# What drives a firm's ES performance? Evidence from stock returns*

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**ABSTRACT**

We examine how the environmental and social (ES) performance of a firm interacts with its stock market returns. We document that stock returns are negatively and significantly associated with future ES performance, whereas the association between ES performance and future stock returns is insignificant. We find that these patterns are stronger for firms that suffer more from agency problems (i.e., firms with higher cash flows, lower debt ratios and more share repurchases). Further, we provide collaborative evidence that poor short-term stock performance plays an important role in explaining better voting outcomes of ES shareholder proposals, especially in those firms with agency concerns.

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# I. Introduction

Over the past two decades, corporate social responsibility (CSR) has globally become an increasingly important part of a firm's business. Managers take environmental, social (ES) and governance (ESG) issues into account when making their corporate decisions. In 2015, approximately 92% of the world's 250 largest companies disclosed detailed CSR reports, this is up from only 35% in 1999.[1] Mirroring the growing awareness of CSR issues, socially responsible investing (SRI), which incorporates ESG considerations into investment decisions, has become a popular investment vehicle in the U.S.[2] At the beginning of 2014, around 6.57 trillion dollars, or about 18% of the total assets under management, had incorporated SRI strategies.[3]

There has also been a substantial increase in academic interest in these areas, especially the relation between environmental and social (ES) performance and corporate financial performance.[4] One strand of literature focuses on the impact of ES performance on financial performance but has not found conclusive evidence. Firms' ES performance is shown to have a positive impact (Bénabou and Tirole, 2010; Edmans, 2011; Dimson et al., 2015; Flammer, 2015; Kruger, 2015; Gong and Grundy, 2017), to have a negative impact (Friedman, 1970; Jensen and Meckling, 1976; Merton, 1987; Heinkel et al., 2001; Hong and Kacperczyk, 2009; Renneboog et al., 2008b), or to have no impact at all (Margolis et al., 2007; Renneboog et al., 2008a) on financial performance.

Another strand of literature that studies the determinants of ES performance is relatively new and developing. Hong et al. (2012) suggest that less financially constrained firms spend more on ES activities. Cheng et al. (2016) shed light on the agency motives behind the ES spending: firms with lower managerial ownership and monitoring engage in more CSR activities. By comparison, using the sample of global firms instead of U.S. firms, Ferrell et al. (2016) find that firms with better governance and fewer agency problems exhibit better ES performance.

While these developments are important, several very important questions about ES perfor-

[1] See the KPMG Survey of Corporate Responsibility Reporting 2015: https://www.kpmg.com/CN/en/IssuesAndInsights/ArticlesPublications/Documents/kpmg-survey-of-corporate-responsibility-reporting-2015-O-201511.pdf.

[2] According to a comprehensive literature review of CSR and SRI studies by Renneboog et al. (2008a), the most popular SRI strategies include negative screening, positive screening, and shareholder activism such as direct conversations with managers or shareholder proposals.

[3] See the 2014 Report on Sustainable and Responsible Investing Trends by the Forum for Sustainable and Responsible Investment: http://www.ussif.org/Files/Publications/SIF_Trends_14.F.ES.pdf.

[4] We use ES performance, corporate social performance, CSR performance, CSR scores and ES index interchangeably hereafter.

mance remain unanswered: What is the dynamic relation between stock market returns and ES performance? Specifically, in what way and to what extent, does a firm's stock market performance influence ES performance? What determines the dynamic relation between a firm's stock returns and its ES performance? This paper aims to address these questions.

We begin by constructing an industry-adjusted ES index to measure a firm's ES performance each year. We then examine how stock returns interact with the ES index. To mitigate the concern of endogeneity, we adopt the panel vector autoregression (PVAR) methodology to disentangle the dynamic relation between a firm's stock market performance and its ES performance. This method helps us to analyze the relative importance of forward impact (i.e., current ES performance influences future stock returns) and reverse impact (i.e., current stock returns influence future ES performance).

Two interesting findings arise. First, we find that past poor stock returns are associated with higher ES index values. One standard deviation drop in stock returns is associated with an approximate 25% increase in the ES index. The results suggest that negative stock market performance could enhance social impact outcomes. Second, we find little evidence that the past ES index affects stock returns. Our results are robust to the inclusion of different specifications of control variables and to the usage of different measures of a firm's ES performance.

To further explore the relation between stock returns and the ES index, we focus on managers' incentives to adopt CSR practices after a disappointing stock market performance. We expect our findings to be stronger in firms with agency concerns (lower leverage ratios, higher cash flows and more share repurchases). The reasons why our previous findings could be strong in those firms are threefold: first, such cash-abundant firms are able to afford costly CSR activities despite poor prior stock market performance; second, after the disappointing stock market performance, managers themselves may be motivated to appear more social responsible and to entrench themselves; third, shareholders are concerned about the poor stock market performance, especially in the case of firms with abundant cash, shareholders may require managers to invest cash wisely on profitable projects or even CSR projects, through which the agency problems in firms can be mitigated.

Having examined the relation between past stock returns and current ES performance, we find that this negative relation is more pronounced for firms with agency problems (i.e., lower leverage ratios, higher free cash flows and more equity repurchases). These findings imply that managers

in those firms have both the scope and the willingness to enhance their corporate ES profiles after poor performance in the stock market.

Although our results certainly imply that negative stock returns have a positive impact on future ES performance, they cannot definitively establish a causal relationship. In addition, one may question the low frequency measure of stock returns and the ES index. To mitigate this concern, we perform a test using a point-in-time record of shareholder proposals on ES issues (hereafter, ES proposals). We pose the question: does poor prior stock market performance lead to the success of shareholder activism on ES issues, thereby putting pressure on managers for improvement in ES performance? Specifically, we examine 2884 proposals on ES issues that came to the vote at the annual general meeting (AGM). We find that the lower the stock returns are over the prior three months, the better are the voting outcomes on ES proposals. Since sponsor identity and the ES theme proposed may influence the number of votes in favor of proposals, we find that our results are robust after taking these factors into account.

We then examine whether the negative relation between past stock returns and the success of ES proposals depends on agency concerns. We find that this relation is stronger for firms with conflicts of interest between managers and shareholders, which is in line with the conjecture that when prior stock market performance is poor, those managers may face more pressure from other shareholders who turn out to be highly supportive of ES proposals, as proposed by socially responsible sponsors. Our results suggest that shareholder attention to ES issues at the AGM is conditional on short-term stock market performance, especially in firms with relatively more severe agency problems.

Our research contributes new insights to the existing literature from the following three perspectives. First, to the best of our knowledge, we are the first to show that past stock market returns precede ES performance but with the reverse not being true. As highlighted by Hong et al. (2012), prior studies that examine how ES performance influences firms' financial performance need to consider the reverse causality that financial performance may also influence a firm's ES performance. To take this point into account, we adopt the PVAR methodology to disentangle the relation between a firm's stock market performance and their ES performance.

Second, we complement previous work that focuses on the determinants of CSR (Hong and Kostovetsky, 2012; Hong et al., 2012; Cheng et al., 2016; DiGiuli and Kostovetsky, 2014). While the existing literature attempts to explain CSR spending by managerial ownership, financial constraints,

political value, and so forth, we demonstrate the role of prior stock market performance by showing the negative relation between past stock returns and ES performance. Moreover, this relation is substantially stronger for firms with relatively greater agency problems.

Third, this paper is related to the literature on the determinants and effectiveness of corporate governance proposals (Gillan and Starks, 2000; Becht et al., 2009) and linked to studies on ex-post effects of shareholder activism towards ES issues (Dimson et al., 2015; Flammer, 2015). Our work distinguishes itself by shedding light on how prior stock returns in the short horizon influence the voting outcome on ES shareholder proposals. We show that past poor stock returns are an important determinant of both the success rate of these proposals and the pressure imposed by ES proposals on management.

The remainder of this paper proceeds as follows. In Section II, we review the related literature. In Section III, we describe data and summary statistics. In Section IV, we present the study's main empirical results and discuss the cross-sectional determinants of the stock return/ES index relation. In Section V, we explore the association between past stock returns and ES shareholder activism. Finally, in Section VI, we conclude our paper.

## II. Related literature

There are three strands of literature relevant for our paper: the first is associated with how ES performance affects financial performance, the second concerns the determinants of ES performance, and the third is related to shareholder activism on ESG issues.

### *A. How does a firm's ES performance affect its financial performance?*

**"Underperform by doing good."** Some researchers consider firms' ES activities as a manifestation of managerial agency problems that pose threat to firm values. In his famous New York Times article, Friedman (1970) states that "The social responsibility of business is to increase its profits." He argues that as an individual, a manager should spend his own money to fulfill any "social responsibility" but when he acts as an agent, using other peoples' money to do social good will undermine shareholder wealth. In the same vein, Jensen and Meckling (1976) document that the agency conflict between shareholders and managers results from managers' inclination to

misappropriate perquisites from companies' resources for private consumption.

**"Outperform by doing good."** Bénabou and Tirole (2010) articulate two views in their attempt to explain why CSR activities have a positive impact on firm value. Their first view is that CSR activities allow managers to adopt a long-term perspective in profit maximization. For instance, a firm invests a lot on pollution control, while sacrificing the firms' short-run profits, may serve to mitigate the concerns over future downside risks such as regulation, litigation risk and stakeholder boycotts. In contrast, a myopic manager may exploit his or her employees, ignore their health and safety, or cut back on their benefits and wages etc, which will make it hard to attract ambitious and motivated employees in the future. Their second view is that socially responsible firms could serve as a channel to express their stakeholders' value, this can be viewed as a form of what they called "delegated philanthropy".

**"No effect by doing good."** In fact, empirical studies that examine how CSR performance affects the firms' financial performance show mixed evidence. In a meta-analysis of 167 CSR empirical studies over 1972-2007, Margolis et al. (2007) find that when regressing firms' financial performance on CSR, some papers document a negative relation whereas others find a positive relation. Overall, the average impact is not significant. Renneboog et al. (2008a) provide a comprehensive review of both theoretical and empirical CSR literature. They conclude that previous studies do not demonstrate that SRI funds or portfolios exhibit inferior performance, compared with conventional portfolios.

### *B. What are the determinants of firms' ES performance?*

There is a smaller body of literature which studies the determinants of firms' CSR activities. Cheng et al. (2016) point out the agency motive for CSR spending. They model that low managerial ownership and poor corporate monitoring lead to managers' involvement in unproductive CSR. Through a quasi-experiment of the 2003 Dividend Tax Cut, they find that firms' social goodness score decreases after an increase in managers' effective ownership. Moreover, using a regression discontinuity approach, they find that firms which pass shareholder-initiated corporate governance proposals experience significantly slower growth in CSR scores than firms which do not pass such proposals. Hong et al. (2012) suggest that firms with fewer financial constraints spend more on CSR. Using the context of the Internet Bubble of 1996-2000 as a quasi-experiment, they find that

compared with prior unconstrained peer firms, constrained non-technology firms which experience a relaxation of financial constraints during this period, tended to increase their CSR activities temporally. This runs contrary to the study of Ferrell et al. (2016) on the determinants of CSR in the context of multiple countries; they find that well-governed firms (i.e., less cash reserves and higher leverage ratios) engage more in CSR projects, supporting the view that CSR activities are value-maximizing corporate governance practices which can benefit both shareholders and stakeholders.[5]

### *C. Shareholder activism*

Our paper is also related to two strands of the shareholder activism literature on ES issues and corporate governance issues, respectively. Becht et al. (2009) find that private engagement with corporate managers by a UK activist fund, Hermes, leads to an increase in both the target firm's performance and its own fund returns. They document that firms with worse performance are more likely to receive interventions on corporate governance issues through telephone conversations and meetings by the activist shareholder. By analysing 2042 U.S. shareholder proposals on corporate governance issues, Gillan and Starks (2000) find evidence that voting outcomes are partially determined by the identity of proposal sponsors and the type of issues addressed. Proposals sponsored by institutional investors or coordinated groups receive more support than those sponsored by individual investors at the AGM. Contrary to evidence in the U.K., they document that the stock market reaction to the revelation of these proposals by the public is trivial, on average.

Our study provides new and comprehensive evidence on how prior stock market performance affects the outcome of the public ES shareholder activism. Compared with studies on corporate governance-related activism, the literature on ES shareholder activism is relatively new and developing. These studies mainly focus on the ex post performance of ES shareholder activism. Using ES engagement data provided by one large institutional investor, Dimson et al. (2015) find that ESG activism activities result in a positive and significant abnormal return of 2.3% over the year after the initial engagement. Successful engagements are followed by positive and significant abnormal

[5] Some studies in the literature document political determinants under CSR. Hong and Kostovetsky (2012) examine how political values affect fund managers' socially responsible investment decisions. They find that managers of firms who make donations to the Democratic Party invest less in socially irresponsible stocks (i.e., politically sensitive industries such as tobacco, guns and defense) than non-donors or Republican donors. In the same vein, DiGiuli and Kostovetsky (2014) study how political values of top executives affect the CSR activities of a firm. They find that democratically leaning firms that belong to the S&P 500 spend $80 million per year more on CSR activities than their Republican counterparts.

returns of 7.1% per year on average, while the unsuccessful engagements are followed by returns of zero. Through a regression discontinuity design in proxy voting settlement, Flammer (2015) finds that the passage of "close-call ES proposals" enhances stock returns significantly. Compared to a proposal that fails marginally, ES proposals that pass marginally at a vote exhibit a small abnormal stock return of 0.92%. For other non-close ES proposals, the stock market reaction is around zero on the day of the AGM.

# III. Data and summary statistics

## *A. ES performance data*

MSCI ESG KLD STATS (MSCI KLD hereafter) is an annual dataset that applies environment, social and governance (ESG) performance indicators to a universe of publicly traded firms.[6] The MSCI KLD dataset is the longest time series of ESG data available. It is used extensively in the finance and economics literature.[7] Most of the top 50 institutional investors worldwide take advantage of their research to involve ESG issues in their investment strategies (Chava, 2014). Moreover, ESG scores provided by MSCI KLD are widely applied by SRI funds to screen out irresponsible stocks from their portfolios. SRI funds usually hold stocks with the higher ESG scores within an industry (Cheng et al., 2016).[8]

Following Cheng et al. (2016), we focus on five ES categories provided by MSCI KLD: environment, community, employee relations, diversity and product.[9] Under each of the five broad categories, MSCI KLD has defined a set of strengths and concerns subcategory indicators.[10] If a company satisfies the evaluation criteria established for a given indicator, it gets "1" for this subcategory. Otherwise, it gets "0". To measure ES performance, most of previous studies count

[6] Kinder, Lydenberg, and Domini Research and Analytics (KLD) was acquired by the RiskMetrics Group, Inc. in November 2009. Subsequently, Morgan Stanley Capital International (MSCI) acquired RiskMetrics in June 2010.

[7] See Hong and Kostovetsky (2012), Hong et al. (2012), Cheng et al. (2016), Deng et al. (2013), Chava (2014), Dimson et al. (2015), Flammer (2015), and Kruger (2015).

[8] MSCI KLD measures firms' ESG ratings from various data sources such as academic datasets, government reports, non-governmental organization (NGO) datasets, media coverage, companies' 10-K fillings, sustainability reports and so forth.

[9] Additionally, MSCI KLD also provides ratings for human rights, corporate governance and controversial business issues (e.g., Alcohol, Gambling, Firearms, Military, Nuclear Power and Tobacco). We exclude human rights because human rights scores are only available for a few years in the 1990s. We do not include the above-mentioned controversial business issues as firms can do little to alter their line of business. Since the coverage of governance scores is different from that of other conventional corporate governance measures, we exclude them from our analysis.

[10] See the coverage of those five categories in 2015 in Appendix A.

the number of strengths and concerns for each of the five broad categories first and then subtract the number of concerns from the number of strengths to calculate the score in each category for each year. The ES score is then the sum of the scores of these five categories.

The number of strength and concern indicators has changed since 1991, which makes it difficult to compare raw ESG scores across years.[11] To mitigate this concern, following Deng et al. (2013), we divide the number of strengths (concerns) by the maximum number of strengths (concerns) in each ES category for each firm year to calculate a strength (concern) index, which ranges from zero to one. Next, we subtract the concern index from the strength index to calculate index for each category which ranges from -1 to +1. Lastly, we sum the index under the five categories and compute the index, ranging from -5 to +5. To mitigate the concern that unobserved industry components exist in firms' ES performance, we use this index minus the median ES index within a firm's industry in the observation year to define our final ES index.[12] We define a firm's industry by the Fama and French (1997) classification of 48 industry groups.[13]

### *B. Firm-level data*

We obtain accounting information from Compustat Annual Fundamental Files and download stock market data from the Center for Research in Security Prices (CRSP). Our main dependent variable $Return_{it}$ is stock $i$'s return for year $t$; $Logsize_{it}$ is the natural logarithm of firm $i$'s market capitalization (stock price times shares outstanding) at the end of year $t$; $Logbm_{it}$ is the natural logarithm of firm $i$'s book value of equity divided by its market capitalization at year $t$; $Profitability_{it}$, gross profits, for firm $i$ is the annual revenue (Compustat item $REVT$) minus the cost of goods sold ($COGS$), divided by total assets ($AT$); $Investment_{it}$ is the growth of total assets in year $t$ divided by total assets at the end of year $t-1$; $Leverage_{it}$ represents the book leverage of the company, which is the total debt ($DLTT + DLC$) divided by the total asset; $Cash_{it}$, cash liquidity, is cash and short-term investments ($CHE$) scaled by the total assets; $Dividends_{it}$, are cash dividends ($DVC+ DVP$) over book assets; $Log(age)_{it}$ is the natural logarithm of firm $i$'s age,

[11] The coverage universe of MSCI KLD has expanded since it was first issued in 1991. From 1991 to 2000, the dataset covered the 500 largest US companies and MSCI KLD 400 Social Index components. In 2001, it evolved to include the 1000 largest US companies. In 2003, it is extended to cover all of the 3000 largest US companies.

[12] An example of how to calculate the ES index for Apple Inc. can be found in Appendix B.

[13] See the website of Ken French Data Library:
$http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html$

as measured by the number of years available in the CRSP.

### C. *Agency problem proxies*

To investigate the cross-sectional determinants of the ES index-stock return relation, we construct several agency problem proxies. Our first measure of agency problems is a firm's leverage; the second measures its free cash flows. Agency problems are severe in those firms with more than sufficient cash flows and lower leverage ratios, because mangers in such firms have more scope to spend the resources of the firms wastefully (Jensen, 1986; Jensen and Meckling, 1976). Free cash flow is the operating income before depreciation ($OIBDP$), minus interest expenses ($XINT$), minus income taxes ($TXT$), minus capital expenditures ($CAPX$), scaled by book value of total assets ($AT$). Moreover, firms which repurchase their stocks are likely to be less dependent on equity capital, less financially constrained, and thus suffer more from agency problems. Following Hong et al. (2012), we construct a dummy variable, "No Repurchase Indicator", as our third measure of agency problems, to indicate whether a firm repurchases its stock. A firm's repurchase is defined as the expenditure on the purchase of common and preferred stocks ($PRSTKC$) minus preferred stock reduction (the first difference of $PSTKL$). The dummy variable, No Repurchase Indicator, is equal to one if a firm does not repurchase stocks, and zero otherwise.

### D. *Summary statistics*

In the MSCI KLD dataset, the main identifying information for a firm is its ticker and its CUSIP number.[14] Some MSCI KLD data have CUSIPs, while others do not (for example, CUSIPs are missing in MSCI KLD from 1991 to 1994 and from 2013 to 2014). For those observations without CUSIPs, we complete them manually. For those observations with CUSIPs, we also check whether their identifying information is correct and updated. To mitigate the influence of outliers, all financial variables are winsorized at the 1% and 99% for each year. In the final sample, we have 33,815 firm-year observations (4279 distinct firms) from 1991 to 2015.

[Insert Table I here]

[14] The CUSIP for a firm in the MSCI KLD dataset, as in Compustat, is composed of 9 digits, the first 6 digit indicate issuer number, the next 2 digit represents issue number and the last digit is the check digit. In CRSP data, CUSIP is the latest 8-digit identifier for the security through the end of the file. Additionally, CRSP has preserved all CUSIPs that were assigned to a given issue, which is NCUSIP (usually called historical CUSIP), which varies across years for a firm.

Table I reports the summary statistics for our sample. The mean ES index is 0.03, with a standard deviation of 0.44. The maximum ES index is 3.25, while the minimum is -2.10. The last column of Table I shows the pair-wise correlation coefficients between the ES index and other variables. All of the correlation coefficients are statistically significant. The ES index is negatively correlated with annual stock returns. Firms that are large, profitable, low leveraged and cash abundant appear to be more active in ES activities.

# IV. Stock market performance and ES performance

To examine the dynamic relation between stock returns and the ES index, we present in Section IV.A our main empirical evidence on the link between stock returns and the ES index. Further, in section IV.B, we analyze the cross-sectional determinants behind this link.

## *A. Causality between stock returns and ES index*

We employ the PVAR technique to disentangle the causal effect between the ES index and stock returns.[15] This PVAR model offer several appealing econometric features: first, the model allows us to examine the dynamic relation between the ES index and stock returns; second, it does not require a priori knowledge on the direction of relation between ES index and stock returns. Stock returns and the ES index in current years are also allowed to be a function of values of each other for previous years; third, the model allows us to eliminate time-invariant components that are correlated with the ES index and stock returns. For the sake of brevity, the estimation process of this PVAR model is explained in Appendix C.

To examine the relation between the ES index and stock market performance, we run the following empirical regression specifications:

[15]Holtz-Eakin et al. (1988) develop a methodology that applies panel vector autoregression (PVAR) to estimate the dynamic relation between working hours and the wage rate. Grinstein and Michaely (2005) use this method to study the correlation between firms' payout policy and institutional holdings. Chang and Zhang (2015) apply this technique to examine the causality effect between managerial entrenchment and firm value.

$$RET_{it} = a_{0t} + a_1 RET_{it-1} + b_1 ES_{it-1} + \delta C_{it-1} + f_i + x_t + \epsilon_{it} \quad (1)$$

$$ES_{it} = c_{0t} + c_1 RET_{it-1} + d_1 ES_{it-1} + \phi C_{it-1} + g_i + y_t + \omega_{it} \quad (2)$$

where $C_{it-1}$ is a vector of exogenous control variables, and where $f_i$ and $g_i$ are unobserved firm fixed effects for stock returns $RET$ and the $ES$ index, respectively. $x_t$ and $y_t$ are year fixed effects for annual stock returns $RET_{it}$ and the industry-adjusted ES index $ES_{it}$, respectively.

[Insert Table II here]

We report the results of regression specifications (1) and (2) in Table II. In columns (1) and (2), we use *Logsize* and *Logbm* as control variables. Our main dependent variables are stock returns and the $ES$ index. Consistent with the "no effect by doing good" view, we find that the estimated coefficient $b_1$ on $ES_{t-1}$ in column (1) is insignificant. In contrast, $c_1$ on $Ret_{t-1}$ in column (2) is negative and significant at 1% level, indicating that worse past stock performance is associated with better ES performance. The magnitude of the coefficient $c_1$ indicateds that one standard deviation drop in annual returns is associated with an around 25% of increase in the ES index. In subsequent columns (3)-(6) of Table II, we add a number of control variables to illustrate the robustness of our findings.[16] In columns (3) and (4), we include profitability and investment as additional controls. In columns (5) and (6), we further control leverage, cash balance, cash dividends and firm age. All of the estimates of the coefficient $c_1$ across the three regression specifications with different control variables are negative and significant at the 1% significance level.In line with the findings in the literature, the book-to-market ratio, gross profit and book leverage are found to positively forecast stock returns, while market capitalization negatively affects stock returns. Larger firms indeed exhibit better ES performance, consistent with evidence from DiGiuli and Kostovetsky (2014). To sum up, our finding that poor stock returns negatively precede the ES index remains unchanged after the inclusion of those control variables.[17]

[16] We use the documented control variables to explain the cross-section variation of stock returns or ES performance, see Fama and French (1993), Hong and Kacperczyk (2009), Hong et al. (2012), DiGiuli and Kostovetsky (2014), among others

[17] In untabulated results, our findings are robust to the usage of raw ES scores and to the usage of change in the ES index as the measure of ES performance. However, we still choose the ES index as our main dependent variable, following the recommendation of Sims (1980) who argues against differencing because it throws away valuable

Next, on the basis of the estimate of coefficients reported in Table II, we construct the orthogonalized impulse response functions (IRFs), which describe how our variable of interest, the ES index (stock returns), evolves along a specified time horizon (from year 1 to year 5) after a 1-unit shock to stock returns (ES index). Following Chang and Zhang (2015), we adopt the inverse of the Cholesky decomposition of the residual covariance matrix to orthogonalize the impulses.[18] We calculate the confidence intervals and standard errors of our orthogonalized impulse-response functions based on 500 Monte Carlo simulations. Figure 1 presents two graphs of the orthogonalized impulse response functions (dashed lines) and the 5th percentile bands (solid lines).

[Insert Figure I here]

Graph A of Figure 1 displays the response of stock returns to a 1-unit increase in the current level of the ES index. Because the confidence intervals include the zero line, the orthogonalized IRFs suggest that the ES index does not generate a significant impact on stock returns. Graph B shows that a shock amounting to 1% decrease in the current stock returns leads to an increase in the ES index of around 0.5% in the first year and around 0.2% from two to five years. The response of a firm's ES index to stock returns is statistically significant at better than the 5% level because the zero line is above 95% error band. Overall, the orthogonalized IRFs further support our results in Table II.

Taken together, our findings support the "no effect by doing good" view, implying that firms which perform better on ES issues do not necessarily show inferior or superior financial performance than others. We do not rule out the possible explanation that the "no effect by doing good" view might be the result of mixing evidence from the "underperform by doing good" view and the "outperform by doing good" view in the real world. Our findings suggest that past negative performance in the stock market precedes better future ES performance.

information about the comovements between dependent variables in the data. Furthermore, as the PVAR Model requires a firm to have at least three years of data observations in our sample, adopting differences in the ES index will leave us a smaller sample size.

[18] Estimates from orthogonalized IRFs may be sensitive to how the endogenous variables are ordered in the Cholesky decomposition. Although there is no empirical test for the ordering, our untabulated robustness tests indicate that our impulse-response results are robust to the ordering of the ES index and stock returns.

*B. The cross-sectional determinants of the stock return-ES index relation*

The results in the previous section suggest a strong negative relation between a firm's stock returns and its future ES performance. This section analyzes the cross-sectional determinants of this stock return-ES index relation. Specifically, we examine how this relation is influenced by proxies for the agency problem including financial leverage, free cash flow and stock repurchases.

In an influential corporate governance paper, Jensen (1986) points out that agency problems are more pronounced in those firms with higher cash flows and lower leverage ratios, since managers in such firms have more scope to overinvest in unprofitable projects or to spend the resourced of their firms wastefully. Also, firms that repurchase their stocks tend to rely less on equity and be less financially constrained, therefore, agency problems are likely to exist in such firms (Hong et al., 2012) .

[Insert Table III here]

To examine whether leverage has any influence on the relation of stock returns negatively preceding ES performance, we divide our sample into three leverage groups (low, medium and high) based on the 30% and 70% breakpoints every year. We use the same control variables as in Table II, but for brevity's sake do not report the estimates of those coefficients. Columns (1)-(2) and columns (3)-(4) of Table III report the results for the high and low leverage groups, respectively. When the dependent variable is $ES_t$, the coefficient $c_1$ on $RET_{t-1}$ is insignificant in column (2) but negative and statistically significant in column (4). Furthermore, the magnitude of the coefficient $c_1$ in column (4) is twice as large as that reported in Table II. After controlling for firm characteristics, we see that our finding is stronger for firms with low leverage than for firms with high leverage. Additionally, the "no effect by doing good" view holds, regardless of the level of leverage. When the dependent variable is $RET_t$, the coefficient $b_1$ on $ES_{t-1}$ is insignificant in columns (1) and (3).

To investigate whether a firm's free cash flows can influence the ES index-stock return relation, we follow the same procedure as above. We classify all firms into three free cash flow groups based on the breakpoints for the top 30% (high) and the bottom 30% (low) of the ranked values of free cash flows: our results appear in columns (5)-(6) and columns (7)-(8) of Table III, respectively. Not surprisingly, when the dependent variable is the ES index, the estimates of the coefficients of the returns are negative and significant at the 5% level for the high free cash flow group, and

insignificant for the low free cash flow group. This evidence confirms our previous findings, that past stock returns negatively forecast future ES index levels and that this is even more pronounced in cash abundant firms.

We construct our third measure of agency problems, "No Repurchase Indicator", which is equal to one for a firm that does not repurchase stocks. If the "No Repurchase dummy" for a firm is equal to one, it is placed in the no repurchase group; otherwise, it is assigned to the positive repurchase group. The results for the positive repurchase group and the non repurchase group are presented in columns (9)-(10) and columns (11)-(12) of Table III, respectively. In the positive repurchase group, past stock returns are negatively correlated with the current ES index. In contrast, we do not find such evidence in the non repurchase group. Given that firms which repurchase stocks are less financially constrained and have more agency problems, managers are willing and able to invest in CSR projects after the poor stock market performance.

To sum up, the negative and significant correlation between stock returns and the future ES index is shown to be stronger for firms with greater agency problems, (i.e., firms with lower debt ratios, higher free cash flows and more stock repurchases). Managers in these firms are more inclined to invest more in CSR activities after their firms' negative stock market performance. A manager may derive non-financial utility from costly ESG activities such as building up friendly relations with employees, making generous donations to local charities and purchasing so-called "eco-efficient" facilities (Jensen and Meckling, 1976). Such ESG expenditures are not only in line with managers' own social preferences and but could also entrench managers' positions after the disappointing performance of the firm in the stock market.

## V. Stock market performance and ES proposals

Thus far, we have shown that firms' poor stock market performance precedes future improved ES performance, especially for firms with pronounced agency problems. Our previous tests, however, do not establish causality. To address this concern, we examine whether poor prior stock market performance leads to the success of shareholder activism on ES issues and thus puts pressure on managers to improve ES performance. Most relevant to our study is Gillan and Starks (2000) who find that both long-term and short-term stock returns are negatively associated with the future

voting outcomes on *corporate governance* proposals. Using an empirical framework similar to theirs, we investigate whether poor prior stock returns lead to more support also on *ES* proposals. In another relevant study, Flammer (2015) focuses on the stock performance $after$ the passage of ES proposals. In contrast to this study, we focus mainly on how the stock returns *prior* to the ES proposals are associated with voting outcomes.

### *A. Overview of ES proposals*

We obtain data from the Institutional Shareholder Services (ISS) database, which covers shareholder proposal data for S&P 1500 firms. We focus on shareholder proposals that come to a vote on ES issues with resolution type of "SRI" (social responsible initiative). For each ES shareholder proposal, ISS shareholder proposal data record information such as the firm identifier, the AGM date, a description of the proposal, the proposal's sponsor identifier, the type of the proposal sponsor and the voting outcome. After combining proposal data with financial and accounting information from CRSP and Compustat, our sample includes 2844 ES shareholder proposals from 1997 to 2015.

[Insert Table IV here]

Table IV provides summary statistics for the frequency of firms that receive ES shareholder proposals in the AGM for each year (Panel A) and across the entire sample period (Panel B). Panel A shows that firms receive more than one ES proposals within a given AGM. More than half of ES proposals (i.e., 2884 proposals) are multiple ES proposals (i.e., 1496 proposals) targeting a single firm. Panel B shows that less than one-third of the 498 firms encounter only one shareholder proposals throughout the entire sample period.

[Insert Table V here]

Panel A of Table V presents the distribution of favorable votes for ES shareholder proposals by year. As measured by the total number of proposals that come into the vote, SRI shareholders became increasingly active from 1997 to 2015. While the average percentage of votes in favor of proposals is relatively small during the sample period, the mean (median) percentage of votes increased from 6.62% (6.00%) in 1997 to 20.37% (23.00%) in 2015, suggesting that proposals submitted by SRI shareholders on ES issues received incremental attention from other shareholders over the sample period.

Panel B of Table V reports the summary statistics of the voting outcome on ES proposals by sponsor type. Note that proposals submitted by pension funds receive the highest support from other shareholders, with a mean value of around 23.34%, similar to the median of 23.30%. In contrast, the least successful proposal sponsors are individuals, with an average voting percentage of 6.96%. This evidence is in line with previous studies which find that proposals supported by individuals gain less support than those advocated by institutional investors or coordinated groups at the AGM (Gillan and Starks, 2000).[19]

### *B. The voting outcome of ES proposals*

This subsection examines the impact of past stock returns over several different horizons on the supporting rate of ES shareholder proposals. In Table VI, we estimate regressions of the following form:

$$\%Votes_{it} = \alpha + \beta_1 ret_{qit} + \beta_2 X_{it} + \eta_p + \eta_t + \varepsilon_{it} \tag{3}$$

where the dependent variable $\%Votes_{it}$ is the average percentage of votes that firm $i$ receives in favor of ES proposals at the AGM in year $t$.[20] The independent variable of interest is $ret_{qit}$, which denotes past $q$ month stock returns prior to the AGM, we use past three-, six-, twelve-, and sixty- month stock returns relative to the value-weighted market return from CRSP in the following analysis. $X_{it}$ is the vector of firm-level controls including ROA, logsize, leverage, Tobin's Q, dividends, cash and a dummy variable $S\&P$ 500. Definitions and descriptions of all the control variables and of the data sources can be found in Appendix E. It is worth mentioning that we include ROA to control for the possibility that a firm is more likely to attract shareholders' attention if the firm experiences prior negative net income, as documented by Gillan and Starks (2000). $\eta_p$ and $\eta_t$ correspond to year fixed effects and industry fixed effects, respectively. Following Fama and French (1997), we classify firms into 48 industries. Standard errors are adjusted for the existence of clustering across

[19] In Appendix D, following Dimson et al. (2015), we manually classify ES proposals into two broad areas (i.e., environment and social), ten themes and 36 issues. The average (median) support is the highest for business-ethics-related proposals at 20.36% (19.40%) and lowest for animal-rights-related proposals at 4.94% (4.45%) over the 19 years of our sample period (1997-2015).

[20] Because some firms may have several ES proposals discussed at the AGM, we collapse our data to firm-year observations by averaging the multiple shareholder proposal observations within each firm-year. In untabulated results, we find that our estimates are robust to using the median percentage of favorable votes.

firms.

[Insert Table VI here]

In Column (1), the estimated coefficients on $ret_{3,0}$ are negative (-2.385) and statistically significant at the 5% level. We obtain very similar results when adding more control variables (i.e., logsize, leverage, Tobin's Q, dividends, cash and the S&P 500 dummy) in column (2), which means that past quarterly stock performance is negatively and significantly associated with the support on ES proposals from other shareholders at the AGM. Again, as shown in columns (3) to (8), stock returns measured at 6-month, 12-month, and 5-year horizons are not significantly associated with voting outcomes towards ES proposals. Gillan and Starks (2000) document that both previous short-term and long-term stock returns negatively affect the voting outcome of proposals on corporate governance issues. By comparison, we find this relation holds between voting outcomes on ES proposals and short-term prior returns instead of relatively long-term returns.

### *C. Proposal type and sponsor identity*

In this sub-section, we examine the robustness of our findings through controlling for factors that have been shown to influence the voting outcome in the previous literature. As shown by Gillan and Starks (2000), the issue type of proposals and the identity of the sponsors are among the factors driving the voting results. To mitigate the concern that the past short-term stock return of a firm is followed by multiple proposals with different voting outcomes, we restrict the sample to firms facing one proposal in a given year's AGM.

[Insert Table VII here]

Table VII reports coefficient estimates for model (3), controlling for potential determinants of voting outcomes. In columns 1 and 2, a fixed effect for each sponsor type is considered and included. We find that the coefficient on $ret_{3,0}$ is around 3 and is significant at the 1% level. Although the control of different sponsor types could capture some variation of votes in support of proposals, our results are still consistent with our previous findings that relatively poor prior quarterly stock performance will result in a higher level of support from other shareholders at the AGM. Columns (3)-(4) present results after controlling for the issue area of ES proposals. We add an issue area

dummy in model (3), this is a variable that takes value one if the ES proposals address issues in the environment area, and zero if in the social area. The $ret_{3,0}$ coefficient yields similar results, showing that our findings are robust to the control of broad proposal areas. In columns (7) and (8), we further control finer classifications of proposals under ES areas (e.g., themes falling under the area of environment such as climate change, ecosystem services and environment management.). The combined results with all of the issue theme fixed effects are qualitatively similar to those reported in columns (3) and (4). In a final robustness check, we repeat our analysis including both sponsor identity and proposal type fixed effect in columns (5)-(6) and (9)-(10). This yields similar magnitudes of the coefficients on $ret_{3,0}$.

### *D. Agency concerns*

The preceding results indicate that poor prior three-month returns negatively affect voting outcomes on ES proposals, which indicates that poor short-term stock returns could effectively draw the attention of shareholders at the AGM. However, there are other mechanisms through which stock returns could affect the supporting rate of ES proposals. For example, when prior stock returns are poorer, shareholders could be more worried about firms that are cash abundant and with agency concerns, they will thus expect that such firms have more room to implement ES issues and impose pressure on managers at the AGM. To estimate whether agency concerns underlie our previous results, we explore differences across sub-groups of firms classified by agency concern proxies.

[Insert Table VIII here]

We group firms by the agency problem proxies that were mentioned in Section III.C., including leverage, free cash flow and repurchase. In columns (1) to (2) (columns(3) to (4)), we classify firms according to whether the selected firm characteristic is above or below the median level of leverage ratios (free cash flows) in a particular industry each year. In columns (5) and (6), firms are divided into either the positive repurchase group or the non repurchase group. As shown in Table VIII, the relation between prior poor short-term stock returns and future voting rates on ES proposals is substantially stronger in the subgroups classified as high agency concern groups (low leverage ratios, more free cash flows and positive stock repurchases). The results are supportive of

our previous findings that the negative relation between stock returns and the future ES index is dominant in firms suffering more from agency problems, since managers in these firms face more pressure from shareholders to implement CSR activities.

# VI. Conclusion

This paper examines the dynamic relation between stock returns and ES performance. We first use the industry-adjusted ES index as a measure of firms' ES performance and employ a PVAR technique to examine the magnitude and significance of forward influence (ES index affecting stock returns) and of reverse influence (stock returns affecting ES index). Our results suggest that stock returns precede ES performance, and have a negative influence.

Second, we examine which firm characteristics could explain this stock return-ES index relation. We find that the relation is concentrated in firms with severe agency problems such as low debt ratios, high free cash flows and the practice of stock repurchases.

Third, we investigate whether after the poor prior stock market performance, shareholders show more support for ES proposals at the AGM, thereby putting pressure on managers to enhance their ES performance. Our results show that past poor stock returns on the short-term horizon (i.e., 3 months) are related to better voting outcomes of ES proposals at the AGM, especially in firms facing tensions between shareholder and managers.

On the whole, our findings suggest that firms with better ES performance, those that are held by investors who are constrained by social norms such as SRI funds, pension funds, foundations, and religious organizations, do not necessarily underperform in the financial market. Although stocks with a higher ES index do not exhibit superior performance, their ES performance is consistent with the social values of SRI investors and could at least enhance their non-financial utility. We demonstrate that short-run poor stock returns before the AGM could determine whether ES proposals submitted by SRI-orientated sponsors are able to gain more support from other shareholders at the AGM.

# REFERENCES


Anderson, Theodore Wilbur, and Cheng Hsiao, 1982, Formulation and estimation of dynamic models using panel data, *Journal of Econometrics* 18, 47–82.

Arellano, Manuel, and Olympia Bover, 1995, Another look at the instrumental variable estimation of error-components models, *Journal of Econometrics* 68, 29–51.

Becht, Marco, Julian Franks, Colin Mayer, and Stefano Rossi, 2009, Returns to shareholder activism: Evidence from a clinical study of the hermes uk focus fund, *The Review of Financial Studies* 22, 3093–3129.

Bénabou, Roland, and Jean Tirole, 2010, Individual and corporate social responsibility, *Economica* 77, 1–19.

Chang, Xin, and Hong Feng Zhang, 2015, Managerial entrenchment and firm value: A dynamic perspective, *Journal of Financial and Quantitative Analysis* 50, 1083–1103.

Chava, Sudheer, 2014, Environmental externalities and cost of capital, *Management Science* 60, 2223–2247.

Cheng, Ing-Haw, Harrison Hong, and Kelly Shue, 2016, Do managers do good with other people's money?, *Unpublished Working Paper* .

Deng, Xin, Jun-koo Kang, and Buen Sin Low, 2013, Corporate social responsibility and stakeholder value maximization: Evidence from mergers, *Journal of Financial Economics* 110, 87–109.

DiGiuli, Alberta, and Leonard Kostovetsky, 2014, Are red or blue companies more likely to go green? politics and corporate social responsibility, *Journal of Financial Economics* 111, 158–180.

Dimson, Elroy, Oguzhan Karakas, and Xi Li, 2015, Active ownership, *Review of Financial Studies* 28, 3225–3268.

Edmans, Alex, 2011, Does the stock market fully value intangibles? employee satisfaction and equity prices, *Journal of Financial Economics* 101, 621–640.

Fama, Eugene F, and Kenneth R French, 1993, Common risk factors in the returns on stocks and bonds, *Journal of Financial Economics* 33, 3–56.

Fama, Eugene F, and Kenneth R French, 1997, Industry costs of equity, *Journal of Financial Economics* 43, 153–193.

Ferrell, Allen, Hao Liang, and Luc Renneboog, 2016, Socially responsible firms, *Journal of Financial Economics* 122, 585–606.

Flammer, Caroline, 2015, Does corporate social responsibility lead to superior financial performance? a regression discontinuity approach, *Management Science* 61, 2549–2568.

Friedman, Milton, 1970, The social responsibility of business is to increase its profits, *The New York Times* 122–124.

Gillan, Stuart L, and Laura T Starks, 2000, Corporate governance proposals and shareholder activism: The role of institutional investors, *Journal of Financial Economics* 57, 275–305.

Gong, Ning, and Bruce D Grundy, 2017, Can socially responsible firms survive competition? an analysis of corporate employee matching grant schemes, *Review of Finance* 1–45.

Grinstein, Yaniv, and Roni Michaely, 2005, Institutional holdings and payout policy, *The Journal of Finance* 60, 1389–1426.

Heinkel, Robert, Alan Kraus, and Josef Zechner, 2001, The effect of green investment on corporate behavior, *Journal of Financial and Quantitative Analysis* 6, 431–449.

Holtz-Eakin, Douglas, Whitney Newey, and Harvey S Rosen, 1988, Estimating vector autoregressions with panel data, *Econometrica: Journal of the Econometric Society* 1371–1395.

Hong, Harrison, and Marcin Kacperczyk, 2009, The price of sin: The effects of social norms on markets, *Journal of Financial Economics* 93, 15–36.

Hong, Harrison, and Leonard Kostovetsky, 2012, Red and blue investing: Values and finance, *Journal of Financial Economics* 103, 1–19.

Hong, Harrison, Jeffrey D. Kubik, and Jose A. Scheinkman, 2012, Financial constraints on corporate goodness, *Unpublished Working Paper* .

Jensen, Michael C, 1986, Agency costs of free cash flow, corporate finance, and takeovers, *The American Economic Review* 76, 323–329.

Jensen, Michael C, and William H Meckling, 1976, Theory of the firm: Managerial behavior, agency costs and ownership structure, *Journal of Financial Economics* 3, 305–360.

Kruger, Philipp, 2015, Corporate goodness and shareholder wealth, *Journal of Financial Economics* 115, 304–329.

Margolis, Joshua D, Hillary Anger Elfenbein, and James P Walsh, 2007, Does it pay to be good? a meta-analysis and redirection of research on the relationship between corporate social and financial performance, *Ann Arbor* 1001, 48109–1234.

Merton, Robert C, 1987, A simple model of capital market equilibrium with incomplete information, *The Journal of Finance* 42, 483–510.

Novy-Marx, Robert, 2013, The other side of value: The gross profitability premium, *Journal of Financial Economics* 108, 1–28.

Renneboog, Luc, Jenke Ter Horst, and Chendi Zhang, 2008a, Socially responsible investments: Institutional aspects, performance, and investor behavior, *Journal of Banking & Finance* 32, 1723–1742.

Renneboog, Luc, Jenke TerHorst, and Chendi Zhang, 2008b, The price of ethics and stakeholder governance: The performance of socially responsible mutual funds, *Journal of Corporate Finance* 3, 302–322.

Sims, Christopher A, 1980, Macroeconomics and reality, *Econometrica: Journal of the Econometric Society* 1–48.

**Table I**

Summary Statistics

This reports the descriptive statistics for the ES index and financial variables used in our main regressions. This study focues on five $ES$ categories: environment, community, employee relations, diversity and product. To measure the $ES$ index, we divide the number of strengths (or concerns) for each firm-year within each $ES$ category by the maximum number of strengths (or concerns) in each $ES$ category each year to get the strength (or concern) index. Then, we subtract the adjusted concern index from the adjusted strength index to get index for each category. Finally, we sum the five index to get the ES index and subsequently adjust this index by subtracting the median ES index in the firm's industry in the observation year. The definition of other variables can be found in Appendix E. All financial variables are winsorized at the 1% and 99% level for each year. The sample includes 33,815 firm-year observations (4279 distinct firms) from 1991 to 2015. Reported summary statistics of each variable include the number of observations, mean, standard deviation, minimum, maximum, and the Pearson correlation coefficients between the ES index and other variables.

| Variables | Number of Observations | Mean | Standard Deviation | Minimum | Maximum | Correlation with ES Index |
|---|---|---|---|---|---|---|
| ES Index | 33815 | 0.03 | 0.44 | -2.10 | 3.25 | |
| Return | 33815 | 0.17 | 0.68 | -0.98 | 26.19 | -0.02*** |
| Logsize | 33815 | 7.36 | 1.58 | 3.13 | 12.37 | 0.19*** |
| Logbm | 33815 | -0.93 | 0.89 | -4.02 | 2.01 | -0.05*** |
| Profitablity | 33815 | 0.34 | 0.26 | -0.68 | 1.30 | 0.06*** |
| Investment | 33815 | 0.13 | 0.35 | -0.63 | 3.50 | -0.02*** |
| Leverage | 33815 | 0.23 | 0.20 | 0.00 | 1.02 | -0.03*** |
| Cash | 33815 | 0.18 | 0.21 | 0.00 | 0.96 | 0.01** |
| Dividends | 33815 | 0.01 | 0.02 | 0.00 | 0.30 | 0.07*** |
| Log(age) | 33815 | 2.77 | 0.97 | 0.00 | 4.50 | 0.09*** |
| Free Cash Flow | 33815 | -0.03 | 0.22 | -1.00 | 0.29 | 0.12*** |
| No Repurchase Indicator | 33815 | 0.46 | 0.50 | 0.00 | 1.00 | 0.04 *** |

***, ** and *** represent 1%, 5% and 10% significance levels, respectively

**Table II**

PVAR Estimates of the Relation between the ES Index and Stock Returns

This table reports estimates from the panel-data vector autoregression (PVAR) (Holtz-Eakin et al., 1988) analysis of the relation between the ES index and stock returns. The two-equation reduced-form PVAR model is as below:

$$RET_{it} = a_{0t} + a_1 RET_{it-1} + b_1 ES_{it-1} + \delta C_{it-1} + f_i + x_t + \epsilon_{it}$$
$$ES_{it} = c_{0t} + c_1 RET_{it-1} + d_1 ES_{it-1} + \phi C_{it-1} + g_i + y_t + \omega_{it}$$

The dependent variables are $RET_{it}$ and $ES_{it}$ index in year $t$. Control variables include: $Logsize_{it-1}$, which is the natural logarithm of firm $i$'s market capat the end of year $t-1$; $Logbm_{it-1}$, which is the natural logarithm of firm $i$'s book value divided by its market cap at the end of year $t-1$;$Profitability_{it-1}$, gross profits, which for firm $i$ is annual revenues minus cost of goods sold, divided by total assets; $Investment_{it-1}$, investment, which is the growth of total assets in year $t-1$ divided by total assets at the end of year $t-2$; $Leverage_{it-1}$, which is the total debt divided by the sum of total debt and book equity; $Cash_{it-1}$, cash liquidity, which is cash and short-term investments scaled by total assets; $Dividends_{it-1}$, total dividend, which is dividends per share by ex date times common shares outstanding, scaled by $BE$. $Log(age)$ is the natural logarithm of a firm's age. $x_t$ and $y_t$ are year fixed effects, and $f_i$ and $g_i$ are firms fixed effects for $RET$ and $ES$, respectively. Firm fixed effects are controlled by subtracting forward means from all variables in the model Arellano and Bover (1995). The lagged levels of regressors are used as instruments to estimate the model with the GMMs. z-statistics are reported in parentheses.

| | (1) Returns | (2) ES Index | (3) Returns | (4) ES Index | (5) Returns | (6) ES Index |
|---|---|---|---|---|---|---|
| Returns$_{t-1}$ | -0.002 | -0.011*** | 0.000 | -0.011*** | -0.001 | -0.011*** |
| | (-0.24) | (-2.98) | (0.03) | (-2.98) | (-0.12) | (-2.77) |
| ES Index$_{t-1}$ | -0.023 | 0.770*** | -0.026 | 0.771*** | -0.025 | 0.771*** |
| | (-1.25) | (46.03) | (-1.43) | (45.80) | (-1.25) | (45.43) |
| Logsize$_{t-1}$ | -0.090*** | 0.032** | -0.094*** | 0.030** | -0.082*** | 0.043*** |
| | (-3.80) | (2.08) | (-4.01) | (2.00) | (-2.90) | (2.72) |
| Logbm$_{t-1}$ | 0.120*** | 0.004 | 0.132*** | 0.005 | 0.156*** | 0.008 |
| | (3.72) | (0.43) | (3.87) | (0.53) | (3.93) | (0.70) |
| Profitability$_{t-1}$ | | | 0.263 | 0.031 | 0.346* | 0.031 |
| | | | (1.60) | (0.58) | (1.93) | (0.52) |
| Investment$_{t-1}$ | | | 0.002 | 0.006 | -0.010 | 0.007 |
| | | | (0.12) | (0.92) | (-0.51) | (1.02) |
| Leverage$_{t-1}$ | | | | | 0.525*** | 0.058 |
| | | | | | (2.84) | (0.92) |
| Cash$_{t-1}$ | | | | | 0.636*** | -0.050 |
| | | | | | (3.43) | (-0.78) |
| Dividends$_{t-1}$ | | | | | -0.721 | 0.657 |
| | | | | | (-0.67) | (1.34) |
| Log(age)$_{t-1}$ | | | | | 0.006 | -0.016 |
| | | | | | (0.26) | (-1.26) |
| Year Effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Firm Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes |
| N | 25319 | 25319 | 25319 | 25319 | 25319 | 25319 |

***, ** and *** represent 1%, 5% and 10% significance levels, respectively

**Table III**

The Relation between the ES Index and Stock Returns Grouped by Firm Characteristics

This table shows PVAR estimates of how the relationship between ES index and stock returns varies with different agency concern groups. From columns (1) to (4), the sample are divided into high and low leverage groups, based on the 30% and 70% breakpoints every year. From columns (5) to (8), all firms are allocated into two free cash flow groups based on the breakpoints for the bottom 30% (Low)and top 30% (High) of the ranked values of free cash flow every year. From columns (9) to (12), firms are assigned into positive repurchase group or non repurchase group if the Non Repurchase Indicator is equal to zero and one, respectively.

| Agency concern measures | Leverage | | | | Free Cash Flow | | | | Repurchase | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | High | | Low | | High | | Low | | Positive | | Non | |
| | (1) Returns | (2) ES Index | (3) Returns | (4) ES Index | (5) Returns | (6) ES Index | (7) Returns | (8) ES Index | (9) Returns | (10) ES Index | (11) Returns | (12) ES Index |
| $Returns_{t-1}$ | -0.011 | 0.001 | 0.028* | -0.022** | -0.018 | -0.030** | -0.001 | -0.008 | 0.019 | -0.024** | -0.017 | -0.000 |
| | (-0.80) | (0.18) | (1.77) | (-2.40) | (-1.05) | (-2.37) | (-0.06) | (-0.77) | (0.85) | (-2.45) | (-1.35) | (-0.07) |
| $ES\ Index_{t-1}$ | -0.031 | 0.805*** | 0.037 | 0.681*** | -0.059 | 0.843*** | -0.061 | 0.675*** | -0.031 | 0.797*** | 0.034 | 0.710*** |
| | (-0.63) | (20.60) | (0.51) | (13.99) | (-1.41) | (15.48) | (-0.92) | (15.50) | (-1.59) | (31.89) | (0.59) | (18.58) |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| N | 5765 | 5765 | 5474 | 5474 | 5253 | 5253 | 4371 | 4371 | 11109 | 11109 | 7287 | 7287 |

***, ** and *** represent 1%, 5% and 10% significance levels, respectively

**Table IV**

Frequency of ES proposals

This table displays the number of ES proposals that came into the vote from 1997 to 2015, as reported by the ISS shareholder proposals databases. Panel A describes the frequency of ES proposals in a given year's AGM. Panel B reports the frequency of proposals that came into the vote during the entire sample period.

| Panel A: Frequency of proposals in a given year's AGM | | |
|---|---|---|
| Number of ES proposals in a given year's AGM | Number of firms | Total number of ES proposals |
| 1 | 1348 | 1348 |
| 2 | 337 | 674 |
| 3 | 92 | 276 |
| 4 | 52 | 208 |
| 5 | 25 | 125 |
| 6 | 12 | 72 |
| 7 | 8 | 56 |
| 8 | 3 | 24 |
| 9 | 2 | 18 |
| 10 | 1 | 10 |
| 11 | 3 | 33 |
| Overall | 1883 | 2844 |
| Panel B: Frequency of proposals over the whole sample period | | |
| Number of ES proposals during the entire period | Number of firms | Total number of ES proposals |
| 1 | 140 | 140 |
| 2 | 96 | 192 |
| 3 | 65 | 195 |
| 4 | 42 | 168 |
| 5 | 27 | 135 |
| 6 | 20 | 120 |
| 7 | 10 | 70 |
| 8 | 13 | 104 |
| 9 | 12 | 108 |
| 10 | 5 | 50 |
| 11-20 | 37 | 533 |
| 21-30 | 20 | 481 |
| >31 | 11 | 548 |
| Overall | 498 | 2844 |

**Table V**

Voting Results of ES shareholder Proposals

Panel A and Panel B show the summary statistics for the percentage of votes in support of the ES shareholder proposals by year and sponsor type, respectively. The number of shareholder proposals, the mean, median, minimum and maximum of the percentage of favorable votes are reported. The sample includes 2844 ES proposals which came to the vote from 1997 to 2015.

| Panel A: Voting Results by Year | | | | | |
|---|---|---|---|---|---|
| Year | N | Mean (%) | Median (%) | Maximum (%) | Minimum(%) |
| 1997 | 89 | 6.62 | 6.00 | 19.00 | 1.00 |
| 1998 | 97 | 7.78 | 6.00 | 31.00 | 2.00 |
| 1999 | 99 | 8.06 | 7.00 | 80.00 | 2.00 |
| 2000 | 120 | 7.00 | 6.00 | 24.00 | 1.00 |
| 2001 | 125 | 8.30 | 8.00 | 32.00 | 2.00 |
| 2002 | 139 | 9.19 | 7.00 | 58.00 | 1.00 |
| 2003 | 129 | 11.19 | 8.00 | 93.00 | 2.00 |
| 2004 | 168 | 11.74 | 8.00 | 98.00 | 1.00 |
| 2005 | 157 | 9.56 | 8.00 | 56.00 | 0.00 |
| 2006 | 239 | 12.89 | 8.40 | 75.50 | 1.00 |
| 2007 | 240 | 14.08 | 8.50 | 95.30 | 0.30 |
| 2008 | 191 | 13.32 | 8.30 | 52.80 | 0.30 |
| 2009 | 161 | 16.80 | 9.60 | 54.20 | 0.40 |
| 2010 | 156 | 19.38 | 14.65 | 60.30 | 0.50 |
| 2011 | 146 | 20.47 | 21.25 | 92.80 | 0.80 |
| 2012 | 150 | 18.29 | 12.85 | 52.70 | 1.10 |
| 2013 | 140 | 20.16 | 18.05 | 96.20 | 1.00 |
| 2014 | 148 | 21.58 | 23.15 | 51.80 | 0.60 |
| 2015 | 150 | 20.37 | 23.00 | 51.50 | 0.30 |
| Overall | 2844 | 13.98 | 8.20 | 98.00 | 0.00 |
| Panel B: Voting Results by Sponsor | | | | | |
| Proposal Sponsor | N | Mean (%) | Median (%) | Maximum (%) | Minimum(%) |
| SRIs | 422 | 17.71 | 10.00 | 92.80 | 0.60 |
| Pension funds | 369 | 23.34 | 23.30 | 93.00 | 0.50 |
| Other institutional investors | 99 | 19.50 | 20.30 | 55.50 | 1.30 |
| Foundations and special groups | 206 | 10.52 | 7.00 | 96.20 | 0.30 |
| Religious Groups | 622 | 11.25 | 7.20 | 95.30 | 0.30 |
| Unions | 105 | 16.07 | 10.00 | 44.70 | 2.10 |
| Individuals | 233 | 6.96 | 5.70 | 31.70 | 0.80 |
| Other | 85 | 19.85 | 22.00 | 49.40 | 1.80 |
| Undisclosed | 703 | 10.77 | 8.00 | 98.00 | 0.00 |

**Table VI**

Voting Outcome and Past Stock Performance

This table shows how the percentage of votes in favor of the ES shareholder proposals relates to past stock performance. The dependent variable is the average of votes that a firm receives for ES shareholder proposals at the AGM. In columns (1)-(2), the independent variables are three-month stock returns before the AGM. In columns (3)-(4), the independent variables are six-month stock returns prior to the AGM. In columns (5)-(6), the independent variables are twelve-month stock returns before the AGM. In columns (7)-(8), the independent variables are five-year stock returns before the AGM. All the returns are adjusted by the value-weighted market return from CRSP. The control variables consists of ROA, logsize, leverage, Tobin's Q, dividends, cash and a dummy variable $S\&P$ 500. Year fixed effects and industry fixed effects are included in all the regressions. Industry is defined according to Fama-French 48 industry classification (1997). Standard errors are clustered by firm. T-statistics are shown in parentheses.

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| $ret_{3,0}$ | -2.385** | -2.170** | | | | | | |
| | (-2.43) | (-2.12) | | | | | | |
| $ret_{6,0}$ | | | -0.716 | -1.122 | | | | |
| | | | (-0.69) | (-1.09) | | | | |
| $ret_{12,0}$ | | | | | -0.453 | -1.085 | | |
| | | | | | (-0.50) | (-1.17) | | |
| $ret_{60,0}$ | | | | | | | 0.548 | 0.274 |
| | | | | | | | (1.49) | (0.77) |
| ROA | -9.654 | -6.925 | -8.887 | -6.247 | -8.798 - | 6.296 | -12.17* | -10.32 |
| | (-1.42) | (-0.88) | (-1.31) | (-0.79) | (-1.30) | (-0.80) | (-1.70) | (-1.26) |
| Logsize | | -1.777*** | | -1.802*** | | -1.819*** | | -1.842*** |
| | | (-4.57) | | (-4.60) | | (-4.63) | | (-4.62) |
| Leverage | | -7.957*** | | -8.204*** | | -8.228*** | | -7.522** |
| | | (-2.64) | | (-2.73) | | (-2.74) | | (-2.37) |
| Tobin's Q | | 0.682* | | 0.668* | | 0.682* | | 0.912** |
| | | (1.76) | | (1.72) | | (1.76) | | (2.19) |
| Dividends | | -10.18 | | -10.67 | | -10.71 | | -5.776 |
| | | (-0.46) | | (-0.48) | | (-0.48) | | (-0.25) |
| Cash | | -9.226** | | -9.056** | | -8.870** | | -10.42** |
| | | (-2.25) | | (-2.20) | | (-2.16) | | (-2.59) |
| S&P 500 | | 2.279 | | 2.369* | | 2.406* | | 2.443* |
| | | (1.62) | | (1.68) | | (1.70) | | (1.68) |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| N | 1731 | 1720 | 1731 | 1720 | 1731 | 1720 | 1668 | 1658 |
| Adjusted R Squared | 0.248 | 0.273 | 0.246 | 0.272 | 0.246 | 0.272 | 0.249 | 0.274 |

***, ** and *** represent 1%, 5% and 10% significance levels, respectively

**Table VII**

Percentage of Votes in Favor and Past Stock Performance

This table reports the relation between the percentage of votes in favor of the ES shareholder proposal and past stock performance. The dependent variable is the vote for percentage that a firm receives for each ES shareholder proposal at the AGM. The independent variables of interests are three month stock returns before the proposal submission date. We control for ROA, logsize, leverage, Tobin's Q, dividends, cash and a dummy variable $S\&P$ 500. Issue area is a dummy variable which is equal to one (zero) if the ES proposals belong to the environment (social) area. Issue area dummy is used in columns (3) to (6). Sponsor fixed effects are controlled using all the sponsor type dummies in columns (1), (2), (5), (6), (9) and (10). Proposals issue theme fixed effects are included using all the issue theme dummies in columns (7) to (10). Year fixed effects and industry fixed effects are applied in all the regressions. We define industry according to the Fama-French 48 industry classification (1997). Standard errors are clustered at the firm level. T-statistics are displayed in parentheses.

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| $ret_{3,0}$ | -3.031*** | -2.802*** | -2.572** | -2.356** | -2.894*** | -2.697*** | -2.561** | -2.351** | -2.848*** | -2.640** |
| | (-3.22) | (-2.88) | (-2.44) | (-2.19) | (-2.98) | (-2.68) | (-2.24) | (-2.02) | (-2.75) | (-2.47) |
| ROA | -6.280 | -4.335 | -5.195 | -4.811 | -7.009 | -4.789 | -7.095 | -4.697 | -8.378 | -5.550 |
| | (-0.76) | (-0.42) | (-0.57) | (-0.44) | (-0.85) | (-0.47) | (-0.92) | (-0.48) | (-1.11) | (-0.57) |
| Logsize | | -1.449** | | -1.549** | | -1.422** | | -1.883*** | | -1.678*** |
| | | (-2.31) | | (-2.44) | | (-2.30) | | (-3.15) | | (-2.82) |
| Leverage | | -5.770 | | -5.934 | | -5.775 | | -5.238 | | -5.165* |
| | | (-1.62) | | (-1.51) | | (-1.63) | | (-1.64) | | (-1.68) |
| Tobin's Q | | 0.586 | | 0.671 | | 0.545 | | 0.974* | | 0.814 |
| | | (1.05) | | (1.15) | | (0.97) | | (1.86) | | (1.57) |
| Dividends | | -9.528 | | -5.497 | | -9.241 | | -33.05 | | -28.65 |
| | | (-0.35) | | (-0.19) | | (-0.34) | | (-1.24) | | (-1.08) |
| Cash | | -7.276 | | -6.154 | | -6.995 | | -5.540 | | -5.652 |
| | | (-1.34) | | (-1.10) | | (-1.29) | | (-1.06) | | (-1.08) |
| S&P 500 | | 1.463 | | 2.218 | | 1.454 | | 1.207 | | 0.698 |
| | | (0.94) | | (1.35) | | (0.93) | | (0.82) | | (0.47) |
| Issue area | | | -3.286** | -2.826* | -1.666 | -1.241 | | | | |
| | | | (-1.99) | (-1.69) | (-0.99) | (-0.73) | | | | |
| All the Sponsor Types | Yes | Yes | No | No | Yes | Yes | No | No | Yes | Yes |
| All the Issue Themes | No | No | No | No | No | No | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| N | 934 | 929 | 934 | 929 | 934 | 929 | 934 | 929 | 934 | 929 |
| Adjusted R Squared | 0.297 | 0.303 | 0.249 | 0.255 | 0.298 | 0.303 | 0.342 | 0.355 | 0.359 | 0.370 |

***, ** and *** represent 1%, 5% and 10% significance levels, respectively

**Table VIII**

Percentage of Vote in Favor and Past Stock Performance by Agency Concern Proxies

This table reports the relation between the percentage of votes in favor of the ES shareholder proposal and past stock performance. The dependent variable is the vote for percentage that a firm receives for each ES shareholder proposal at the AGM. The independent variables of interests are three month stock returns before the proposal submission date. A firm is assigned to a high or low group if its agency concern measure is above or below the median level in each industry-year. We control for ROA, logsize, leverage, Tobin's Q, dividends, cash and a dummy variable *S&P* 500. Sponsor types and issue themes are controlled. Year fixed effects and industry fixed effects are applied in all the regressions. We define industry according to the Fama-French 48 industry classification (1997). Standard errors are clustered at the firm level. T-statistics are displayed in parentheses.

| Agency concern | Leverage | | Free Cash Flow | | Repurchase | |
|---|---|---|---|---|---|---|
| measures | High | Low | High | Low | Positive | Non |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| $ret_{3,0}$ | -1.726* | -11.52*** | -7.694*** | -0.692 | -5.900** | -0.994 |
| | (-1.85) | (-3.15) | (-2.88) | (-0.53) | (-1.98) | (-0.78) |
| ROA | -13.75 | -0.318 | -10.22 | 11.11 | 5.097 | -16.99 |
| | (-0.94) | (-0.03) | (-0.79) | (0.60) | (0.39) | (-1.09) |
| Logsize | -1.337* | -1.913** | -1.482** | -2.548** | -1.975** | -1.593** |
| | (-1.68) | (-2.04) | (-2.59) | (-2.49) | (-2.59) | (-2.05) |
| Leverage | -8.643 | 2.118 | -4.287 | -9.990 | -4.287 | -9.290** |
| | (-1.53) | (0.23) | (-1.27) | (-1.42) | (-1.08) | (-1.99) |
| Tobin's Q | 0.507 | 1.022 | 0.790 | -0.219 | 0.127 | 1.165 |
| | (0.57) | (1.46) | (1.42) | (-0.17) | (0.19) | (1.29) |
| Dividends | -15.72 | -74.71* | -22.30 | 72.52 | -45.14 | 12.58 |
| | (-0.47) | (-1.75) | (-0.78) | (1.07) | (-1.28) | (0.33) |
| Cash | -14.70** | 1.553 | -2.555 | -6.063 | -0.471 | -22.13** |
| | (-2.00) | (0.20) | (-0.47) | (-0.57) | (-0.08) | (-2.58) |
| S&P 500 | -1.102 | 0.434 | 2.228 | -1.701 | 1.687 | -0.267 |
| | (-0.56) | (0.21) | (1.32) | (-0.70) | (0.89) | (-0.12) |
| All the Sponsor Type | Yes | Yes | Yes | Yes | Yes | Yes |
| All the Issue Themes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes | Yes | Yes | Yes |
| N | 514 | 405 | 669 | 253 | 613 | 312 |
| Adjusted R Squared | 0.368 | 0.398 | 0.410 | 0.415 | 0.376 | 0.368 |

***, ** and *** represent 1%, 5% and 10% significance levels, respectively

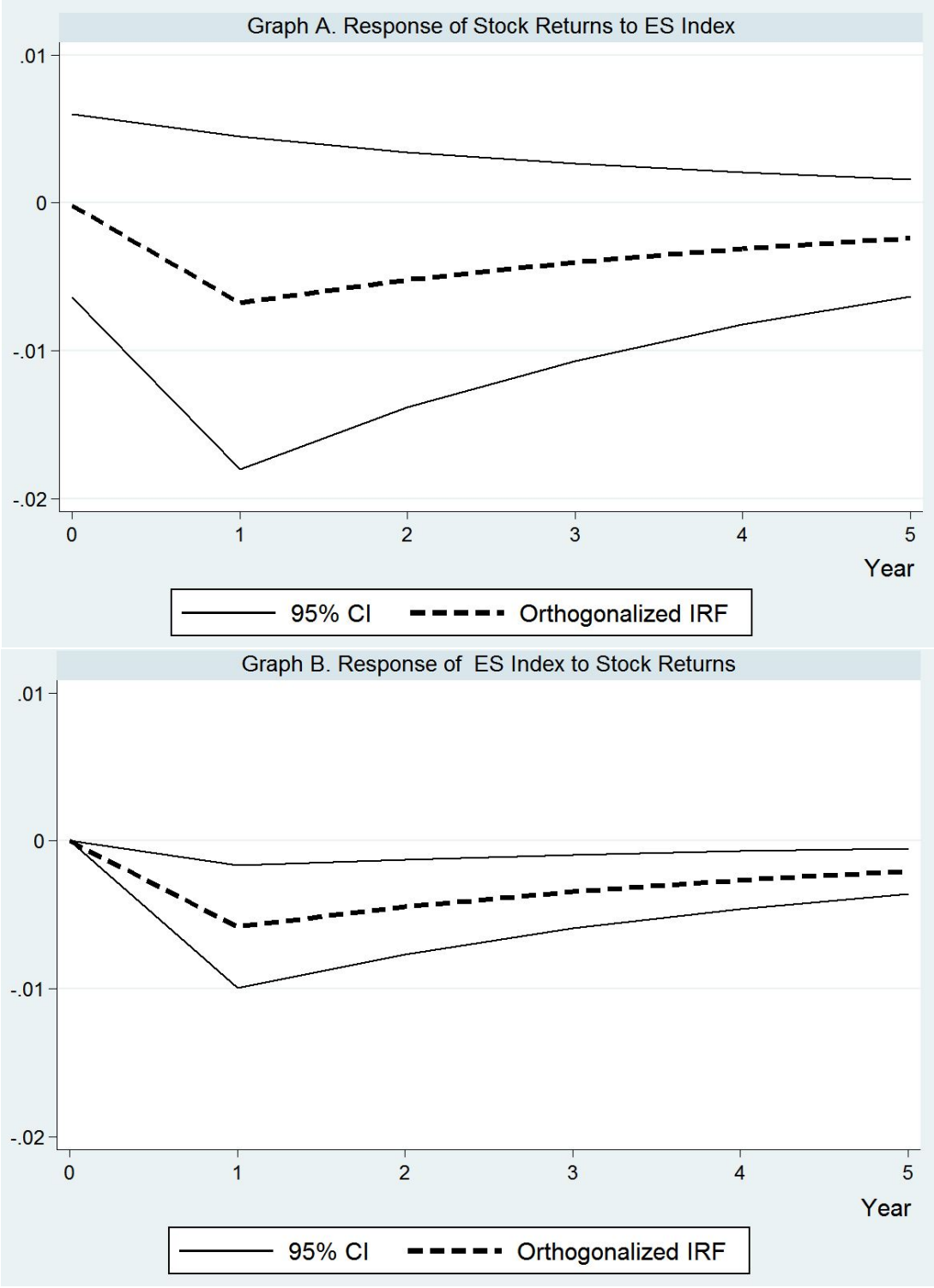


**Figure 1.** Orthogonalized Impulse Response Functions between the ES Index and Stock Returns

This figure displays the orthogonalized impluse response functions and the 5% error bands calculated using 500 Monte Carlo simulations. Orthogonalized IRFs are estimated using the estimates of coefficients in Table 2. The responses of stock returns (ES index) to a 1-unit increase in the current ES index (stock returns) for up to five years are shown in Panel A (B). Dashed lines report the Orthogonalized IRFs, while solid lines stand for the 5% error bands.

# Appendix A: List of MSCI ESG Ratings

| Rating Category | Coverage |
|---|---|
| *Environment Strengths* | Environmental Opportunities - Opportunities in Clean Tech; Pollution & Waste - Toxic Emissions and Waste; Pollution & Waste - Packaging Materials & Waste; Climate Change - Carbon Emissions; Environmental Management Systems; Natural Capital-Water Stress; Natural Capital - Biodiversity & Land Use; Natural Capital - Raw Material Sourcing; Climate change - Financing Environmental Impact ; Environmental Opportunities-Opportunities in Green Building; Environmental Opportunities - Opportunities in Renewable Energy; Pollution & Waste - Electronic Waste; Climate Change - Energy Efficiency; Climate Change - Product Carbon Footprint; Climate Change - Climate Change Vulnerability; Environment - Other Strengths. |
| *Environment Concerns* | Toxic Emissions and Waste; Energy & Climate Change; Biodiversity & Land Use; Operational Waste (Non-Hazardous); Supply Chain Management; Water Stress; Environment - Other Concerns. |
| *Community Strengths* | Community Engagement. |
| *Community Concerns* | Impact on Community. |
| *Employee Strengths* | Union Relations; Cash Profit Sharing; Employee Involvement; Employee Health & Safety; Supply Chain Labor Standards; Human Capital Development; Labor Management; Controversial Sourcing; Human Capital - Other Strengths. |
| *Employee Concerns* | Collective Bargaining & Unions; Health & Safety; Supply Chain Labor Standards; Child Labor; Labor Management Relations; Labor Rights & Supply Chain. |
| *Diversity Strengths* | Representation; Board Diversity - Gender. |
| *Diversity Concerns* | Discrimination & Workforce Diversity; Board Diversity - Gender. |

| | |
|---|---|
| *Product Strengths* | Product Safety and Quality; Social Opportunities - Access to Healthcare; Social Opportunities - Access to Finance; Social Opportunities - Access to Communications; Social Opportunities - Opportunities in Nutrition and Health; Product Safety - Chemical Safety; Product Safety - Financial Product Safety; Product Safety - Privacy & Data Security; Product Safety - Responsible Investment; Product Safety - Insuring Health and Demographic Risk. |
| *Product Concerns* | Product Quality & Safety; Marketing & Advertising; Anticompetitive Practices; Customer Relations; Privacy & Data Security; Other Concerns. |

## Appendix B: An Example of Calculating the ES index

To understand how the adjusted ES scores are calculated, we will take Apple Inc. as an example. For the data coverage in 2015, Apple exhibits strengths in five indicators (i.e., "Cash Profit Sharing", "Employee Involvement", "Supply Chain Labor Standards", "Controversial Sourcing" and "Human Capital-Other"). This means that it gets 5 points for employee relations strengths. After scaled by the maximum number of strengths in this category (i.e., 9) this year, Apple gets adjusted score of 5/9=0.556 in employee relations strength. At the same time, Apple shows concerns on "Supply Chain", "Child Labor" and "Labor-Management Relations", which gives it 3 points for employee relations concerns. We scale it by 6, the maximum number of concerns reported in this category,which yields 3/6=0.5 for the adjusted employee relations concern score for Apple. Then, we deduct adjusted concern scores from adjusted strengths scores to obtain an adjusted score for employee relations, which is 0.556-0.5=0.056. The adjusted scores for the other four broad categories (i.e., environment, community, diversity and product) are measured in the same vein: Apple obtains 0.170, 0.000, 0.000, -0.300 for environment, community, diversity and product, respectively. In sum, the ES index for Apple is equal to 0.056+0.170+0.000+0.000-0.300=-0.074. Next, we adjust this index by the median ES score for its industry: Chips–Electronic Equipment, which is 0. Thus, the final ES index used in our regression for Apple Inc. is -0.074.

# Appendix C: PVAR specification

We briefly summarized the estimation and testing process of the PVAR specification. Here is a two-equation reduced-form PVAR model:

$$RET_{it} = a_{0t} + \sum_{k=1}^{m} a_k RET_{it-k} + \sum_{k=1}^{m} b_k ES_{it-k} + \delta C_{it} + f_i + \epsilon_{it} \tag{1}$$

$$ES_{it} = c_{0t} + \sum_{k=1}^{m} c_k RET_{it-k} + \sum_{k=1}^{m} d_k ES_{it-k} + \phi C_{it} + g_i + \omega_{it} \tag{2}$$

where $i \in 1, ..., N$ and $t \in 1, ..., T$ index firms and years, respectively. $a_{0t}, a_1, ..., a_m, b_1, ..., b_m$ are the coefficients of regressing $RET_{it}$ on a constant, previous values of $RET_{it}$ and $ES_{it}$ while $c_{0t}, c_1, ..., c_m, d_1, ..., d_m$ are the coefficients of regressing $ES_{it}$ on a constant, previous values of $RET_{it}$ and $ES_{it}$. $k$ (from 1 to m) is the length of year lags, which is sufficiently large to ensure that error terms $\epsilon_{it}$ and $\omega_{it}$ are white noise. $C_{it}$ is a vector of exogenous control variables, $f_i$ and $g_i$ are unobserved firm fixed effects for stock returns $RET$ and $ES$ index, respectively.

Specifically, we assume that the error terms, $\epsilon_{it}$ and $\omega_{it}$, satisfy the following orthogonality properties:

$$E(\epsilon_{it} * RET_{is}) = E(\epsilon_{it} * ES_{is}) = 0, \ (s < t) \tag{3}$$

$$E(\omega_{it} * RET_{is}) = E(\omega_{it} * ES_{is}) = 0, \ (s < t) \tag{4}$$

One way to eliminate the firm fixed effects $f_i$ and $g_i$ is to apply the first difference (FD) transformation (Anderson and Hsiao, 1982). Next, we show how to estimate equation (1), which also applies for equation (2). We subtract the equation in year $t-1$ from the equation for year t, which yields the transformed equation:

$$\begin{aligned} RET_{it} - RET_{it-1} = \alpha_t &+ \sum_{k=1}^{m} a_k (RET_{it-k} - RET_{it-k-1}) + \sum_{k=1}^{m} b_k (ES_{it-k} - ES_{it-k-1}) \\ &+ \delta (C_{it} - C_{it-1}) + v_{it} \end{aligned} \tag{5}$$

where

$$\alpha_t = a_{0t} - a_{0t-1}$$

$$v_{it} = \epsilon_{it} - \epsilon_{it-1}$$

The orthogonality conditions (3) indicate that the error term $v_{it}$ of the transformed equation (5) satisfies the following orthogonality conditions:

$$E(v_{it} * RET_{is}) = E(v_{it} * ES_{is}) = 0, \ \ (s < (t-1)) \tag{6}$$

Therefore, the vector of instruments that is able to identify the coefficients of equation (5) is

$$Z_{it} = [RET_{it-2}, ..., RET_{i1}, ES_{it-2}, ..., ES_{i1}] \tag{7}$$

According to the orthogonality condition (6), a necessary condition for the identification of equation (5) is that there are at least as many instrumental variables as right-hand-side endogenous variables. There are $2m$ right-hand-side endogenous variables in equation (5) and the dimension of instruments $Z_{it}$ is $2t-4$ so we need to have $T \geqslant m+2$ to estimate coefficients for equation (5) as well as equation (1).

As an alternative to FD transformation, forward orthogonal deviation (FOD) transformation (Helmert's transformation), is discussed by Arellano and Bover (1995) and is useful in the context of models with predetermined variables. Compared with FOD transformation, the FD transformation might amplify the gap in unbalanced panels. For example, if some $RET_{it}$ is missing, then the first differences at time t+1 and t are missing. Also, the FD transformation requires longer length of time periods than FOD transformation to identify parameters in equation (1). In essence, the FOD transformation subtracts the average of future observations available in the sample. Thus, equation (1) will be transformed into:

$$c_{it}(RET_{it} - \overline{RET_{it}}) = a_{0t} + \sum_{k=1}^{m} a_k c_{it}(RET_{it-k} - \overline{RET_{it-k}}) + \sum_{k=1}^{m} b_k c_{it}(ES_{it-k} - \overline{ES_{it-k}}) + \delta c_{it}(C_{it} - \overline{C_{it}}) + c_{it}(\epsilon_{it} - \overline{\epsilon_{it}}), \quad t = 1, ..., T-1 \tag{8}$$

where the weighting $c_{it} = \frac{T_i - t_i}{T_i - t_i + 1}$, is used to equalize the variance. $T_i - t_i$ is the number of all available future observations for firm $i$ at time $t$. The $\overline{variable}$ represents the mean of all available future observations for each original variable. Thus, for each of the first $T-1$ observations of each firm i, we subtract the mean of the remaining future observations available in the future through this transformation. Obviously, since the transformed equation (8) does not involve past error terms, the dimension of available instruments will grow into:

$$Z_{it}^{'} = [RET_{it-1}, ..., RET_{i1}, ES_{it-1}, ..., ES_{i1}] \tag{9}$$

According to the order condition for identification, we must have $T \geqslant m + 1$ observations to estimate parameters for the transformed equation (8).

Given the appealing attributes of FOD transformation, we first take the FOD transformation to get rid of firm fixed effects, and then follow the standard GMM procedure, using instrumental variables to estimate the preliminary one-step consistent estimator for the transformed equation (8). Then, we use the residuals obtained from preliminary estimates to form the variance-covariance matrix. Finally, we apply the estimated variance-covariance matrix to get a two-step consistent GMM estimator of the coefficients.

**Appendix D: Voting Results of ES shareholder Proposals by Areas, Themes and Issues**

This table classifies all the ES shareholder proposals which come to the vote into different areas, themes and issues from 1997 to 2015. Each proposal area consists of different themes, and each proposal theme includes several types of issues. For example, three themes (climate change, ecosystem services and environment management) are under the area of "environment". Three issues (biofuels, climate change strategy, and emissions management and reporting) are covered by the theme of "climate change". The last five columns report the summary statistics of voting results under each theme.

| Areas and Themes | Issues within each theme | N | Mean (%) | Median (%) | Maximum (%) | Minimum(%) |
|---|---|---|---|---|---|---|
| **a. Environment** | | | | | | |
| a.1 Climate change | Biofuels, Climate change strategy, Emissions management and reporting | 331 | 16.27 | 10.90 | 92.00 | 1.10 |
| a.2 Ecosystem services | Access to land, Biodiversty management, Water | 37 | 9.27 | 7.00 | 29.40 | 2.00 |
| a.3 Environment management | Environmental standards, Pollution control, Supply chain environmental standards, Waste and recycling | 110 | 13.04 | 8.25 | 41.70 | 3.00 |
| **b. Social** | | | | | | |
| b.1 Public health | Access to medicines, HIV or AIDs, Nutrition, Product safety | 324 | 7.47 | 6.00 | 98.00 | 0.00 |
| b.2 Human rights | Community relations, Privacy and free expression, Weak governance zones, Human rights standards, Fair lending, Charitable contributions, Security | 515 | 11.26 | 7.10 | 95.30 | 0.80 |
| b.3 Labor standards | Diversity, Health and safety, ILO core conventions, Supply chain labor standards | 264 | 17.16 | 10.00 | 93.00 | 0.00 |
| b.4 Business ethics | Bribery and corruption, Political influence, Responsible marketing, Whistle-blowing systems | 516 | 20.36 | 19.40 | 75.50 | 0.50 |
| b.5 Sustainability management and reporting | Disclosure and reporting, Matching gift, Governance of sustainability issues, Stakeholder engagement, UNGC compliance | 488 | 15.12 | 10.00 | 92.80 | 0.70 |
| b.6 Animal rights | Protect animals | 142 | 4.94 | 4.45 | 25.40 | 0.30 |
| b.7 Other | Other social issues related | 117 | 10.72 | 7.30 | 96.20 | 0.30 |

# Appendix E: Variable Definitions

| Variable Name | Coverage |
|---|---|
| Source: Compustat | |
| *Book value of equity* | According to Fama and French (1993), this is equal to the book value of shareholders' equity plus balance sheet deferred taxes and investment tax credit (if available), minus the book value of preferred stock. Following Novy-Marx (2013), we calculate shareholders' equity as item $SEQ$ if available, or else common equity plus the carrying value of preferred stock (item $CEQ$+ item $PSTK$) if available, or else total assets minus total liabilities (item $AT$-item $LT$). We calculate deferred taxes as the deferred taxes and investment tax credits (item $TXDITC$) if available, or else deferred taxes and/or investment tax credit (item $TXDB$ and/or item $ITCB$). Depending on data availability, we use redemption (item $PSTKRV$), liquidation (item $PSTKL$), or par value (item $PSTK$) (in that order) to estimate the book value of preferred stock. |
| *Profitability* | Annual revenues (item $REVT$) minus cost of goods sold (item $COGS$), divided by total assets (item $AT$) |
| *Investment* | The growth of total assets (item $AT$) in year $t$ divided by total assets at the end of year $t-1$ |
| *Leverage* | Total debt (item $DLTT$ + item $DLC$) divided by the total asset (item $AT$) |
| *Cash* | Cash and short-term investments (item $CHE$) scaled by total assets (item $AT$) |
| *Dividends* | Cash dividends (item $DVC$+ item $DVP$) over book assets (item $AT$) |
| *Free cash flow* | The operating income before depreciation (item $OIBDP$) minus interest expenses (item $XINT$) minus income taxes (item $TXT$) minus capital expenditures (item $CAPX$), scaled by book value of total assets (item $AT$) |

| | |
|---|---|
| *Dividend payout ratio* | Total dividends (item $DVT$) divided by book value of equity (item $BE$) |
| *Repurchase* | The expenditure on the purchase of common and preferred stocks (item $PRSTKC$) minus preferred stock reduction (the first difference of item $PSTKL$) |
| *No Repurchase Indicator* | A dummy equal to one if a firm does not repurchase stocks |
| *ROA* | Net income (item $NI$) /average total assets (item $AT$) |
| *Tobin's Q* | The market value of assets divided by the book value of assets (item $AT$), where the market value of assets is calculated as the book value of total assets (item $AT$) plus the market value of common stocks less the sum of book value for common stocks (item $CEQ$) and the deferred taxes (item $TXDB$). |
| *S&P*500 | A dummy variable equal to one if a firm is in the $S\&P500$ firm list, zero otherwise |
| Source: CRSP | |
| *Return* | Annual stock return over the past twelve months |
| *Logsize* | The natural logarithm of market capitalization (stock price (item $PRC$) times shares outstanding (item $SHROUT$)) |
| *Logbm* | The natural logarithm of book value (item $BE$) divided by market capitalization (stock price (item $PRC$) times shares outstanding (item $SHROUT$)) |
| *Log*(*age*) | The natural logarithm of firm age, as measured by the number of years available in the CRSP |
| $ret_{n,0}$ | The n-month buy-and-hold stock returns relative to the value-weighted market return from CRSP before the AGM. |
| Source: ISS | |
| $\%Votes$ | The percentage of votes on ES shareholder proposals at the AGM for each firm year. |