting of women and minorities, and work/life benefits), employee relations (e.g., workplace health and safety issues, workforce reductions, retirement benefits, worker involvement programs, and union relations), product quality (e.g., marketing-contracting concerns, product safety, and benefits to the economically disadvantaged), and human rights issues.[7] For each category, KLD subjects every firm to a

[6] In principle, heightened attention may also affect the demand for specific stocks, which may influence their returns. Edmans (2011) investigates whether increased demand for stocks of America's Best Companies to Work For explains these stocks' positive risk-adjusted returns, for which he finds little evidence.

[7] We adjusted the diversity measure to correct for KLD's overweighting of issues related to female representation by setting a maximum of 1 to the sum of all diversity issues related to female representation.

number of “strengths” and “concerns” indicators, with “1” (“0”) indicating the presence (absence) of a strength or concern.[8]

We develop for every firm an aggregate stakeholder-relations index (henceforth, *SI*) on a yearly basis, using the strengths and concerns indicators from KLD. To construct the *SI*, we follow the common practice of adding all strengths and subtracting all concerns in a given year (see, e.g, Hong and Kostovetsky (2010) and Jiao (2010)). We omit from this procedure the indicators of human rights issues, because KLD did not cover these issues consistently throughout the sample period. Moreover, we industry adjust these scores by subtracting the mean score within an industry from the firms' score.[9]

From a statistical standpoint, the aggregate of the individual indicators has the most desirable distributional characteristics compared to disaggregate measures. For example, around 80 percent of all firm-year observations do not experience a single strength or concern in the areas of community involvement or environment, whereas this occurs only in 14 percent of the cases when all stakeholder categories are aggregated. Therefore, undesirable distributional features makes the use of too disaggregate measures problematic in common tests of errors in expectations.

Panel A of Table 1 presents summary statistics for the SI. The *SI* is on average zero and has a standard deviation of 1.68. Panel B reports correlations between the *SI* and a number of elementary financial variables based on data from Compustat, which creates a basic impression of the financial characteristics of firms with stronger stakeholder relations relative to those with weaker relations. These basic statistics support the popular belief that firms with better stakeholder relations tend to have larger accounting profits (e.g., Russo and Fouts 1997, King and

[8] Next to covering these strengths and concerns indicators, KLD offers a separate analysis of firms' involvement in controversial sectors, specifically, alcohol, gambling, firearms, military, nuclear power, and tobacco.
[9] We use the Fama French 10 industry definition to have sufficient within industry variation.

Lenox 2002, Jiao 2010), higher price-to-book ratios (Galema et al. 2008), and lower leverage ratios (Verwijmeren and Derwall 2010, Bae, Kang, and Wang 2011). Whether the *SI* is also associated with higher risk-adjusted returns in the stock market is central to the next Section of the paper.

4. Empirical analysis

We present three complementary analyses of errors in investors' expectations that are common in studies on stock market anomalies. The first analysis revolves around risk-adjusted returns on investment portfolios that are formed based on the *SI*. The second analysis focuses on stock returns around firms' earnings announcements. The third analysis explores investors' expectations by means of analyst forecasts.

4.1. Portfolios and decreasing risk-adjusted returns

Our empirical analysis starts with an evaluation of the returns on stock portfolios that are formed using the *SI*. Our primary objectives in this Section of the study are to investigate (i) whether portfolios composed of stocks that ranked high on the *SI* earned a significantly higher risk-adjusted return than those that score lowed on the *SI*, and if so, (ii) whether the difference in risk-adjusted return eventually diminished once investors paid more attention to stakeholder information.

Every year, starting in April 1992, we rank all available stocks on the *SI*, and then allocate those stocks that rank above a specific upper threshold level to a top-ranked portfolio and those that rank below a bottom threshold level to the bottom-ranked portfolio.[10] We exclude from the portfolio construction those stocks that belong to KLD's list of controversial businesses, because prior research explicitly attributes their returns to risk premiums instead of errors in expectations (see Hong and Kacperczyk (2009)). Using the CRSP returns database, we compute the monthly returns on the portfolios during the twelve consecutive months after formation until the portfolios are updated based on the latest *SI* values, and we subsequently evaluate the time-series of portfolio returns over the period April 1992-December 2009.

Following previous studies that document significant risk-adjusted returns associated with the quality of corporate stakeholder relations, we derive risk-adjusted returns from the Carhart (1997) four-factor regressions:

$$R_{i,t} - R_{f,t} = \alpha + \beta_{1,i}(R_{m,t} - R_{f,t}) + \beta_{2,i}SMB_t + \beta_{3,i}HML_t + \beta_{4,i}UMD_t + \varepsilon_{i,t} \tag{1}$$

where $R_{i,t}$ is the return on a portfolio that is formed based on the *SI*, $R_{m,t} - R_{f,t}$ is the return on a portfolio composed of all stocks from the NYSE/AMEX/Nasdaq exchanges minus the one-month T-Bill rate from Ibbotson Associates, SMB_t is the return difference between a small cap portfolio and a large cap portfolio, HML_t is the return difference between a "value" portfolio (with a high book/market value ratio) and a growth (low book/market value) portfolio, UMD_t is the return difference between a portfolio of the past 12-month return winners and a portfolio of the past 12-month losers. A large amount of literature consistently points out that the four factors, which are

[10] The starting year in the KLD STATS database is 1991, but KLD usually releases its statistics in the first quarter of the subsequent year.

taken from the Kenneth French Data Library, are important in explaining the returns on equity portfolios that are formed using stakeholder information.[11]

Table 2 shows average risk-adjusted returns and four-factor factor loadings measured over the entire sample period (April 1992-December 2009) for a number of portfolios that are formed using the *SI*. The regression parameters are largely consistent with earlier studies that have documented risk-adjusted returns associated with several of KLD's indicators. A portfolio composed of either the top third, or top fourth, or top fifth of all stocks ranked by the *SI* earned a higher average annualized risk-adjusted return than its bottom-ranked counterpart. The performance difference is economically significant, and in two of the three reported cases statistically significant at the conventional levels of significance. Table 2 also shows that much of the performance difference between the top-ranked and bottom-ranked portfolios is largely due to positive risk-adjusted returns of top-ranked portfolios. The risk-adjusted return on bottom-ranked portfolios are not significantly different from zero.

We now turn to time variation in the risk-adjusted return on portfolios formed using the *SI*. A visual inspection of rolling-window regressions involving specification (1) provides the first indication that risk-adjusted returns on portfolios constructed using the *SI* have weakened over time. Figure 1 shows that the equal-weighted risk-adjusted return on a portfolio that is long in the top one-third of stocks and short in the bottom-third was persistently positive for a substantial number of years but eventually decreased considerably.

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[11] http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html. See Fama and French (1993) and Carhart (1997) for details on the construction of the four factors.

To explore more formally the time-variation in returns, we adopt a variant of the procedure described in Quandt (1960) and Bebchuk et al. (2012). The goal of the procedure is to identify a date that marks a structural break in risk-adjusted returns of portfolios that are formed based on the *SI*. The date that is identified in this way marks a break in the sense that the risk-adjusted returns across the two periods differ the most from a statistical point of view. To determine the break date, we estimate a variant of the Carhart (1997) regression, which allows risk-adjusted returns and portfolio factor loadings to vary across two periods.

(2) $$R_{top,t} - R_{bottom,t} = \alpha_i * Post_t + \beta_{1,i}\left(R_{m,t} - R_{f,t}\right) * Post_t + \beta_{2,i}SMB_t * Post_t + \beta_{3,i}HML_t * Post_t + \beta_{4,i}UMD_t * Post_t + \varepsilon_{i,t}$$

where $R_{top,t}$ is the return in month t on the top-ranked portfolio, $R_{bottom,t}$ is the return on the bottom-ranked portfolio, and the dummy variable $Post_t$ is an indicator variable that captures all months including and after a breakpoint date. To determine which break date marks the largest difference in risk-adjusted return between two periods, we re-estimate the model based on all possible variations of the indicator variable $Post_t$. Like Bebchuk et al. (forthcoming), we compute the F-statistic on the coefficient on $\alpha * Post_t$ for each regression and then determine the break date from the regression that yields the largest F-statistic for this coefficient.

In Figure 2, we give a graphical example of one specific Quandt test result that is relevant for break date determination. The F-statistics suggest that August 2004 marks a break in the return difference between the equal-weight top-ranked and bottom-ranked portfolio. For this month, the F-statistic on $\alpha * Post_t$ is 10.77, which is almost twice as large as the F-statistic corresponding to the same month one year earlier, and about nine times as large as the F-statistic observed 3 years earlier.

We apply this procedure to determine break dates for a number of "top-minus-bottom" ranked portfolios that can be formed using the *SI*, and then measure risk-adjusted return before and after the break-date. In independent analyses, we allow the top and bottom portfolios to comprise either the top (bottom) third, fourth, or fifth of all stocks that are ranked on the *SI*. Table 3 shows the risk-adjusted returns on both equal-weighted and value-weighted portfolios, measured over, respectively, the full sample period, the pre-break period, and the post-break period.

Concerning equal-weighted returns, the Quandt test marks as break dates, respectively August 2004 for top-minus-bottom third portfolios, July 2004 for top-minus-bottom fourth portfolios, and October 2002 for top-minus-bottom-fifth portfolios. As for value-weighted returns, the corresponding dates are November 2005, February 2003, and November 2005. The average date, then, corresponds to June 2004.

Finding breakpoints close to 2004 seems consistent with indicators of attention to stakeholder issues among companies and investors. For example, in order to explore a proxy for attention by investors, we counted the yearly number of shareholder proposals on corporate social policy issues that were mainly (co)sponsored by institutions from 1991 onwards (after removing proposals from individuals, religious groups, special interest groups, and unknown sponsors). We derived these results from an analysis of the RiskMetrics database of shareholder proposals in the U.S., which involves mostly S&P 1500 constituents. What becomes apparent from Figure 3 is that firms received structurally more proposals on social policy issues in recent years. Also pointing to heightened attention for stakeholder issues is the increasing volume of information that U.S. companies disclose on stakeholder relations. Dahliwal, Li, Tsang, and Yang (2011) investigated the number of U.S. firms per year that voluntarily disclosed CSR information. Their results suggest that aggregate CSR reporting increased substantially, first temporarily in 2001 and then more permanently from 2003 onwards.

Using the dates determined by this test, we see in Table 3 that the average risk-adjusted return differences between top- and bottom-ranked portfolios are positive, economically large, and statistically significant prior to each break date. In contrast, the post-break risk-adjusted return is not significantly different from zero in five out of the six analyses, and negative (albeit significant at the 10% level) in one case.

Based on the average of the different Quandt test results, it stands to reason that the quality of stakeholder relations at first related positively to (risk-adjusted) stock returns, but that such a relation has decreased or diminished as from 2004. Because KLD tends to report its yearly evaluation of firms' stakeholder relations in the first quarter of the next year, we would expect that KLD's indicators released after the first quarter of 2004 conveys less information about risk-adjusted returns than indicators released in the years before. For this reason, we report in Table 4 the difference in risk-adjusted return between top-ranked portfolios and their bottom-ranked counterparts during, respectively, the period April 1994-March 2004 and April 2004-December 2009.[12]

The results in Table 4 further corroborate that those trading rules based on the *SI* that produced a positive risk-adjusted return have done so significantly only in the first sub-period. All equal-weighted and value-weighted portfolios that score high on *SI* significantly

[12] We also performed all analyses using 2003 as the breakpoint year. These results are available upon request.

outperformed their bottom-ranked counterparts during the period April 1992-March 2004, but most of these portfolios ceased to exhibit significant differential risk-adjusted returns during the period April 2004- December 2009.

At first glance, the results presented in this Section suggest that the financial market has temporarily been too pessimistic about the value-relevance of stakeholder performance, leading to positive risk-adjusted returns, but then learned about the earnings difference among firms that differ in the quality of stakeholder relations. However, because long-term risk-adjusted returns can also emerge for reasons other than "mispricing", we now turn to more explicit tests of errors in investors' expectations. [13]

4.2. Earnings announcement returns

Researchers have suggested that stock returns around earnings announcements can be used to detect more explicitly errors in investors' expectations investors' concerning firms' earnings.[14] In this section, we study abnormal earnings announcement returns to determine the extent to which the time-variation risk-adjusted returns on the aforementioned *SI*-based strategies represent investors' initial misunderstanding and subsequent learning about firms' earnings. If it is true that firms with higher *SI* values realized higher profits than anticipated by investors, we would expect that investors' surprises are reflected in higher abnormal returns around earnings announcements. We would also expect that the *SI* ceases to explain earnings announcement returns in times of heightened capital market attention for stakeholder issues.

[13] For example, risk-adjusted stock returns may alternatively stem from risk premiums that are overlooked by models that researchers use to determine expected returns (see, e.g., Fama and French (1993)), and from data snooping (Lo and MacKinlay (1990)).
[14] See for example Chan, Jegadeesh and Lakonishok (1996), Sloan (1996), La Porta, Lakonishok, Shleifer, and Vishny (1997), Core et al. (2006), and Bebchuk et al. (forthcoming).

We perform an event study to measure firms' stock returns around the announcements, using quarterly earnings announcement dates from I/B/E/S and daily stock returns from CRSP. For each stock, we compute daily abnormal returns from various days before until one day after each announcement, where the daily abnormal return (AR) is the difference between the realized return and the return predicted by the Carhart (1997) four-factor model. The return prediction model is re-estimated for each firm before every earnings announcement, using stock returns observed over a 250-day period that ends 20 days before the announcement date. The daily abnormal returns are subsequently converted to cumulative abnormal returns (CARs) over, respectively, three-day (-1,1), five-day (-3,1), and 7-day (-5,1), and 12-day (-10,1) windows.

In the tradition of Bebchuk et al. (forthcoming), we derive time-variation in the relation between the earnings announcement CAR and corporate stakeholder relations from pooled regressions that take the form:

(3) $$CAR_{i,(tq-s,tq+1)} = \alpha + \beta_1\, SI_{i,t-1} + \beta_2 SI_{i,t-1} * Subsample\ 2_t \ + \ \beta_3 * Subsample\ 2_t + \sum_{k=1}^{K} \gamma_k\, Controls_{i,k,t-1} + \ \varepsilon_{i,tq} \ \ for\ s \in \{1,3,5,10\}$$

where $CAR_{i,(tq-s,tq+1)}$ is the cumulative (s+2)-day abnormal return around the earnings announcement for firm *i* in quarter *q* of year *t*. The vector of controls includes a dummy variable that captures firms' presence on KLD's list of controversial businesses and industry dummy variables. Of primary interest to us is the stakeholder-relations index *SI* and its interaction with a dummy variable *Subsample 2* that equals 1 if earnings announcements occurred after March 2004, the period after which we expect that information from KLD conveys less information about errors in expectations than before (also see Table 4).

The estimated relationships between the *SI* and the earnings announcement CARs are reported in Table 5. All coefficients are multiplied by 1000 for expositional convenience. The regression results are consistent with the idea that better stakeholder relations was associated with higher risk-adjusted stock returns over the period 1992-2004 due to errors in investors' expectations. The coefficients concerning the *SI* point to a statistically and economically significant relationship with cumulative earnings announcement returns, regardless of the event window that we consider. For example, a one-point increase in *SI* is associated with roughly a 0.09 percent five-day abnormal return per quarterly earnings announcement during the period 1992-2004, which is equivalent to an annualized abnormal announcement return of about 0.36 percent. The average difference in *SI* score between the top one-third and bottom one-third bottom-ranked portfolio over this period is 4.33 (not tabulated), which multiplied with the estimated earnings announcement effect, implies an industry-adjusted difference in abnormal earnings announcement return of 1.56 percent.

Table 5 suggests not only that earnings announcement effects explain risk-adjusted returns associated with the *SI* over the period 1992-2004 but also that such earnings announcement effects have decreased subsequently. Independent of the event window, the coefficient on *SI*Subsample 2* is consistently negative and significant below the 5% significance level of significance. According to F-tests regarding the sum of the coefficients on *SI* and *SI*Subsample 2*, the decrease in the earnings announcement effect measured over 2004-2009 is large enough to make the positive earnings announcement effect in the earlier period disappear. None of the F-statistics rejects the null of a zero relation between the *SI* and earnings announcement CARs during the period 2004-2009. The decreasing relation between the *SI* and these CARs over time is consistent with the notion that risk-adjusted returns associated with stakeholder information eventually disappear as rising attention causes investors to learn about the differential future earnings among firms with different stakeholder relations.

Given that stakeholder issues attracted substantial attention in recent years as part of a broader interest in environmental, social and corporate governance issues, one might ask whether diminishing relation between the *SI* and earnings announcement CAR is driven by the learning effect that Bebchuk et al. document for certain corporate governance issues. To ensure that the learning effect documented in our study is unique, we also run regressions after expanding the vector of control variables with the corporate governance indexes that Bebchuk et al. associate with their learning hypothesis. The first governance index measures the number of anti-takeover provisions (*G Index*) developed by Gompers, Ishii, and Metrick (2003), with higher values for the index implying more provisions and hence a weaker corporate governance structure. The second index is the entrenchment index (*E Index*) of Bebchuk, Cohen and Ferell (2009), which is a subset of the *G Index* that has been shown to better predict firm value and abnormal stock returns. Both indexes were taken from the authors' websites.

Table 6 shows that the diminishing association between the *SI* and earnings announcement returns is present across all models that also contain the corporate governance indexes. The diminishing association between the *SI* and earnings announcement CAR not only continues to be significant in all of the models but also appears to be more robust than the time-variation in the relation between corporate governance and earnings announcement returns during our sample period. Specifically, the coefficient estimates for the *SI* and the *SI**Subsample 2 variables are highly stable and statistically significant regardless of the model employed, whereas only the coefficient on the entrenchment index differs significantly from zero in the first subsample period, at the 10% level.

Combined with the results from the previous section, the earnings announcement regressions yield two important conclusions. First, the results suggest that the risk-adjusted returns on trading rules based on the *SI* originally could be explained by investors' surprise about firms' earnings. Second, the diminishing relation between the *SI* and earnings announcement returns coincides with the decreasing risk-adjusted returns on *SI* portfolios discussed in Section 4.1, as well as with the heightened attention for stakeholder information in the capital market in recent years.

4.3. Errors in analysts' forecasts

We complement our examination into errors in investors' expectations with an analysis of analysts' earnings forecasts. Although analysts' expectations do not necessarily reflect the capital market's expectations, the previous results at the very least raise the question whether analysts have misunderstood the association between stakeholder relations and firms' future earnings. Moreover, analysts have been criticized for insufficiently catering to institutional investors when it comes to integrating environmental, social, and corporate governance information in financial research (e.g., O'Loughlin and Thamotheram 2006). Therefore, if investors misunderstood the association between stakeholder relations and profitability, one could expect that analysts were at least as surprised.

In order to be consistent with the analysis of quarterly earnings announcements, we first study errors in quarterly earnings-per-share (EPS) forecasts, which we define as the difference between the actual EPS and the median forecast that I/B/E/S/ released on the closest date prior to the last day of the fiscal period. Previous studies have illustrated that inferences involving analyst forecast data are sensitive to extreme noise, skewness, outliers, and the measurement of the forecasts themselves (see, e.g., Lim (2001); Ljungqvist et al. (2009)). We address these robustness issues by analyzing alternative measures of forecast errors. Specifically, we follow the literature on analyst forecast errors and consider different ways of scaling forecast errors. We scale the errors by, respectively, the price per share at the forecast date, the assets per share, the absolute value of the median forecast and the standard deviation of the analyst forecasts. To make sure that small sample problems and outliers do not distort the median forecasts, we omit observations that either are based on forecasts from fewer than five analysts or exceed the bottom (top) 1% of the distribution.

The model we estimate takes the form:

(4)
$$FE_{i,tq} = \alpha + \beta_1 SI_{i,t-1} + \beta_2 SI_{i,t-1} * Subsample\ 2_t + \beta_3 * Subsample\ 2_t + \sum_{k=1}^{K} \gamma_k\, Controls_{i,k,t-1} + \varepsilon_{i,tq}$$

where FE is the forecast error for quarter *q* in year *t*. As controls, we include a dummy that equals one for firms operating in a controversial industry and zero otherwise, the natural logarithm of the book to market ratio from the previous fiscal year, the natural logarithm of the market value of equity from the previous fiscal year, and industry fixed effects based on the Fama-French 48 industry definitions. In line with the previous analysis, time-variation in the relation between the *SI* and earnings forecast errors is estimated by interacting *SI* with a dummy variable that identifies forecast errors realized after March 2004.

Since earlier studies suggest that investments in stakeholder relations are mainly intangible and pay off slowly, we also study forecasts of firms' long-term earnings growth released by sell-side financial analysts in the I/B/E/S universe in order to investigate analyst forecast errors. Like Edmans (2011), we first perform pooled OLS regressions involving forecast errors defined as the long-term earnings growth that firm *i* realized at the end of fiscal year *t* minus the corresponding median value of analysts' forecasts of long-term growth made 5 years earlier (we winsorize the errors at the 1% level). Because most annual reports are filed within three months after the fiscal year-end, we measure analysts' forecasts four months after the previous fiscal year-end in order to make sure that analysts were aware of previous earnings when they made their forecast (see Core et al. (2006); Doukas et al. (2002)). Alternatively, we estimate ordered probit models after converting the earnings forecast errors to discrete variables in order to deal with the extreme noise and outliers that are common with earnings surprise data. In the probit model (Probit), the discrete variable has a value of 1 when the forecast error is greater than or equal to 10 percent, 0 when the error is between 10 percent and -10 percent, and -1 if it is equal to or below -10 percent.

According to all models of quarterly forecast errors presented in Table 7, firms with higher *SI* values experienced significantly higher earnings surprises over the period 1992-2004. In the subsequent years, the relationship between the *SI* and quarterly forecast errors decreased significantly under three specifications. Based on F-tests, the null hypothesis that the sum of the coefficients β_1 and β_2 are different from zero is not rejected in two specifications, which suggests that the *SI* is not significantly related to forecast errors in recent years. Under the two remaining models, the relation between the *SI* and quarterly forecast errors reversed from positive to slightly negative. Indeed, it has been shown that inferences about expectational errors derived from scaled-errors in short-term analyst forecasts might be sensitive to the choice of scaling variable (see, Bebchuk et al. (forthcoming)).

Our models of long-term forecast errors, which are presented in Table 8, reach a consensus. According to the OLS model, the relation between the *SI* and errors in analysts' forecast of long-term earnings growth was positive over the period 1992-2004 but close to zero and statistically not significant over the period 2004-2009. Under the ordered probit model, firms with stronger stakeholder relations were more likely to produce higher surprises in the first part of the sample period. But after the March 2004, firms with better stakeholder relations were less likely than before to have beaten analysts' long-term growth forecasts.

Furthermore, we also find in models of analysts forecast errors no evidence that potential learning effects concerning corporate governance variables subsume the association between the *SI* and earnings surprises. Table 9 shows that even in the presence of the *G Index* and *E index*, the coefficient on the *SI* and the *SI**Subsample 2 variables are highly similar to those reported in Tables 8 and 9.[15] The coefficients on the governance variables are sensitive to the choice of earnings surprise measure, which is consistent with the results on analyst forecast errors reported in Bebchuk et al (2012).

Taken as a whole, the analyses of errors in analysts' forecasts produce results that display similarities with tests of errors in investors' expectations derived from risk-adjusted portfolio returns and abnormal earnings announcement returns.

5. Additional tests

5.1. Alternative factor models

[15] Due to space constraints, we do not report on OLS regression of errors in forecasts of long-term earnings growth. The results are available upon request.

Up to this point, our estimates of average risk-adjusted return on top- and bottom-ranked portfolios have been derived from the Carhart (1997) four-factor model. To ensure that the observed decreasing risk-adjusted returns documented in Section 4.1 are not an artifact of that specific model, we report the estimates of risk-adjusted returns that we obtain under alterative specifications in this section.

The first two models we report on in Table 10 are nested versions of the Carhart four-factor model, specifically, a 1-factor model, and the three-factor model of Fama and French (1993). The third model presented in Table 9 is an alternative four-factor model brought forward by Cremers, Petajisto and Zitzewitz (2013), who argue that a model containing the momentum factor augmented with market, size and value premiums based on tradable indexes better captures returns than the standard multifactor models from Fama and French (1993) and Carhart (1997). The last model we use to measure risk-adjusted returns is the Carhart (1997) model extended with the traded liquidity factor of Pastor and Stambaugh (2003).

Taken together, the intercepts from these alternative factor regressions reinforce the idea that positive risk-adjusted returns associated with the *SI* eventually ceased to exist. Independent of the factor model, the difference in average risk-adjusted return between top-ranked and bottom-ranked portfolios was positive, economically large, and significant at the conventional cut-off levels during the period 1992-2004. For the period April 2004-December 2009, none of the factor models produces a risk-adjusted return that is significantly different from zero.

5.2. Alternative firm scores based on KLD data

This section examines alternative firm scores derived from KLD data that have been associated with positive abnormal returns in the literature. In particular, we pay attention to measures used by Kempf and Osthoff (2007) who document positive risk-adjusted returns associated with several different stock ranking approaches based on a composite of indicators from KLD. They use indicators from six KLD categories: community, diversity, employee relations, environment, human rights, and product. To get an overall score for each firm called "Combination 1", they transform the concerns by taking the binary complements, then sum up the scores from all KLD criteria, and normalize this sum so that the score ranges from zero to one. In addition, they also create an overall score that is first subject to a so-called "negative screen" ("Combination 2"), by excluding all firms that are involved in at least one of the controversial business areas that are identified by KLD. We also consider a "Best-in-Class" version of their Combination 1, where we rank firms on Combination 1 relative to the industry average Combination 1 scores (using the Fama-French 10 industry classifications). Our fourth alternative measure is obtained by simply taking the sum of all strengths that KLD identified for a firm in a given year minus the sum of all concerns that KLD identified across all possible indicators ("Strengths – concerns").

Panel A of Table 11, shows that all of these alternative measures for ranking stocks leads to top-minus-bottom third portfolios that produced positive risk-adjusted returns during the period April 1992-March 2004, but which did not deliver positive risk-adjusted returns during the remainder of the sample period. In Panel B, we show the results of replacing the *SI* by, respectively, Combination 1, Combination 2, and Strengths-Concerns measures in regressions involving earning announcement returns (measured from 1 day before to 1 day after each announcement).[16] Consistent with diminishing errors in expectations, the coefficient estimates suggest that all three alternative measures were positively related to earnings announcement returns prior to April 2004 but not in the period thereafter.

[16] The Combination 2 measure is not included in the earnings announcement regressions since a controversial business indicator variable is separately included in the models.

Table 12 reports on the inclusion of the alternative measures in the different models of quarterly and long-term analyst forecast errors. Although the results are more mixed than those from portfolio analyses and earnings announcement regressions, the coefficients in twelve out of the fifteen specifications in Table 12 suggest that these alternative measures related positively to forecast errors during the period 1992-2004. In nine specifications, the coefficients on the interaction term *Alternative KLD*Subsample 2* suggests that the relation decreased significantly during the period April 2004-December 2009.

5.3. Stakeholder relations and future profitability

For investors to overlook the difference in future profits between top- and bottom-ranked firms, it is important to verify that an association between the *SI* and future profitability exists to begin with. For this reason, we also show results of regressing firms' future operating performance, as measured by return on assets, on the lagged *SI* and a set of control variables:

(5) $$ROA_{i,t} = \alpha + \beta_1 SI_{i,t-1} + \sum_{k=1}^{K} \gamma_k Controls_{i,k,t-1} + \varepsilon_{i,t}$$

where $ROA_{i,t}$ is the accounting return on assets (defined as either operating income after depreciation and amortization divided by total assets, or net income divided by assets) for the fiscal year subsequent to the year for which KLD reports its information; and $Controls_{it-1}$ is a vector of control variables. The vector of control variables includes a dummy for controversial industries, the natural logarithm of the book-to-market ratio, the natural logarithm of total assets, the natural logarithm of firm age identified as the number of months the firm first appeared in the CRSP returns database until December of the year, a dummy for Delaware incorporation, R&D

divided by total sales, capital expenses divided by total assets in conjunction with dummy variables that identify non-reported R&D and capital expenses, and year- and industry-fixed effects (also see Jiao 2010)). All variables that are not reported as a natural logarithm are winsorized at the 1% level to account for outliers.[17] These variables (except firm age) are constructed using data from Compustat.

Table 13 shows the coefficients from the regressions together with *t*-statistics derived from two-way clustered standard errors. The coefficients on the control variables have signs that are consistent with the majority of studies on the determinants of profitability. Most important to this study is the coefficient on the *SI*. Independent of the model employed, we find that the relation between the *SI* and ROA is positive and statistically significant at the conventional significance levels. Hence, these results suggest that information about corporate stakeholder relations is relevant in understanding firms' future profits.

6. Conclusion

Many investors justify the integration of stakeholder information – nowadays under the heading of "ESG" information – in portfolio selection by the view that corporate stakeholder relations are associated with (intangible) value in a manner that is not fully understood by the financial market. Although this view is not necessarily counterintuitive in the short run, investors' public hunt for "mispriced" information that generates superior risk-adjusted returns eventually comes as a double-edged sword. Economic logic teaches us that increased attention to value-relevant information makes potential "mispricing" short-lived.

[17] Winsorizing or trimming at different levels does not qualitatively alter our results.

This paper shows that trading strategies that use a stakeholder-relations index generated risk-adjusted returns that were economically and statistically significant over the period 1992-2004, but that were largely non-significant over the period 2004-2009. This finding is in line with our premise that a stakeholder-relations index predicted risk-adjusted returns due to errors in investors' expectations, but ultimately ceased to do so as attention for stakeholder issues increases.

Our findings are based on three complementary approaches, commonly used in empirical studies on stock market anomalies. A portfolio approach, an event study around quarterly earnings announcements, and an analysis of errors in analysts' forecasts all point in the same direction, and show that errors in expectations that arise due to difficulties in assessing the value of stakeholder relations investments, are not persistent.

Furthermore, the paper suggests, using a statistical procedure described in Quandt (1960), that a break in the analysis occurred around the year 2004. This seems in line with annual statistics on the number of shareholder proposals on stakeholder issues, and with previous studies that document a strong increase in the number of CSR reports published by companies.

The implications of our findings are that those institutional investors that pursue both financial and social goals have empirical foundations for integrating stakeholder issues in investment decisions. However, the contribution of stakeholder information to generating abnormal returns does not persist in the long term. Our findings also imply that companies should place stakeholder issues higher on the corporate agenda given that stakeholder management nowadays appears to be more fully appreciated by investors.

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Table 1. Summary statistics and correlations

Reported are descriptive statistics on the *SI* (Panel A), and pairwise correlations between the *SI* and several firm characteristics (Panel B). Reported in parentheses are the involved numbers of observations. Return on assets (ROA) is defined as the ratio of operating income (after depreciation and amortization) divided by total assets, the book-to-market equity defined as the book value of equity plus book value of deferred taxes divided by the market value of equity (common shares outstanding * share price at the end of the fiscal period). Leverage defined as long-term debt to total assets.

Panel A: Distributional characteristics of the SI

Variable	Obs.	Mean	St.Dev.	Min	Max
SI	22792	0	1.68	-9.28	9.18

Panel B: Correlation between the SI and firm characteristics

	ROA	Log Book/market	Log assets	Leverage	1-yr Sales growth
SI	0.0384	-0.1006	-0.0787	-0.0816	0.0166
	(22792)	(22133)	(22512)	(22792)	(22390)

Table 2: Risk-Adjusted returns over 1992-2009

Every year, starting in April 1992, we rank stocks based on the *SI* and assign the top (bottom) third, fourth, or fifth of all ranked stocks to a top-ranked (bottom-ranked) portfolio. We run Carhart (1997) four-factor regressions to estimate risk-adjusted portfolio returns over the period April 1992-December 2009. Reported are annualized risk-adjusted returns and factor exposures for equal-weighted portfolios.

	Alpha	Rm-Rf	SMB	HML	UMD	R2
Top-minus-bottom third						
Top	2.46%**	1.03***	0.21***	0.44***	-0.17***	0.94
	(2.27)	(41.84)	(4.89)	(11.70)	(-8.24)	
Bottom	0.89%	1.07***	0.24	0.45***	-0.23***	0.91
	(0.60)	(33.43)	(5.09)	(6.56)	(-7.46)	
Top-minus-bottom	1.57%	-0.0423	-0.0317	-0.00930	0.0602**	0.079
	(1.19)	(-1.384)	(-0.977)	(-0.159)	(2.048)	
Top-minus-bottom fourth						
Top	3.22%**	1.032***	0.156***	0.461***	-0.178***	0.911
	(2.359)	(33.10)	(2.891)	(10.16)	(-5.614)	
Bottom	-0.30%	1.074***	0.213***	0.508***	-0.213***	0.907
	(-0.207)	(36.28)	(4.451)	(8.605)	(-6.995)	
Top-minus-bottom	3.52%***	-0.0413	-0.0573*	-0.0472	0.0351	0.060
	(2.750)	(-1.481)	(-1.710)	(-1.008)	(1.164)	
Top-minus-bottom fifth						
Top	2.99%**	1.022***	0.158***	0.490***	-0.159***	0.905
	(2.132)	(32.87)	(2.976)	(11.22)	(-4.811)	
Bottom	0.10%	1.036***	0.216***	0.487***	-0.227***	0.896
	(0.0644)	(31.82)	(4.737)	(7.227)	(-6.874)	
Top-minus-bottom	2.89%*	-0.0138	-0.0582	0.00329	0.0683	0.061
	(1.960)	(-0.418)	(-1.398)	(0.0538)	(1.610)	

Table 3. Quandt test on difference in risk-adjusted returns over time for portfolios based on the *SI*

	Equal-weighted α				Value-weighted α			
SI portfolio	1992 - 2009	Break date	Pre-break	Post-break	1992-2009	Break date	Pre-break	Post-break
Top minus bottom third	1.57%	Aug-04	4.19%***	-2.76%*	2.02%	Nov-05	3.71%**	-2.60%
	(1.19)		(2.81)	(-1.82)	(1.26)		(2.06)	(-1.11)
Top	2.46%**		4.26%***	-1.31%	1.21%		2.33%*	-1.85%
	(2.27)		(3.53)	(-1.02)	(1.10)		(1.80)	(-1.19)
Bottom	0.89%		0.08%	1.45%	-0.81%		-1.38%	0.76%
	(0.60)		(0.04)	(1.35)	(-0.73)		(-1.03)	(0.59)
Top minus bottom fourth	3.52%***	Jul-04	5.52%***	0.33%	2.96%*	Feb-03	5.48%**	-0.74%
	(2.75)		(3.26)	(0.24)	(1.80)		-2.41	(-0.34)
Top	3.22%**		5.00%***	0.35%	1.80%		5.54%***	-1.45%
	(2.36)		(3.17)	(0.26)	(1.36)		-2.79	(-0.99)
Bottom	-0.30%		-0.52%	0.02%	-1.17%		0.06%	-0.71%
	(-0.21)		(-0.30)	(0.02)	(-1.02)		(0.034)	(-0.55)
Top minus bottom fifth	2.89%*	Oct-02	5.04%***	0.13%	3.01%*	Nov-05	5.45%***	-2.16%
	(1.96)		(2.78)	(0.07)	(1.71)		(2.68)	(-0.83)
Top	2.99%**		4.27%**	-0.34%	1.67%		4.40%***	-1.60%
	(2.13)		(2.45)	(-0.25)	(1.26)		(2.74)	(-0.81)
Bottom	0.10%		-0.77%	-0.47%	-1.34%		-1.04%	0.57%
	(0.06)		(-0.40)	(-0.34)	(-1.11)		(-0.62)	(0.40)

Table 3 continued.

Every year, starting in April 1992, we rank stocks based on the stakeholder-relations index (*SI*) and assign top-ranked (bottom-ranked) stocks to an equal-weighted or value-weighted top-ranked (bottom-ranked) portfolio. We explore alternative stock selection rules: top and bottom third, fourth, or fifth of all stocks ranked on the *SI*. We apply a Quandt (1960) procedure to determine the date of a break in the risk-adjusted return difference between the portfolios. We estimate using monthly returns from April 1992 to December 2009,

(3) $$R_{i,t} - R_{f,t} = \alpha_i * Post_t + \beta_{1,i}\left(R_{m,t} - R_{f,t}\right) * Post_t + \beta_{2,i}SMB_t * Post_t + \beta_{3,i}HML_t * Post_t + \beta_{4,i}UMD_t * Post_t + \varepsilon_{i,t}$$

where *Post* is an indicator variable that captures all months including and after a breakpoint date. We re-estimate the model based on all possible variations of the indicator variable *Post*. We compute the F-statistic on the coefficient on α**Post* for each regression, and identify the break date from the regression that yields the largest F-statistic for this coefficient. We impose that *Post* cannot equal 1 for the first 36 months and last 36 months of our sample period in order to ensure that all factor loadings can be estimated properly. Based on the break dates, we estimate model (1) for the returns on top- and bottom-ranked portfolios, before the breakpoint date and after breakpoint date. The first column reports risk-adjusted returns measured over the entire sample period April 1992-December 2009.*, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

Table 4. Difference in risk-adjusted return over time: Before and after April 2004.

Every year, starting in April 1992, we rank stocks based on the stakeholder-relations index (*SI*). We then assign stocks to either an equal-weighted or a value-weighted top-ranked (bottom-ranked) portfolio. We run Carhart (1997) four-factor regressions to estimate the difference in risk-adjusted return between the portfolios over two consecutive periods April 1992-March 2004 and April 2004-December 2009. We explore alternative stock selection rules: top minus bottom third, fourth, and fifth of stocks ranked on the *SI*. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	Equal-weighted α			Value-weighted α		
SI portfolio	1992-2009	92-04	04-09	1992-2009	92-04	04-09
Top minus bottom third	1.57%	3.52%**	-2.30%	2.02%	3.43%*	-1.28%
	(1.19)	(2.44)	(-1.58)	(1.26)	(1.72)	(-0.63)
Top minus bottom fourth	3.52%***	5.24%***	0.85%	2.96%*	4.36%**	-0.30%
	(2.75)	(3.08)	(0.60)	(1.80)	(2.05)	(-0.14)
Top minus bottom fifth	2.89%*	4.36%**	1.33%	3.01%*	4.42%**	-0.24%
	(1.96)	(2.59)	(0.74)	(1.71)	(2.00)	(-0.11)

Table 5. Stakeholder relations and earnings announcement returns

We estimate the relationship between the stakeholder-relations index and cumulative earnings announcement returns using a model of the form:

(4) $$CAR_{i,(tq-s,tq+1)} = \alpha + \beta_1 SI_{i,t-1} + \beta_2 SI_{i,t-1} * Subsample\ 2_t + \beta_3 * Subsample\ 2_t + \sum_{k=1}^{K} \gamma_k\ Controls_{i,k,t-1} + \varepsilon_{i,tq} \qquad for\ s \in \{1,3,5,10\}$$

where $\text{CAR}_{i,(tq-s,tq+1)}$ is the cumulative abnormal return realized during (s+2)-days around the earnings announcement date of firm *i* in quarter *q* of year *t*, *SI* is the stakeholder-relations index, Subsample 2_t is a dummy variable that equals 1 when earnings announcements occurred during the period April 2004-December 2009 and zero otherwise. $Controls_{i,k,t-1}$ is a vector of control variables, which includes a dummy variable that captures firms' presence on KLD's list of controversial businesses, and industry fixed effects based on the 48 industry classifications from the Kenneth French Data Library. In four independent regressions, we analyze the effect of stakeholder relations on CAR measured over, respectively three-day (-1,1), five-day (-3,1), seven-day (-5,1), and twelve-day (-10,1) event windows. The *t*-statistics (in parentheses) are derived from two-way clustered standard errors. The reported coefficients are multiplied by 1000 for expositional convenience. The F-test measures for each regression whether the sum of the coefficients on *SI* and *SI*Subsample 2* are different from zero. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	Event window (days before, after)			
	-1,+1	-3,+1	-5,+1	-10,+1
SI	0.889***	0.895***	0.758**	0.803**
	(3.15)	(3.20)	(2.38)	(2.12)
*SI**Subsample 2	-1.032**	-1.140***	-1.000**	-1.338**
	(-2.46)	(-2.58)	(-1.98)	(-2.15)
Subsample 2	-0.722	-0.477	0.318	1.311
	(-0.60)	(-0.29)	(0.16)	(0.48)
Controversial business	2.320**	2.124*	1.147	1.246
	(2.08)	(1.67)	(0.76)	(0.63)
Constant	10.829***	6.575	3.714	1.712
	(3.05)	(1.45)	(0.76)	(0.36)
Observations	78,340	78,323	78,319	78,310
Adj. R-squared	0.002	0.001	0.001	0.002
F-test (β1+β2=0)	0.220	0.560	0.411	1.356
Prob. > F	0.639	0.454	0.521	0.244

Table 6. The *SI* and earnings announcement returns: controlling for governance indexes

We estimate the relationship between the stakeholder-relations index and cumulative earnings announcement returns using a variant of the model:

(4) $$CAR_{i,(tq-s,tq+1)} = \alpha + \beta_1\, SI_{i,t-1} + \beta_2 SI_{i,t-1} * Subsample\ 2_t\ +\ \beta_3 * Subsample\ 2_t + \sum_{k=1}^{K} \gamma_k\, Controls_{i,k,t-1} +\ \varepsilon_{i,tq} \qquad for\ s \in \{1,3,5,10\}$$

where $CAR_{i,(tq-s,tq+1)}$ is the cumulative abnormal return realized from 1 day before the earnings announcement date to 1 day after the announcement date. *SI* is the stakeholder-relations index, Subsample 2_t is a dummy variable that equals 1 when earnings announcements occurred during the period April 2004-December 2009 and zero otherwise. $Controls_{i,k,t-1}$ is a vector of control variables, which includes a dummy variable that captures firms' presence on KLD's list of controversial businesses, and industry fixed effects based on the 48 industry classifications from the Kenneth French Data Library. In addition, we include either the *G Index* of Gompers, Ishhi and Metrick (2003) and *G-Index**Subsample 2, or the *E Index* of Bebchuk, Cohen and Ferrell (2009) and *E Index**Subsample 2. The *t*-statistics (in parentheses) are derived from two-way clustered standard errors. The reported coefficients are multiplied by 1000 for expositional convenience. The F_1-test indicates for each regression whether the sum of the coefficients on *SI* and *SI*Subsample 2* are different from zero, and the F_2 test (Governance) indicates whether the summed coefficients on *G (E) Index* and *G (E) Index**Subsample 2 are different from zero. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively. Coefficients on the control variables other than those on the governance indexes are not reported for the sake of brevity.

SI	0.883***	0.882***	0.877***	0.882***	0.880***
	(3.23)	(3.21)	(3.17)	(3.23)	(3.22)
*SI**Subsample 2	-1.270***	-1.267***	-1.264***	-1.262***	-1.271***
	(-2.65)	(-2.65)	(-2.63)	(-2.65)	(-2.70)
Subsample 2	-0.194	-0.206	-1.361	-0.175	-1.889
	(-0.173)	(-0.18)	(-0.47)	(-0.16)	(-1.23)
G Index		-0.026	-0.096		
		(-0.19)	(-0.49)		
*G Index**Subsample 2			0.121		
			(0.42)		
E Index				-0.192	-0.596*
				(-0.67)	(-1.81)
*E Index**Subsample 2					0.713
					(1.19)
Control variables	Yes	Yes	Yes	Yes	Yes
Observations	53178	53178	53178	53178	53178
Adj. R-squared	0.002	0.002	0.002	0.002	0.002
F_1-test (β1+β2=0)	1.132	1.131	1.144	1.120	1.210
Prob. > F_1	0.29	0.29	0.29	0.29	0.27
F_2-test (Governance)			0.017		0.064
Prob. > F_2			0.90		0.80

Table 7. Stakeholder Index and Quarterly Errors in Analysts' Earnings Forecasts

The error in quarterly forecast is defined as the actual level of quarterly earnings minus the I/B/E/S median analyst long-term forecast closest to the error date. We report quantile (median) regressions to take the skewed distributions of the errors into account. As independent variables, we include the stakeholder-relations index (*SI*), a dummy variable (Subsample 2) that is equal to 1 whenever a forecast error is realized during the period April 2004-December 2009, an interaction term *SI**Subsample 2 that captures time variation in the relation between stakeholder relations and the dependent variable, and control variables. Sample period: April 1992 - December 2009. The *t*-statistics, derived from two-way clustered standard errors, are presented in parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

Variables	Percentage	Assets	Price	St. Dev
SI	1.382***	0.009***	0.006*	48.229***
	(3.994)	(3.282)	(1.900)	(7.598)
*SI**Subsample 2	-1.653***	-0.001	-0.017***	-45.071***
	(-3.417)	(-0.099)	(-3.842)	(-5.078)
Subsample 2	17.039***	0.299***	0.316***	133.819***
	(17.591)	(38.758)	(34.883)	(7.528)
Controversial business	-5.13***	-0.089***	-0.052***	-90.727***
	(-3.254)	(-7.123)	(-3.531)	(-3.137)
Log book / market equity	4.576***	-0.069***	0.09***	-102.107***
	(6.775)	(-12.781)	(14.323)	(-8.237)
Log market value of equity	-0.849**	0.008***	0.01***	97.054***
	(-2.500)	(3.013)	(3.035)	(15.568)
Constant	14.587**	-0.162***	-0.098*	-649.716***
	(2.390)	(-3.325)	(-1.723)	(-5.799)
Observations	59,320	59,320	59,320	59,320
Pseudo R-squared	0.007	0.013	0.007	0.006
F-test (β1+β2=0)	0.593	9.508	11.620	0.238
Prob. > F	0.441	0.002	0.001	0.625

Table 8. Stakeholder Index and Errors in Analysts' Forecasts of Long-Term Earnings Growth

The error in long-term growth forecast is defined as the actual five-year annualized EPS growth rate minus the I/B/E/S median analyst long-term growth forecast 56 months before the error date. We report on an OLS regression (OLS), and an ordered probit model (Probit) after we convert the forecast errors to discrete variables. In the ordered probit model, the discrete variable has a value of 1 when the forecast error is greater than or equal to 10 percent, 0 when the error is between 10 percent and -10 percent, and -1 if it is equal to or below -10 percent. As independent variables, we include the stakeholder-relations index (*SI*), a dummy variable (Subsample 2) that is equal to 1 whenever a forecast error is realized during the period April 2004- December 2009, an interaction term Stakeholder*Subsample 2 that captures time variation in the relation between stakeholder relations and dependent variable, and control variables. Sample period: April 1992-December 2009. The t-statistics (*z*-statistics) in parentheses are derived from standard errors that are clustered by firm. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	OLS	Probit
SI	0.267**	0.012*
	(1.97)	(1.69)
*SI**Subsample 2	-0.388	-0.026**
	(-1.55)	(-1.96)
Subsample 2	3.647	0.206*
	(1.54)	(1.70)
Controversial business	0.442	-0.011
	(0.42)	(-0.21)
Log book / market equity	-5.156***	-0.286***
	(-8.11)	(-8.58)
Log market value of equity	2.071***	0.104***
	(10.90)	(7.19)
Constant	-29.576***	
	(-13.10)	
Observations	15,190	15,190
Adj ./Pseudo -R-squared	0.080	0.043
F test / Chi-square test (β1+β2=0)	0.362	1.929
Prob. > F	0.548	0.165

*** p<0.01, ** p<0.05, * p<0.1

Table 9. The *SI* and earnings forecast errors: controlling for governance indexes

	OLS								Ordered probit	
	Percentage	Percentage	Assets	Assets	Price	Price	St. Dev.	St. Dev.	Long-term	Long-term
SI	1.570***	1.667***	0.011***	0.011***	0.009***	0.008***	53.688***	51.022***	12.162*	12.237*
	(5.30)	(5.77)	(4.209)	(4.37)	(3.51)	(3.34)	(7.29)	(6.52)	(1.70)	(1.70)
*SI**Subsample 2	-1.437***	-1.586***	0.002	0.002	-0.013***	-0.014***	-47.109***	-45.032***	-23.628	-24.466
	(-3.35)	(-3.79)	(0.636)	(0.67)	(-3.70)	(-3.78)	(-4.42)	(-3.973)	(-1.55)	(-1.60)
G index	-0.346		-0.002		-0.001		-18.487***		5.538	
	(-1.47)		(-0.77)		(-0.47)		(-3.16)		(0.70)	
*G index**Subsample 2	-0.322		-0.015***		-0.004		16.043**		1.686	
	(-0.99)		(-5.23)		(-1.31)		(1.98)		(0.16)	
E index		-1.252***		-0.006		-0.003		-43.972***		23.790
		(-2.74)		(-1.41)		(-0.71)		(-3.55)		(1.47)
*E index**Subsample 2		0.344		-0.027***		-0.004		27.083		3.492
		(0.55)		(-4.94)		(-0.70)		(1.59)		(0.17)
Subsample 2	20.203***	16.776***	0.437***	0.364***	0.344***	0.322***	7.892	106.596**	168.175	170.627
	(6.25)	(9.71)	(15.09)	(24.12)	(12.85)	(21.21)	(0.098)	(2.28)	(1.10)	(1.10)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	43,554	43,554	43,554	43,554	43,554	43,554	43,554	43,554	12,197	12,197
Pseudo R-squared	0.006	0.006	0.013	0.013	0.007	0.007	0.007	0.007	0.040	0.041
F_1-test ($\beta1+\beta2=0$)	0.169	0.0646	22.04	23.77	2.814	3.791	0.668	0.488	0.871	0.991
$P > F_1$	0.681	0.799	0.00	0.00	0.094	0.052	0.414	0.485	0.351	0.320
F_2-test (Governance)	8.429	4.047	67.10	68.91	5.435	2.882	0.182	1.906	1.023	3.543
$P > F_2$	0.004	0.044	0.000	0.000	0.020	0.090	0.669	0.167	0.312	0.060

Table 10. Performance under alternative factor model specifications

Every year, starting in April 1992, we rank stocks based on the stakeholder-relations index (*SI*) and assign the top (bottom) third, fourth, or fifth of all ranked stocks to a top-ranked (bottom-ranked) portfolio. Using alternative factor models, we then estimate differences in risk-adjusted portfolio returns between top and bottom ranked portfolios over the period April 1992-December 2009 and the subperiods April 1992-March 2004 and April 2004–December 2009. The factor models we consider for performance evaluation are, respectively, a 1-factor model that includes as explanatory variable the CRSP value-weighted return described in equation (1), the three-factor model of Fama and French (1993), the four factors proposed by Cremers, Petajisto, and Zitzewitz (2012), and the Carhart (1997) four-factor model augmented with the Pastor and Stambaugh (2003) liquidty factor (Pastor-Stambaugh). Reported are annualized risk-adjusted returns for equal-weighted portfolios, with *t* statistics in parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

Factor model	1-factor	Fama-French	Cremers et al.	Pastor-Stambaugh
Top minus bottom third				
1992-2009	2.10%	2.29%*	1.73%	1.61%
	(1.56)	(1.72)	(1.31)	(1.22)
1992-2004	3.88%**	5.38%***	2.83%*	3.49%**
	(2.18)	(3.35)	(1.94)	(2.41)
2004-2009	-1.40%	-1.90%	-1.43%	-2.06%
	(-0.73)	(-1.17)	(-0.89)	(-1.39)
Top minus bottom fourth				
1992-2009	3.48%***	3.89%***	3.37%***	3.43%***
	(2.78)	(3.18)	(2.68)	(2.70)
1992-2004	4.76%***	6.36%***	4.38%**	5.22%***
	(2.76)	(3.86)	(2.60)	(3.06)
2004-2009	0.99%	0.86%	0.92%	0.79%
	(0.68)	(0.60)	(0.64)	(0.55)
Top minus bottom fifth				
1992-2009	3.44%**	3.62%**	3.04%**	2.81%*
	(2.31)	(2.52)	(2.00)	(1.93)
1992-2004	4.69%**	6.32%***	3.56%**	4.33%**
	(2.35)	(3.49)	(2.16)	(2.58)
2004-2009	1.51%	1.36%	1.46%	1.24%
	(0.82)	(0.74)	(0.80)	(0.69)

Table 11. Risk-adjusted portfolio returns and earnings announcement returns: alternative measure of stakeholder relations

In Panel A, we report on top-ranked and bottom-ranked portfolio that are formed based on alternative firm-level measures derived from the KLD database. Starting in April 1992, we rank stocks based one of four alternative measures based on KLD indicators and assign the top (bottom) third of all ranked stocks to an top-ranked (bottom-ranked) portfolio. Using the Carhart (1997) four-factor model, we then estimate differences in risk-adjusted portfolio returns between top- and bottom-ranked portfolios over the period April 1992-December 2009 and the subperiods April 1992-March 2004 and April 2004–December 2009. The alternative measures are, respectively, Kempf and Osthoff's (KO, 2007) Combination 1, Combination 2, and Best-in-class measures, and an industry-unadjusted version of the *SI* (which thus simply aggregates for each firm all strengths and subtracts all concerns reported by KLD). Reported are annualized risk-adjusted returns for equal-weighted portfolios, with *t* statistics in parentheses. In Panel B we report on estimating three-day earnings announcement returns (-1,+1) using model (3) after replacing the *SI* by one of four alternative measures that are based on KLD indicators. (*Alternative KLD*). The F-test and corresponding p-value indicate for each regression whether the sum of the coefficients on the *Alternative KLD* measure and *Alternative KLD**Subsample 2 are different from zero. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

Panel A: Risk-adjusted portfolio returns, top minus bottom third

	Carhart (1997) four-factor alpha		
Cut off	1992-2009	92-04	04-09
KO Combination 1	1.14%	2.88%**	-2.30%
	(1.03)	(2.38)	(-1.53)
KO Combination 2	1.30%	2.78%**	-2.04%
	(1.11)	(2.07)	(-1.25)
KO Best-in-class	1.44%	2.36%**	0.07%
	(1.35)	(2.00)	(0.05)
Strenghts - Concerns	1.94%	4.27%***	-3.01%*
	(1.54)	(2.67)	(-1.86)

Panel B: Earnings announcement returns (-1,+1)

	KO Combination 1	KO Best-in-class	Strenghts – concerns
Alternative KLD	19.378***	22.713***	0.843***
	(2.70)	(2.88)	(3.07)
*Alternative KLD**Subsample 2	-27.527***	-28.215**	-1.070***
	(-2.63)	(-2.29)	(-2.91)
Subsample 2	18.819**	-0.378	-0.062
	(2.451)	(-0.33)	(-0.05)
Controversial business	2.564**	2.574**	2.298**
	(2.37)	(2.38)	(2.06)
Constant	-3.924	10.222***	10.078***
	(-0.65)	(3.04)	(2.83)
Observations	91,290	91,290	78,340
Adj. R-squared	0.002	0.002	0.002
F-test ($\beta1+\beta2=0$)	1.030	0.336	0.681
Prob. > F	0.31	0.56	0.41

Table 12: Analysts forecast errors and alternative measures of stakeholder relations

The error in quarterly forecast is defined as the actual level of quarterly earnings minus the I/B/E/S median analyst long-term forecast closest to the error date, scaled by either the absolute value of the median forecast (*Percentage*), assets per share (*Assets*), price per share (*Price*), or the standard deviation of analysts' forecasts (*St. Dev.*). The error in long-term growth forecast is defined as the actual five-year annualized EPS growth rate minus the I/B/E/S median analyst long-term growth forecast 56 months before the error date. We estimate models of quarterly and long-term forecast errors, using alternative measures based on KLD and a set of control variables as explanatory variables. The alternative measures are, respectively, Kempf and Osthoff's (2007) Combination 1 and Best-in-class measures, and an industry-unadjusted version of the *SI* (i.e., the sum of all strengths minus the sum of all concerns reported by KLD). Coefficients on the control variables are not reported due to space constraints.

Forecast error	*Alternative KLD*	*Alternative KLD**Subsample 2	Subsample 2	Observations	Pseudo R2	F-test (β1+β2=0)	Prob. > F
Percentage							
Combination 1	34.800***	-4.07	22.193***	66843	0.007	17.139	0.00
Best-in-Class	46.821***	-29.05**	17.177***	66843	0.007	3.719	0.05
Strenghts - concerns	0.975***	-1.00**	17.631***	59320	0.007	0.008	0.93
Assets							
Combination 1	0.228***	-0.053	0.350***	66843	0.013	9.541	0.00
Best-in-Class	0.287***	0.132	0.292***	66843	0.013	34.43	0.00
Strenghts - concerns	0.005**	0.01**	0.303***	59320	0.012	24.49	0.00
Price							
Combination 1	0.136*	-0.229**	0.465***	66843	0.007	1.858	0.17
Best-in-Class	0.259***	-0.085	0.301***	66843	0.007	4.487	0.03
Strenghts - concerns	0.003	-0.013***	0.319***	59320	0.007	9.265	0.00
St. Dev							
Combination 1	834.612***	635.355***	-205.667	66843	0.006	82.563	0.00
Best-in-Class	1,025.933***	-639.855**	126.001***	66843	0.007	3.917	0.05
Strenghts - concerns	30.467***	-23.548**	158.035***	59320	0.007	1.012	0.31
Long-term							
Combination 1	-5.411	-43.063***	30.451***	17,347	0.101	38.972	0.00
Best-in-Class	0.32	-16.832**	3.346	17,347	0.086	8.432	0.00
Strenghts - concerns	0.495***	-0.692**	4.042*	15,191	0.081	0.862	0.35

Table 13. Stakeholder relations and profitability

This table reports on pooled regressions with accounting return on assets (ROA) as dependent variable and the *SI* in conjunction with control variables as independent variables. Return on assets (ROA) is defined as either the ratio of operating income (after depreciation and amortization) divided by total assets or net income divided by total assets. The control variables include a dummy variable capturing firms' controversial business involvement (alcohol, gambling, firearms, military, nuclear power, tobacco) according to KLD, the logarithm of the book-to-market ratio, the logarithm of total assets, R&D expenses scaled by sales, capital expenditures scaled by total assets, dummy variables that identify non-reported R&D and capital expenditures, and year fixed-effects, and industry-fixed effects based on 48 industry classifications from the Kenneth French Data Library. The *t*-statistics (in parentheses) are derived from two-way clustered standard errors. Sample period 1992-2009. *, **, *** represent significance levels of 10%, 5%, and 1%, respectively.

	Operating income / assets	Net income / assets
SI	0.004***	0.004***
	(4.81)	(4.01)
Controversial business	-0.003	-0.005
	(-0.87)	(-1.19)
Log book / market equity	-0.025***	-0.011***
	(-6.60)	(-2.98)
Log total assets	0.006***	0.005***
	(3.36)	(3.65)
Log age	0.006***	0.005**
	(4.41)	(2.33)
Delaware	-0.009***	-0.012***
	(-3.63)	(-4.86)
CAPEX / assets	0.030*	0.010
	(1.76)	(0.68)
R&D / sales	-0.083***	-0.060***
	(-21.73)	(-13.75)
R&D Dummy	0.012***	0.011***
	(3.35)	(3.05)
CAPEX / assets dummy	-0.001	-0.000
	(-0.34)	(-0.051)
Constant	-0.001	-0.055**
	(-0.07)	(-2.19)
Observations	21,310	20,643
Adj. R-squared	0.348	0.233
Year FE	YES	YES
Industry FE	YES	YES

Figure 1. year-by-year difference in risk-adjusted return between top- and bottom-ranked portfolios

Every year, we perform Carhart (1997) four-factor regressions using monthly return differences over the last 4-years between the portfolio composed of the top third of stocks ranked on the stakeholder relations index and the bottom-ranked counterpart. Reported are the annualized yearly risk-adjusted returns derived from equal-weighted portfolios. The stakeholder-relations index *SI* is based on the sum of all strenghts a firm receives in the areas of environment, community, diversity, employee relations, and product quality minus to sum of all concerns.

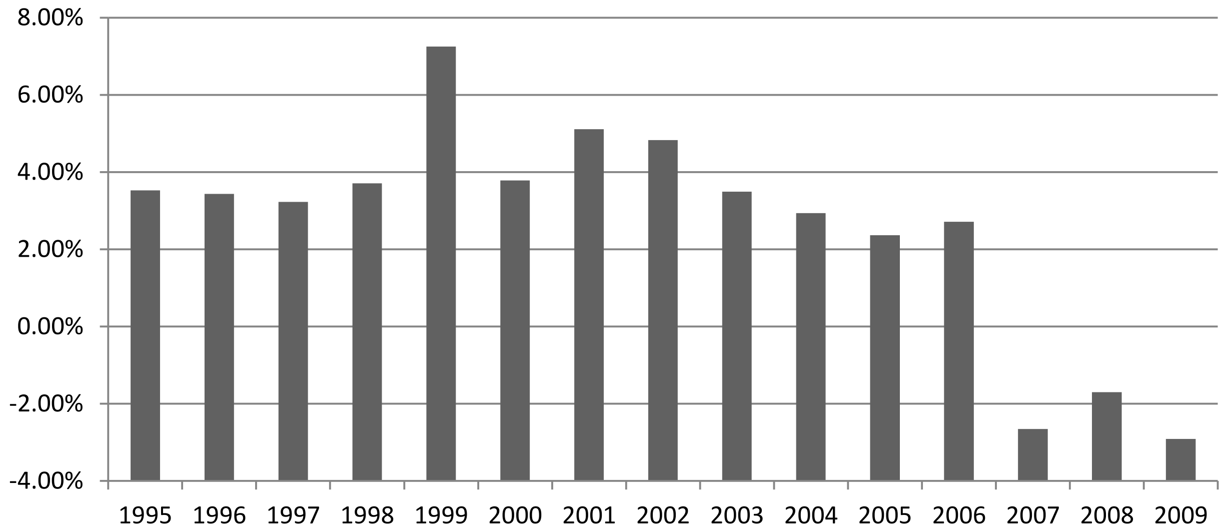


Figure 2. F-statistics from Quandt test on portfolio returns

Every year, starting in April 1992, we rank stocks based on the stakeholder-relations index (*SI*) and assign the top (bottom) third of ranked stocks to an equal-weighted top-ranked (bottom-ranked) portfolio. We apply a Quandt (1960) procedure to determine the date of a break in the risk-adjusted return difference between the two portfolios, which requires estimations of the following model using monthly returns from April 1992 to December 2009,

(3) $$R_{top,t} - R_{bottom,t} = \alpha_i * Post_t + \beta_{1,i}(R_{m,t} - R_{f,t}) * Post_t + \beta_{2,i}SMB_t * Post_t + \beta_{3,i}HML_t * Post_t + \beta_{4,i}UMD_t * Post_t + \varepsilon_{i,t}$$

where *Post* is an indicator variable that captures all months including and after a breakpoint date. Our Quandt test involves a re-estimation of model (3) based on all possible variations of the indicator variable *Post*. We impose that *Post* cannot equal 1 for the first 36 and last 36 months of our sample period in order to ensure that all factor loadings can be estimated properly. We compute the F-statistic on the coefficient on α*Post for each regression, and identify the break date from the regression that yields the largest F-statistic for this coefficient.

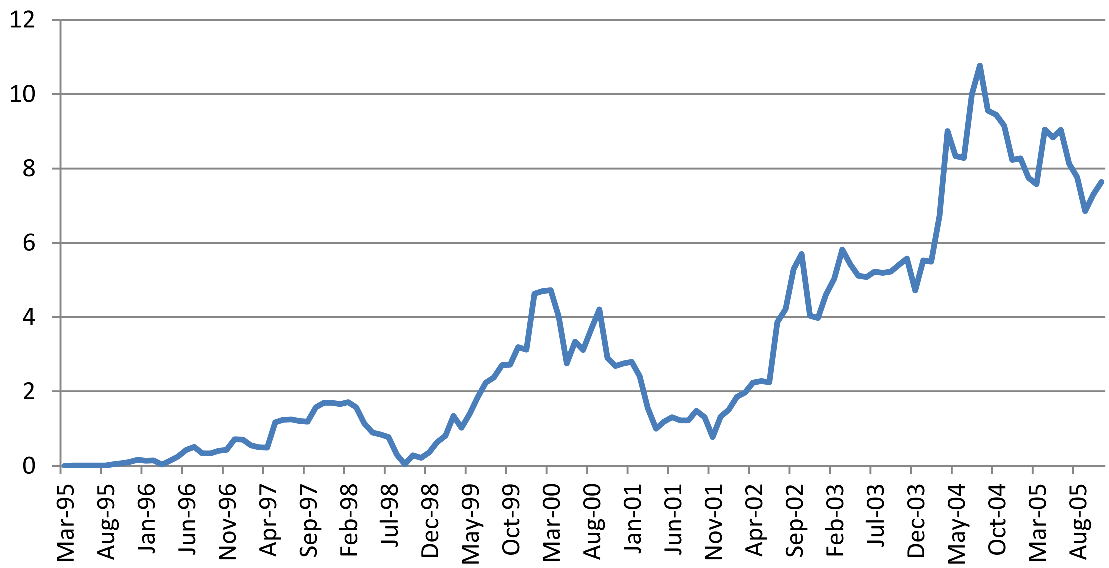
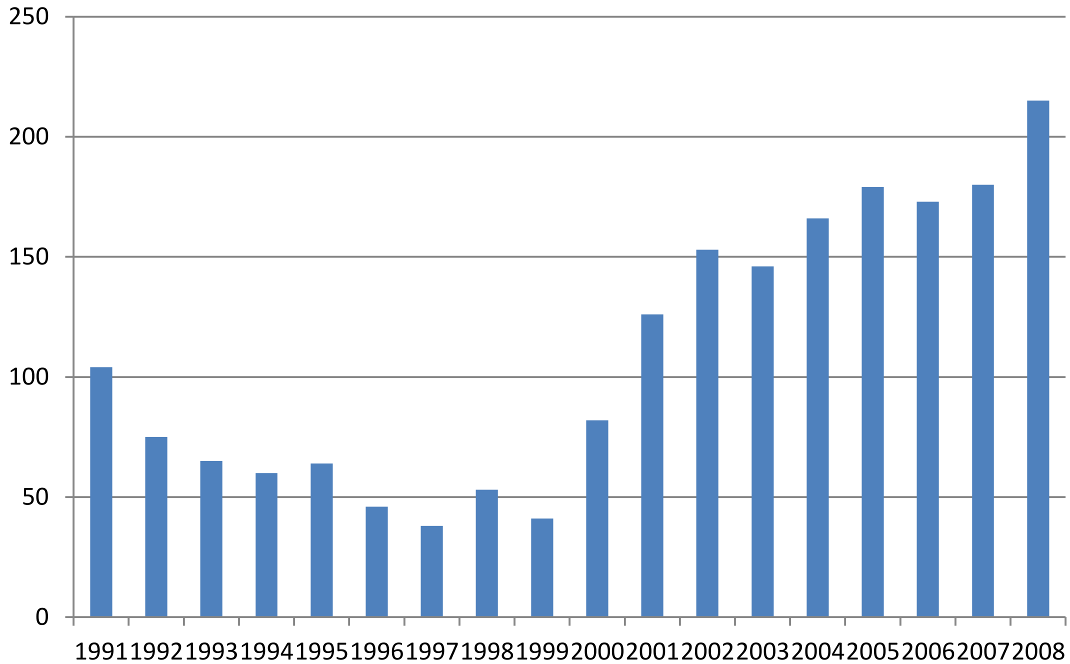


Figure 3: Number of shareholder proposals on stakeholder issues

We collect all shareholder proposals involving S&P 1500 firms from Riskmetrics over the period 1991-2008. For each proposal, we identify the (co)sponsor and eliminate proposals that are exclusively sponsored by individuals, religious institutions, and special interest groups (e.g., PETA, Friends of the Earth). To identify stakeholder issues we take all shareholder proposals that Riskmetrics classifies as social policy issues ("SRI") and add all "crossover" proposals, i.e., proposals involving social issues that investors submit tied to executive compensation.



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