Social Impact of Activist Hedge Funds: Evidence from Employee Satisfaction and Emission

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Abstract

We examine the impact of hedge fund activism on employee satisfaction and emission of target firms. Our results show that employees of target firms are more satisfied with senior management and work-life balance after hedge fund intervention. The increase in satisfaction is related with reduction in frictions in the workplace. However, the improvement in employee satisfaction is absent in the presence of proxy fights between management and activist hedge funds. From the environmental perspective, we find that target firms' plants emit less toxic chemicals following hedge fund activism campaigns, which is driven by endeavour to reduce regulatory sanction on violation of environmental laws. Our evidence leans towards the view that hedge fund activism improves the target firm value at least partly by enhancing non-financial performance.

KEYWORDS: Corporate Social Responsibility; Hedge Fund Activism; Employee satisfaction; Emission

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1. Introduction

It remains a hot debate whether hedge fund activism improves firm performance. Brav, Jiang, Partnoy, and Thomas (2008) show that hedge fund activism leads to positive valuation effect on target firms. A series of subsequent studies examine the underlying channels of how hedge fund activism enhances target firm value. Brav, Jiang, and Kim (2015) demonstrate that the improvement in production efficiency is a key driver of the better performance and Boyson, Gantchev, and Shivdasani (2017) present the evidence that the increase in firm value during merger and acquisition processes is attributed to hedge funds' target firm monitoring activities. More recently, Brav, Jiang, Ma, and Tian (2018) study the pattern of corporate innovation after hedge fund activism. Their results are in line with Brav, Jiang, and Kim (2015), showing that target firms increase their innovation output through efficient input allocation while they reduce their R&D expenditure.

Despite the above studies supporting the positive effect of hedge fund activism on firm value, some argue that the positive impact manifests at the expense of long-term growth of firms. Cremers, Giambona, Sepe, and Wang (2015) support that hedge fund activism decreases long-term firm value after controlling for the characteristics of target firms. The authors argue that target firms with more limited commitment problem experience the reduction in firm value after hedge fund activism. From practitioner's view, Laurence Fink and Hillary Clinton, the CEO of BlackRock and Presidential candidate, respectively, criticized the activists' short-term return-seeking behaviour which may distort the decision-making of corporate leaders for the long-term firm value.

In this paper, we study whether hedge fund activism is detrimental to the long-term growth by examining the social and environmental dimension of target firms. Our theoretical framework is in line with the stakeholder value maximization view that cooperation with stakeholder is a crucial factor of the firm's growth. A series of studies show the long-term valuation

effect of corporate social responsibility (Edmans, 2011; Green, Huang, Wen, and Zhou, 2019; Deng, Kang, and Low, 2013). The better management of stakeholder relationship leads to more support from related parties to the firm operation. This view is supported by the theory of firm boundaries and contract theory that consider a firm as a nexus of explicit and implicit contracts. Each stakeholder has explicit (e.g., supplier contracts, employment contracts, and etc.), and/or implicit contracts (e.g., job satisfaction, environment-friendly operation and etc.) with the firm. Cornell and Shapiro (1987) argue that announcements of major changes[1] of a firm provides information to both investors and other stakeholders, which triggers revaluation of implicit contracts of stakeholders, followed by positive abnormal returns. This explanation based on the stakeholder theory provides us with a testable hypothesis on hedge funds' influence on target firms in social and environmental aspects.

Firms can choose whether they default on their implicit contracts without declaring bankrupt or liquidating (Cornell and Shapiro, 1987). Although the valuation of implicit contracts is notoriously challenging, firms generally select to default on implicit promises when the benefit of delivering the promise exceeds the cost. In the context of hedge fund activism, short-term oriented activists are likely to force the management of target firms to default on implicit contracts if it leads to a temporary increase in stock prices. Cremers et al. (2015) illustrates that hedge funds' ability to determine changes in corporate policies or firm control may lead managers to develop myopic incentives (Stein, 1988; Karpoff and Rice, 1989). Such changes are also likely to reduce the incentives of important stakeholders to invest optimally in the firms (Shleifer and Summers, 1988; Johnson, Karpoff, and Yi, 2015). As an observed outcome, we expect target firms' stakeholder relationship to deteriorate after hedge fund activism. This prediction is consistent with the view that hedge funds extract short-term returns at the cost of breaking implicit contracts which lasts for the longer period.

[1] earnings, dividends, stock splits, rating changes, and etc

On the other hand, it is plausible that activist hedge funds do not deter a target firm's stakeholder relationship. Activist hedge funds influence target firms in various ways, such as acquiring board seats, lay-off, financial restructuring, and so on. When these corporate policy changes are made in a way to improve the firm performance, stakeholders are incentivized to optimally invest in the target firms as the firm is less likely to default. In this scenario, we anticipate the stakeholder relationship to be better after the hedge fund activism, which is in line with a series of studies, such as Brav et al. (2008) and Brav, Jiang, and Kim (2015) amongst others.

We first use the CSR score of a target firm as a measure of firms' engagement in stakeholder relationship. To evaluate the change in target firms' stakeholder engagement after hedge fund activism, we regress the CSR scores of target firms on hedge fund activism event using the difference-in-difference specification. Given the fact that hedge funds target firms with certain characteristics, such as under-performance, we use a propensity score matching in our regression setting. After controlling for the differences in observables between target and control firms through the matching process, we find that most variables are balanced. The results show that CSR scores do not significantly change after the intervention of activist hedge funds, which implies that hedge funds do not hurt the long-term commitment of target firms that contributes to the long-term growth of firms. We also test whether sub-categories of CSR scores, environmental and social scores, are reduced after hedge fund activism. The results show that activist hedge funds do not significantly decrease target firms' engagement in both dimension.

Next, we test whether there is a heterogeneous effect of activism on target firms' CSR score with respect to a tension between management and hedge funds. Hedge funds often seek board representation after they file 13D form and even require a change of a CEO for an extreme case. When there exists a resistance to the requests from target firms, hedge funds

have an option to quit or fight back. When the funds choose the latter, they often resolve the issue through a course of legal action such as a proxy fight. In this case, target firms experience heightened tension between activists and management, which less motivate stakeholders to optimally invest in the target firm since their firm-specific investment is likely to be void. We expect the effect of a hedge fund on CSR score to be negative when there is a proxy fight.

Our results show that activism is negatively correlated with CSR scores when hedge funds seek drastic changes in target firms through proxy fights. The decrease in CSR is mainly driven by employee relation. Our result is consistent with Boyson and Pichler (2018) that show the negative market reaction of target firms when target firms resist against hedge funds' action. To verify whether the reduction in CSR of target firms happens in the cases where severe tension developed between hedge funds and management, we also examine whether the target firm's CSR decreases after hedge fund activism when there is a director turnover. We find that there is no change in CSR score of target firm when board members are changed.

Overall, our results indicate that hedge fund activism, known as an additional channel of shareholder governance, does not necessarily worsen stakeholder relationship of target firms. The decrease in CSR score is only observed at the presence of proxy fights, which suggests that shareholder governance could be detrimental to firms' stakeholder relationship when there is heightened tension between shareholders and management.

One potential problem of the above results is a measurement of stakeholder relationship. While the CSR scores serve as overall stance or the degree of engagement in a particular dimension, it does not give us a clear idea of what the actual scores mean. In other words, its economic interpretation is obscure. To supplement our finding, we collect employee satisfaction and emission data to measure the social and environmental dimension of target

firms directly. The data enables us to test the effect of hedge fund activism on measurable outcomes of target firms in non-financial dimension.

Employees are one of the key stakeholders of firms whose satisfaction level on employers drives the future growth of company (Edmans, 2011). When employees feel that they are well treated and motivated by management, arguably, they are more willing to devote to the growth of the firm. In addition, high employee satisfaction is also likely to attract highly skilled future employees through a reputation channel. Edmans (2011) empirically documents that employee satisfaction is positively associated with long-term performance. In addition, Green et al. (2019) show that employee satisfaction improvement is positively related to firm fundamentals even in the near term.

We test whether hedge fund intervention improves employee satisfaction using Glassdoor data. When hedge funds seek changes in target firms, in order to improve firm value without sacrificing long-term growth, the satisfaction of target firm employees are likely to be improved or unchanged at least. Our findings show that the correlation between overall employee satisfaction and hedge fund activism is significantly positive. The satisfaction in sub-categories, including satisfaction on compensation, senior management, and work-life balance, are improved after the intervention. The rest, for example, career opportunities and corporate culture, appear to be unchanged.

While employees of target firms are more satisfied after hedge fund activism, we examine whether the results are different at the presence of proxy fights. It turns out that target firms with proxy fights are not significantly different from those without in the overall employee satisfaction level. However, the heightened tension between activists and target firms appears to have a heterogeneous effect on various dimension of employee satisfaction. Employee satisfaction decreases in corporate culture, senior management, and career oppor-

tunities while workers feel better for work-life balance.

A potential channel that can explain the increased employee satisfaction is efficient labour allocation. A stream of literature examines the relation between CSR and lawsuits. Hong, Kubik, Liskovich, and Scheinkman (2019) show that firms with higher CSR score experience lower sanctions from prosecutors. In a similar vein, Barnett, Hartmann, and Salomon (2018) reports that firms with greater CSR score suffer fewer lawsuit. Further, Brav, Jiang, and Kim (2015) report that labour productivity increases with the decrease in employment and stagnation in work hours and wages. The no change in satisfaction on compensation may be due to the stagnation in wages. The higher productivity coupled with job satisfaction could be achieved through reducing frictions in the workplace. As a consequence, we expect that labour-related lawsuits will decrease after hedge fund activism campaign. Our results are consistent with the expectation that the total and the ongoing number of labour-related litigation decline after hedge fund activism events.

Pollution is a negative externality which largely affects the welfare of local communities. Toxic pollutants have devastating results in human health while general emission, such as carbon dioxide significantly contributes to global warming, which manifests in the long-term. Given the high cost associated with reducing pollution (Walker, 2013), firms are less motivated to reduce their emission as long as they do not expect fines and penalties by violating regulatory limit. On the other hand, firms' voluntary effort for pollution abatement is possibly compensated by stakeholders who value the firm's engagement in protecting the environment.

We investigate whether hedge fund activism reduces emission at the plant level. Our findings indicate that target firms' plants emit less toxic chemicals to air after hedge fund investment, but there is no change in toxic release to water or disposal into the land. However, the finding

does not hold at the firm level. The evidence that the emission reduction does not manifest at the firm level, but still exist at the plant level, implies that at least the local communities where target firms' plants located to benefit from the activism events.

A mechanism that hedge funds intervention decreases plant-level emission is cost-saving incentives. As a violation of environmental laws incur regulatory costs, hedge funds are incentivized to force target firms to manage their environmental risk more carefully. We find that target firms experience reduction in the number of violation in relation to Clean Air Act, which leads to less monetary costs for penalties, complying action, and supplemental environmental project related to settlement with regulatory agencies. In the sensitivity tests of emission reduction effect by hedge funds, it is reported that target firms with more entrenched management reduce toxic emission less than those managed by non-entrenched managers while other governance measures including product market competition, board independence, and CEO power do not show the variation. The evidence that plants at target firms increase their offsite chemical release in other forms also suggests that target firms are more likely to comply with the regulation after the activism events.

To check the validity of our channel, we examine whether the reduction of emission is more concentrated on chemicals that are harmful to human or on chemicals that are closely monitored by local air quality system. When hedge funds care about environment (or local communities), the reduction is more likely to occurs in the toxic chemicals. On the other hand, the emission decreases in monitored chemicals if hedge funds seek to avoid regulatory sanction. Our results suggest that the reduction is stronger for chemicals tracked by local stations, implying that cost-saving motive drives the decrease in plant-level emission. To sharpen our explanation, we test whether pollution monitoring intensity change leads to the reduction of emission by target firms. Using the pollution monitoring site opening and closure data, it is shown that plant emission is reduced when new monitoring site is established

near the plants while the emission increases when near-by monitors are closed. The effects are more pronounced for the chemicals that are tracked by the monitoring stations.

Our contribution is following. Our paper sheds light on ongoing debate that myopic claim on activist hedge funds. Brav, Jiang, and Kim (2015) show that hedge funds improve firm value by efficient allocation of corporate resources while Cremers et al. (2015) argue that hedge fund activism exacerbate the limited commitment problem, which in turn complicates the optimal investment decisions of stakeholders. Practitioners also argue that the reported short-term value-enhancing effect comes at the expense of long-term growth given the relatively short investment period[2] of activist hedge funds. By examining the employee satisfaction that are correlated with long-term growth, we demonstrate that hedge fund actions improve the satisfaction of a key stakeholder, employees. Our results imply that activist hedge funds, on average, enhance the target firm value by changing corporate policies without the deterioration in CSR. Our findings also support the arguments of Cremers et al. (2015) under the condition that target firm managements fight back to the hedge funds.

This paper is also related to several studies that examine the relation between institutional ownership and CSR. For example, Chen, Dong, and Lin (2019) find that institutional ownership increases firms' CSR score and that firms have lower CSR score when their investors are distracted. Dyck, Lins, Roth, and Wagner (2019) report an international evidence that firms' CSR scores are positively related to institutional ownership, arguing that institutional owners have a positive effect on environmental and social issues. An important aspect of these studies is that the authors show that institutional owners promote CSR that has a long-term consequence even if they put the short-term pressure on firm performance. However, given that the activist hedge funds exercise their ownership right to increase the target firm value in a relatively short period, the existing studies are not likely to illustrate the whole picture

[2]Barry, Brav, and Jiang (2020) report that the median (average) investment horizon is 253 (497) days.

of effect of institutional ownership on firms' CSR. Our study shows that hedge fund activism does not decrease the CSR of target firms and that the reduction in CSR only materializes when activist hedge funds and target firms' management have proxy fights, which highlights the evidence of value destruction in shareholder governance.

Activist hedge funds execute a range of actions from top management level (change of CEO and/or acquiring a board seat) to employee level (restructuring production involving lay-offs). The current literature spots a light on top management level decision (e.g., governance changes), but we have relatively limited understanding on how these changes impact on lower employee level. One of existing studies is Brav, Jiang, and Kim (2015) who find that hedge funds intervention is associated with a reduction in work hours and stagnation in wages notwithstanding an increase in labor productivity at a plant level. Our study gives new evidence on how employees respond to hedge fund activism as a key stakeholder.

Lastly, our analysis of emission contributes a discussion on how environmental regulations affect firms' environmental decision in the angle of hedge fund activism. Target firms experience better management of environmental risk after the activism events. This finding suggests that the negative externality of pollution is addressed by activist hedge funds near the boundary of existing regulation, which highlights the importance of designing environmental laws.

2. Data

2.1. Data sources

2.1.1. Hedge Fund Activism

The sample of hedge fund activism events, covering 1994 to 2016, is an extension of Brav et al. (2008)[3]. These events are collected through 13D filings submitted to SEC. The filing is mandatory for any investor who owns more than 5% of any class of publicly traded securities of a company who intends to influence corporate policy or control. The data is supplemented using new searches. This leaves us with 4,260 activism events of 2,772 target firms by 847 activist hedge funds.

2.2. Corporate Social Responsibility

We employ MSCI Stats (formerly known as KLD) data to source for information about corporate social performance of target firms. It provides most of the comprehensive data on firm-level social ratings in several dimensions including community, workforce diversity, employee relations, human rights, and environmental impact. We construct an aggregate CSR measure, as well as CSR measure along each dimension by following Lins, Servaes, and Tamayo (2017). Then, we further aggregate community, workforce diversity, employee relations, and human rights category into social dimension. We do not consider governance score in MSCI Stats since the category is less reflective of firms' social stance. After merging with hedge fund activism events, the unique number of target firms is 899.

The advantages of using CSR data is its coverage and various dimension of social performance. Measuring a firm's social performance is a challenging task since there is little regulatory guideline to report such information. As a result, the CSR score is usually measured

[3]We thank Alon Brav for providing us with the hedge fund activism data

by questionnaires on firms' action, rather than the observed outcome.[4] The other method is giving a credit based on some observed outcomes with arbitrary threshold (or a vague cutoff point).[5] As a consequence, it is natural that Berg, Kölbel, and Rigobon (2020) find that several CSR measures do not converge, which is driven by the scope and measurement divergence.

To lessen the concern on CSR measurement, we employ two observed outcomes of firms' social commitment: employee satisfaction and emission. Green et al. (2019) show that informational contents in CSR measure is different from those in employee satisfaction. In the Table 2 of internet appendix of Green et al. (2019), the relation between CSR and employee satisfaction is insignificant after controlling for firm and year fixed effects. Gauging a firm's environmental engagement, it is often not clear how to aggregate many different pollutants. Our emission data is reported at plant-chemical level so that we do not have to use the aggregate the amount of different chemicals. In addition, the availability of plant-level emission data enables us to test hedge fund activism improves local environment by reducing emission.

2.2.1. Employee Satisfaction

We collect employee satisfaction data from Glassdoor which allows workers who have a company's email address to record their reviews on the firm. The coverage of Glassdoor includes public, private, government, and nonprofit entities in the period from 2008 onward. Glassdoor asks reviewers to assess their workplace in 5 sub-categories: work/life balance, culture & value, career opportunities, compensation & benefits, and senior management. In addition,

[4] A significant portion of indicators under employee relations belongs to this type. It includes the indicators below: cash profit sharing (EMP-STR-C), employee involvement (EMP-STR-D), employee health & safety (EMP-STR-G), supply chain labor standards (EMP-STR-H), labor management (EMP-STR-M), controversial sourcing (EMP-STR-N), and child labor (EMP-CON-G).

[5] For example, the indicator, union relations (EMP-STR-A), give a value of one when a company has high union density. Most indicators excluded in the previous footnote pertain to this type.

the reviewers separately rate the company for overall satisfaction level.[6] For all assessment categories, a five-level Likert scale using stars is used to provide employee satisfaction ratings. In addition, reviewers can also write their own comments using text.

Before merging with other database, firms that have less than 100 reviews over the sample period are excluded to ensure that the aggregated satisfaction rating on corporations is more likely to be representative opinion. This restriction leads us to use a shorter sample period from 2011 to 2016 with 1548 unique firms.[7] The match is done through hand-matching company names in Glassdoor to PERMNO identifiers. To supplement the accuracy of hand-matching, we also double check a firm's headquarter location and Chief Executive Officer name. After merging with hedge fund activism data, We are left with 205 unique target firms.

The bottom of Table 1 reports firm-level summary statistics of employee satisfaction. The average overall satisfaction score is 3.17 which is comparable to the one in Green et al. (2019), 3.2. It is noted that the variation in employee satisfaction is relatively larger across firms, but still exists for within firms. The scores of sub-categories are also analogous to those of Green et al. (2019), given that the difference only appears in the second decimal point.

2.2.2. Emission

Our emission data is retrieved from Toxic Release Inventory (TRI) managed by Environmental Protection Agency (EPA). The database is created by the Emergency Planning and Community Right-to-Know Act in 1986 after a series of spill of toxic chemicals between 1984 and 1985. The TRI contains the annual usage of 767 unique chemicals that can cause significant adverse human health and/or environmental effects. Despite the fact that TRI is the most comprehensive database for toxic chemical release, it has been criticized for its

[6]It is noted that the overall satisfaction is not the aggregation of subcategories. At a review level, some reviewers do not complete the sub-categories, but rate firms on overall satisfaction.

[7]Green et al. (2019) identify 3906 firms that matched with Center for Research in Securities Prices (CRSP), but a significant portion of these firms have insufficient number of reviews over time.

self-reporting nature and the change of industry coverage (Currie, Davis, Greenstone, and Walker (2015)). There also exist the minimum thresholds for reporting, plants could be included or excluded in TRI sample while the plants still emit toxic chemicals.

We link TRI with Compustat data by matching parent company name of plants in TRI to GVKEY identifier. The merged data is then matched to hedge fund activism events, which leaves us with 322 unique target firms from 1992 to 2014.[8] The final sample of emission analysis contains 72,539 plant-chemical-year level observations including matched sample to target firms.

2.3. Sample construction

For each of the activism event, we match a comparable firm following the approach by Brav et al. (2008) and Brav et al. (2018) using a propensity score matching. We use additional sets of variables and checked the balance of covariates to ensure the quality of the match. We calculate the propensity score by running a logistic regression of targeting on market value, book-to-market ratio, leverage, cash holding, dividend payout, R&D expenses, sales growth, analyst coverage and institutional ownership structure and the set of CSP scores in KLD database. These variables are listed by Brav et al. (2008) indicating significant prediction power of a firm receiving a HFA. After obtaining the propensity score, we match the target firm with a firm with the closest propensity score with replacement and force the matched firm to in the same SIC two-digit industry as the target firm. We report the balance of covariates tests in Table 2. It is noted that there is little difference in observables given no significant mean difference in covariates.

Next, for each activism event, we expand the matched sample to five years before and five

[8] Although TRI covers a longer period from 1987, we limit our sample period from 1992 to mitigate the impact of industry coverage changes by 1991.

years later to form a panel dataset, following Brav et al. (2018). For our analyses of employee satisfaction and emission, we restrict our sample to three years before and after the hedge fund intervention due to shorter sample span.

3. Empirical Results

In this section, we present a positive relation between employee satisfaction and hedge fund intervention. We then show that target firms reduce carbon emission at their plants.

3.1. Corporate Social Responsibility

To gauge the effect of hedge fund activism on target firm's CSR, we regress CSR scores on hedge fund activism event dummy following the specification in Brav et al. (2018), which is a standard difference-in-difference (DiD) regression framework:

$$CSR_{i,t} = \beta_0 + \beta_1 I(Target_i) \times I(Post_{i,t}) + \beta_2 I(Post_{i,t}) + \beta_3 I(Target_i) + \gamma Controls_{i,t} + \epsilon_{i,t} \quad (1)$$

where $CSR_{i,t}$ is CSR scores are composite and sub-categories of CSR scores from MSCI STAT database. We use the composite index of CSR, environmental and social sub-category indices as dependent variables. The regressor, $I(Target_i)$, is a dummy variable which takes one when a sample firm is targeted by activist hedge funds and $I(Post_{i,t})$ is a binary variable that has a value of one for the 4-year period after the hedge fund intervention. Consistent with Brav et al. (2018), our control variables include market value, sale growth, R&D expenses, Return on Asset (ROA), market-to-book ratio, cash holding, leverage ratio (leverage), and dividends. We also include firm and year fixed effects.

Table 3 shows the results of the regressions that examine the relation between firms' CSR scores and hedge fund activism events. In columns (1) to (3), the dependent variable is the CSR scores for the sample period from 1995 to 2016. In column (1), we run a regression of CSR score on hedge fund activism with all firm characteristics. The coefficient of $HFA \times Post$ (-0.02) is negative and statistically insignificant, suggesting that hedge fund activism does not deter target firms' engagement in CSR given its small economic magnitude (the standard deviation of CSR is approximately 0.57). In following examination of subcategories including environmental and social scores in column (2) and (3), respectively, we do not find evidence that hedge fund activism decreases firm performance in environmental and social dimension. In the appendix IA.1, we re-estimate the equation (1) using each subcategory of social score as dependent variables.[9] We find that there is no significant change in any sub-categories of social dimension after hedge fund activism. Overall, the evidence indicates that hedge fund activism does not deteriorate target firms' stakeholder relationship.

We next test whether target firms change their engagement in CSR depending on the degree of tension created by hedge fund activism. We employ records of proxy fight as a measure of tension between target firms and activists. A triple difference-in-differences specification is estimated by including all cross-product terms among $I(Target_i)$, $I(Post_{i,t})$, and $Proxy_{i,t}$ in the equation (1). We expect the coefficient of $I(Target_i) \times I(Post_{i,t}) \times Proxy_{i,t}$ to be negative if the increased tension between target firms and activists deters the long-term commitment of stakeholders and/or incentivize managers to be myopic.

The estimated coefficients are reported in Table 4. The dependent variables are the CSR, social, and environmental scores from column (1) to (3). Consistent with our prediction, the coefficient estimate is negative and statistically significant (-0.39) at 10 percent level. The magnitude of reduction in CSR associated with proxy fight is slightly larger than the half

[9]It includes community, diversity, employee, and humanity categories.

of interquartile range. The result indicates that target firms reduce their CSR engagement when there is severe tension between management and shareholders. To understand the sources of the decrease in CSR score, we run the regressions of sub-categories (social and environmental). It turns out that the social dimension is worsened by hedge fund intervention when there are proxy fights while the environmental score is not significantly changed. In the appendix IA.2, we further break down the social score into individual scores including community, workforce diversity, employee relations, and human rights to test which dimension of social score drives the results. It is shown that only employee relation is worsened at the presence of hedge fund intervention with proxy fights (the estimated coefficient is -0.25).

For the robustness check, we test whether the decrease in CSR engagement also presents in the other form of hedge fund action: governance change. As one of most common change requested by activists is board representation, we use the board member change as a measure of governance change. We estimate the same triple difference-in-differences model above but replacing $Proxy_{i,t}$ variable with $DT_{i,t}$, which is a dummy variable that takes a value of one when a firm experience board member changes. The coefficient is negative but statistically insignificant. The magnitude (-0.04) is also much lower than the coefficient with the proxy variable. The results confirm that hedge funds activism is not detrimental to the stakeholder relationship of target firm on average, but it occurs when there is heightened tension between activists and target firm management.

3.2. Glassdoor

In this section, we examine whether hedge fund activism affects target firms' employee satisfaction using Glassdoor rating data from 2008 to 2016. As Glassdoor data has limited coverage than our CSR data, we have smaller sample size than in the earlier analysis. Grennan (2019) hand-collect corporate culture variables from various sources and match them

with hedge fund activism events from 2002 to 2012. The number of unique target firm is 213 in our sample, which is similar to 196 in Grennan (2019). We also require our sample firms to have three years of observations before and after hedge fund activism events. More specifically, we estimate a standard DiD regression below:

$$\begin{aligned} Employee\ Satisfaction_{i,t} =& \beta_0 + \beta_1 I(Target_i) \times I(Post_{i,t}) + \beta_2 I(Post_{i,t}) \\ &+ \beta_3 I(Target_i) + \gamma Controls_{i,t} + \epsilon_{i,t} \end{aligned} \tag{2}$$

where $Employee\ Satisfaction_{i,t}$ is the satisfaction scores of compensation & benefits (compensation), senior management (senior mgmt), work-life balance (work&life balance), career opportunities (career prospects), culture & value (corporate culture), and the overall score. Control variables are same as the equation (1).

Table 5 reports the estimation results of employee satisfaction on hedge fund activism events. For column (1) to (5), we show the regression results of sub-categories of employee satisfaction for compensation, senior management, work-life balance, career prospects and company culture, respectively. In column (6), the dependent variable is the overall satisfaction of employees of a firm. The coefficient estimate on $I(Target_i) \times I(Post_{i,t})$ is positive and significant at 5% level for overall employee satisfaction (column 6). Its magnitude (0.11) suggests that hedge fund activism leads to a 0.11 points increase in the overall employee satisfaction. A possible explanation of the difference in results between Table 3 and 5 is the scope of measurement. As discussed in data section, the information content in the social and overall satisfaction scores is different. The former considers a firm's management on employee relations while the latter reflects the realized outcome (how employees feel about the firm) of such action as well as covers employee's view on broader corporate characteristics.

In the examination of sub-categories of employee satisfaction, we find that hedge fund activism particularly improves employee's satisfaction on senior management and work-life

balance. In column (2) and (3), the coefficients of $I(Target_i) \times I(Post_{i,t})$ are significantly positive (0.14 for both senior management and work-life balance). While the coefficients of other dimension are not statistically significant, they are also positive. Overall, the results indicate that employees are more satisfied with their workplaces after hedge fund intervention. It suggests that hedge funds' positive influence expands to target firms' employee satisfaction, which is an important contributing factor for long-term growth (Edmans, 2011). It is also noteworthy that the improvement of employee satisfaction increases stock returns in relatively short-term given that the positive relation between employee satisfaction change and stock return only lasts for the first quarter (Green et al., 2019). These findings are consistent with Brav, Jiang, and Kim (2015) that hedge funds involves actual restructuring work to improve firm value.

We next study how employee satisfaction changes with the degree of tension between management and activist using proxy fight records. We use the same triple DiD specification as the previous section of CSR to examine the heterogeneous effect of activists on target firms. We postulate that employees are less satisfied with target firms when there are proxy fights. Table 6 report the results of employee satisfaction on hedge fund activism with proxy fights. In column (6), the coefficient of $I(Target_i) \times I(Post_{i,t}) \times Proxy_{i,t}$ is positive (0.03), but insignificant. It suggests that overall employee satisfaction is not sensitive to the tension between management and activists. By examining the sub-categories of employee satisfaction, it is shown that the insignificance of overall satisfaction is driven by offsetting effects of sub-categories.

In column (5) of Table 6, the regression results of satisfaction on corporate culture are presented. The coefficient of interest is significantly negative, suggesting that the increased tension due to proxy fights lowers employees' satisfaction on corporate culture. The magnitude of coefficient (-1.01) is economically large as it is equivalent to 1.6 standard deviation.

In the other perspective, a target firm at 95% percentile in terms of corporate culture satisfaction will be placed at the median satisfaction level if the firm experiences proxy fights.

We find the similar results for employee satisfaction on senior management and career opportunities. The both coefficients are significantly negative, but the magnitude is relatively smaller than the one in corporate culture regression. For senior management, employees satisfaction reduces by 0.59 point (column 2), which is slightly larger than one standard deviation. The coefficient for career opportunities is -0.22, indicating that employees are concerned about their career prospects when there is a proxy fight. Surprisingly, the coefficient for work-life balance is significantly positive. A plausible interpretation is that management provides better treatment (i.e., better work-life balance) to employees when they need internal support to fight back the activist hedge funds. Lastly, employee satisfaction on compensation and benefits does not significantly change with the events of proxy fights.

3.2.1. Channel

In this section, we discuss a plausible channel that hedge fund activism improves the employee satisfaction of target firms.

It is not apparent if hedge funds purposely enhance job satisfaction of employees or it is unintentional consequence of their effort to improve target firm value. Although it is difficult to tease out their intention, the presence of activists is more likely to trigger a change in employee relation that is positively related to employee satisfaction. Brav, Jiang, and Kim (2015) show that target firms experience a decline in employment but an increase in productivity with stagnation in work hours and wages at plant level. These findings are

consistent with our firm-level labor outcomes reported in appendix IA.3.[10]

Given the evidence of Brav, Jiang, and Kim (2015), the higher productivity is likely to be achieved through more efficient labor allocation rather than monetary compensation or increase in work hours. We postulate that the efficient labor allocation increases target firms' employee satisfaction after hedge fund activism. Target firms often restructure their workforce after activism events to improve the firm performance. For example, target firms streamline business model as "selection and concentration strategy", which leads to the reduction in workload that is related to unproductive tasks. At the same time, the increase in job satisfaction is likely to cause less friction in the workplace including labor related lawsuits.

The lawsuit data is obtained from Federal Judicial Center (FJC) for the period between 1995 and 2016. To match the litigation data with our sample, we link the dependent name in FJC data to PERMNO. To identify the labor related lawsuits, we use 710, 720, 790, and 442 nature of suit (NOS) classification.[11] Each code represents fair labor standards act, labor/management relations act, labor/management reports & disclosure, other labor litigation, and civil rights jobs.[12] The cases classified in civil rights jobs (code 442) include discrimination based on race, religion, national origin, age, mental disability, gender, and sexual orientation by employers. The lawsuits in other NOS codes include disputes regarding minimum wage, unions and other labor related matters.

We examine whether risk of labor related lawsuits decrease after hedge fund activism using the same DiD model described in the equation (3). The labor related litigation risk is

[10]The results suggest that target firms decrease employment size, staffing costs including salaries and incentive pays. Although it is not statistically insignificant (close to 10 percent significance level), target firms are more likely to address the importance (or risk) of key employee management in their annual reports.

[11]The use of NOS to identify a certain type of lawsuit may be noisy. Boyd and Hoffman (2017) show that the use of NOS for employee discrimination (code 442) is well summarizing its intended legal contents.

[12]Hutton, Jiang, and Kumar (2015) also used NOS of 710, 720, 790, and 442 to measure companies' wrongdoing with employee rights.

measured by logarithm of the number of cases filed and the number of cases ongoing. The difference between the two measures is that the latter only counts the cases that do not settle or withdrawn. We include firm and year fixed effects in the estimation of the model. The coefficients of $I(Target_i) \times I(Post_{i,t})$ in both regressions are expected to be negative since more efficient labor allocation reduces frictions in workplaces that leads to litigation against the firm.

The estimation results presented in Table 7. Column (1) and (2) shows the results of the number of new cases filed and ongoing cases, respectively. The coefficient on $I(Target_i) \times I(Post_{i,t})$ is negative (-0.03) and statistically significant in column (1). In economic terms, target firms experience about 3.5% less labor related litigation after hedge fund activism. Similar results are reported in column (2). The coefficient (-0.05) is significant at 1% level, indicating that target firms reduce their ongoing labor related lawsuits by 5% after hedge fund engagement. The overall evidence suggests that target firms are exposed to less labor related litigation risk after hedge fund activism.

Subsequently, we test which type of lawsuits is reduced in the presence of activist hedge funds. The two dependent variables are constructed across different NOS codes in the same way as the aggregated ones. It is found that the reduced labor related litigation risk is mainly driven by NOS code of 442. The estimates are reported in column (3) and (4) of Table 7. The magnitude of coefficients of $I(Target_i) \times I(Post_{i,t})$ is close to those reported in column (1) and (2). For all other types of litigation, the results are reported in appendix table IA.4. The sign of coefficient is negative, but statistically insignificant.

3.3. Emission

In this section, we study whether target firms change their emission after hedge fund activism at plant level. All regressions use the sample of plants covered by the the EPA's TRI data from 1992 to 2014.

There are a number of ways to evaluate polluting behavior of firms. One is aggregating different types of pollution at firm-level. This approach is useful to see the overall amount of pollution generated by firms, but the downside is that the aggregation is not obvious across different sources of pollution, for example, air, water, land, and other. We, hence, analyze the effect of hedge fund activism campaigns on pollution at plant-chemical level. This allows us to use variation of different types of pollutants caused by firm actions or regulations.

To evaluate the effect of hedge fund activism on emission, we employ the DiD specification described in the below equation:

$$\begin{aligned} ln(emission_{i,j,t}) =& \beta_0 + \beta_1 I(Target_i) \times I(Post_{i,t}) + \beta_2 I(Post_{i,t}) \\ &+ \beta_3 I(Target_i) + \gamma_{c,t} + \alpha_{j,c} + \theta_{c,t} + \eta_{s,t} + \epsilon_{i,t} \end{aligned} \tag{3}$$

where $ln(emission_{i,j,t})$ is the logarithm of toxic chemical amount emitted by firm i at facility j. We consider a number of sources of pollution: air, on- and off-site water, land, and other. Onsite pollution is emitted at the area where a plant is located while off-site pollution is generated onsite, but transferred to a different place to be treated.

We employ most stringent fixed effects for β_3 to estimate the change in pollution release after hedge fund activism events. In our plant-level emission analysis, county×year fixed effect ($\gamma_{c,t}$) is considered to control for local environmental regulation impact. The facility×chemical fixed effect ($\alpha_{j,c}$) is used mitigate concerns on heterogeneity in the use of different chemicals across plants. The chemical×year fixed effect ($\theta_{c,t}$) is incorporated to control for a time-

varying difference in the use of chemicals. Lastly, the industry×year fixed effect is included to capture time-varying heterogeneity of pollution at industry-year level.

Table 8 reports the regression results of emission on the hedge fund activism. The coefficient on $I(Target_i) \times I(Post_{i,t})$ is negative (-0.13) in column (1), suggesting that target firms emit 13% less air pollution after hedge fund intervention. The 90% confidence interval of coefficient on $I(Target_i) \times I(Post_{i,t})$ in column (1) lies between -0.26 and -0.02. Although it's only significant at 10 percent level, the reported emission reduction is net of regulatory effect on environment. In fact, we find that the size of coefficient is larger (-0.21 in column (1) of Table IA.5) when we exclude count×year fixed effect, but directly interact $I(Target_i) \times I(Post_{i,t})$ with a dummy variable that takes a value of one when a plant is located in a regulated area.

It is noted that all water and land pollution are not significantly changed after hedge fund activism campaign. The only exception is offsite other pollution. In column (7), the estimate of $I(Target_i) \times I(Post_{i,t})$ is 0.34, indicating that target firms transfer other type of contaminated waste to offsite for disposal or treatment. The increase in offsite transfer suggests that target firms act better upon the environmental rules.

3.3.1. Channel

Brav et al. (2008) illustrate the disclosed objectives of activist hedge funds in 13D filings. The half of events state their goals as shareholder value maximization. The other half is a combination of various actions seeking change in capital structure, business strategies, and governance. Although there is little evidence that hedge funds exert effort to reduce emission of target firms, the funds have an incentive to do so if the reduction in emission helps the firm value enhancement.

A possible reason that hedge fund influence emitting behavior of target firms is to avoid the cost associated with regulatory intervention. When a plant violates environmental regulations, it is likely to incur costs for a firm. We posit that target firms reduce their number of violation in relation to environmental laws, in turn bear less cost of violation after hedge fund activism campaign.

We collect a record of enforcement action of EPA to test our hypotheses. Specifically, we use the total number of environmental violation and those related to Clean Air Act[13] (CAA). The same specification is used as the equation (3) with firm, year, and industry fixed effects given that the enforcement action is plant-year level data. The results are reported in Table 9. The dependent variable of first column is logarithm of total number of environmental violation (Violation) and the second one for logarithm of number of violation in relation to CAA. It is shown that the total violation number does not change, but those related to CAA decrease after hedge fund activism events. This finding implies that target firms reduce their air pollution in complying with CAA given that the results in Table 8 show only air pollution is reduced.

Next, we test whether the reduction of violation in CAA leads to less monetary costs for target firms. The cost of violation is not limited to penalties, but also possibly include other types of expenses including cost of complying action and supplemental environmental project (SEP)[14] in the settlement. We examine whether these costs are reduced after hedge fund activism.

[13]The Clean Air Act of 1963 (42 U.S.C. § 7401) is a United States federal law designed to control air pollution on a national level. It is one of the first and most influential environmental laws in the US, which is enforced regardless of political or economic consideration.

[14]EPA states that an alleged violator may propose to undertake a project to provide tangible environmental or public health benefits to the affected community or environment, that is closely related to the violation being resolved, but goes beyond what is required under federal, state or local laws.

We present our estimation results in Table 9 from column (3) to (6). All dependent variables are transformed in logarithmic form. In general, all types of costs are reduce after hedge fund intervention. The penalty payment is reduced by 7% and complying action cost approximately by 9% in column (3) and (4). Given that the mean values of penalty and complying costs are 0.4 million and 14.6 million, respectively, the effect of cost reduction is not economically negligible. In column (6), the coefficient of interest is -0.05, indicating that hedge fund activism campaign decreases the cost of SEP by 5%.

Our findings suggest that the emission reduction by hedge fund activism campaign is related to cost saving effort by avoiding regulatory sanction. A plausible alternative hypothesis is that target firms reduce their emission by hedge funds since hedge funds obtain higher utility in providing safer environment in local area. To check the validity of our channel, we test whether target firms reduce emission of chemicals that are more dangerous to human. Given the results that toxic chemical reduction is concentrated in release to air, we investigate which type of chemical release decreases after hedge fund activism campaign. We use ozone, particulate matter (PM), and lead related chemicals as our dependent variables.[15] If hedge funds consider environmental aspect of investments, we expect that the size of coefficient of $I(Target_i) \times I(Post_{i,t})$ is larger in chemicals that widely known as pernicious to human. The estimation results are given in Table 10. The regressors and fixed effects are same as those in equation (3).

For ozone (column 1), we find that the coefficient of interest (-0.08) is less than the one (-0.13) reported in column (1) of Table 8. The analysis of lead (column 3) also shows the similar results. In contrast, the magnitude of coefficient in PM regression appears to be larger at 10 percent significance level. A possible explanation is that PM is more visible than ozone and lead, which leads to more careful management of chemicals that contribute

[15]The allocation of individual chemicals into the above classification is performed following Greenstone (2003).

to PM by firms. One drawback of this approach is that the chemicals classified as ozone, PM, and lead are also tracked closely by regulators. Hence, it is difficult to conclude that the emission reduction by hedge fund activism is mainly driven by regulation.

For a robustness check, we investigate whether target firms emit less for the chemicals that are closely monitored by local Air Quality System (AQS). If the emission reduction is in line with effort to reduce financial (regulatory) sanction, their emission reduction is more likely to be concentrated on chemicals monitored. The result is reported in column (4) of Table 10. The coefficient of interest is significantly negative at 5% level. The magnitude is -0.24 which is nearly twice larger than the one reported in column (1) of Table 8. The finding implies that target firms' emission reduction is more pronounced in chemicals that are closely monitored by local stations.

In effort to disentangle the regulation effect from the one of social preference, we employ monitoring site opening and closure to proxy the change in the intensity of monitoring. Arguably, the new establishment and closure of monitoring site are plausible exogenous variations in monitoring intensity change given that the location, establishment and/or closure of monitoring site is not determined by local firms but government agencies.[16] A large number of monitoring sites have been set up across the US, but there are around 3,400 monitors that measure pollution in local area to determine whether a county meet National Ambient Air Quality Standard (NAAQS). The pollution level collected by NAAQS flagged monitors is critical source of determination of non-attainment status of a county.[17] We only focus on NAAQS flagged monitor site establishment since it does have higher regulatory power. We postulate that the emission reduction of target firms by hedge fund activism campaign is more pronounced when a plants experience new monitoring site establishment nearby (the

[16]It is possible that firms lobby the government to locate monitoring site far from their plants, but we couldn't find the anecdotal evidence.

[17]When a county is designated as non-attainment, the emitting activities in the county is restricted. For example, a new plant opening becomes harder due to higher requirement of abatement facilities.

sign of $I(Target_i) \times I(Post_{i,t}) \times Increase$ is negative). Similarly, the closure of monitoring sites leads target firms to emit more (the sign of $I(Target_i) \times I(Post_{i,t}) \times Decrease$ is positive).

The estimated coefficients are reported in Table11. In column (1), target firms with new nearby NAAQS monitors decrease emission 12% more compared to those without. The effect is slightly stronger when we restrict our sample to only chemicals that are tracked by monitors. The results of monitoring site closure depict a clearer picture on the regulation effect on the emission reduction on target firms. Plants with closure of nearby NAAQS monitors emit 71% more than those without. When the sample is restricted to the chemicals traced by monitors, the coefficient size becomes larger (86%). The evidence suggest that hedge funds' incentive to reduce emission is driven by regulation in place and reducing the likelihood of incurring violation costs.

We also test whether the emission reduction effect by activist hedge funds is sensitive to target firm governance. Specifically, we employee a number of governance measures including E-index (management entrenchment), Lerner index (product market competition), the percentage of institutional ownership, and a dummy variable that has a value of one when CEO serves a chairman of board. The estimated results are reported in Table 12. While most governance measures do not change the sensitivity of emission, we find that target firms with entrenched management experience less emission reduction compared to target firms with non-entrenched management.

We also check whether the emission reduction is driven by the installation of emission abatement effort. We find little evidence to support this channel given the results presented in appendix Table IA.6. Lastly, we attempt to investigate emission reduces after hedge fund activism events at firm level given the evidence that the environment score does not change

(Table 3). The aggregate the outcome variables in Table 8 are used as dependent variables. In the unreported results, we do not find any significant change in emission at firm level. This suggests that the environmental performance of target firms do not manifest at firm level, but still hedge fund activism appears to reduce emission at local level, which benefits the local communities.

4. Conclusion

We find hedge fund activism does not deter the stakeholder relationship of target firms on average. This evidence supports the previous findings that activist hedge funds improve firm performance through financial engineering and/or real asset allocation not at the expense of long-term growth.

Table 1: Summary Statistics

This table provides descriptive statistics of our sample. Firm characteristics data is obtained from Compustat and CSR scores are collected from MSCI Stats (formerly known as KLD). The sample spans from 1995 to 2016. The variables of board characteristics are retrieved from Boardex and legal cases of our sample firms are acquired from Federal Judicial Center (FJC). Corporate donation data is gathered from Foundationsearch.com and employee satisfaction ratings are collected from Glassdoor website.

	N	Mean	Std	25%	50%	75%
Firm Characteristics						
Total Assets	17,670	7,730.44	23,635.78	453.33	1,371.74	4,648.75
Market Cap	17,670	4,840.82	12,607.48	418.01	1,087.97	3,294.75
Sale Growth	17,670	0.10	0.28	-0.03	0.06	0.17
R&D	17,670	0.03	0.07	0.00	0.00	0.04
ROA	17,670	0.01	0.13	-0.00	0.03	0.07
Market-to-Book	17,670	1.76	1.03	1.12	1.42	1.98
Leverage	17,670	0.25	0.22	0.05	0.21	0.37
CSR scores (KLD) and corporate donations						
CSR	17,670	-0.16	0.58	-0.50	-0.15	0.14
COM	17,670	0.01	0.18	0.00	0.00	0.00
DIV	17,670	-0.13	0.35	-0.50	0.00	0.14
EMP	17,670	-0.04	0.20	-0.20	0.00	0.00
ENV	17,670	0.02	0.16	0.00	0.00	0.00
HUM	17,670	-0.01	0.13	0.00	0.00	0.00
CGOV	17,670	-0.04	0.26	-0.25	0.00	0.00
Director (Boardex)						
Affliation	17,670	0.05	0.14	0.00	0.00	0.09
No. of Affliated	17,670	0.49	1.34	0.00	0.00	1.00
Director Turnover	17,670	0.39	0.49	0.00	0.00	1.00
proxy	17,670	0.08	0.28	0.00	0.00	0.00
Legal Cases (FJC)						
No. of case filed	17,670	1.50	16.12	0.00	0.00	1.00
No. of on-going	17,670	0.43	0.85	0.00	0.00	0.69
FoundationSearch.com						
Contribution to Corporate Foundation($m)	1,275	5.11	14.54	0.00	0.65	3.60
Employee Satisfaction (Glassdoor)						
Overall	1,741	3.17	0.58	2.80	3.16	3.53
Work-life balance	1,741	3.14	0.62	2.77	3.13	3.52
Culture	1,741	3.14	0.65	2.74	3.12	3.57
Career prospects	1,741	2.97	0.55	2.64	2.96	3.29
Compensation	1,741	3.22	0.59	2.83	3.24	3.59
Management	1,741	2.75	0.58	2.40	2.74	3.03

Table 2: Pre-event balance of covariates

This table reports firm-level characteristics for the subsample of target firms matched with KLD CSR score data and for the control sample. The control sample is selected by matching each target firm to a non-target firm from the same industry (2-digit SIC) with the closest propensity score, where the propensity score is evaluated using market value, book-to-market ratio, leverage, cash holding, dividend payout, R&D expenses, sales growth, analyst coverage and institutional ownership structure and the set of CSR scores in KLD database. The variable values are measured as of the year prior to the hedge fund intervention. For each observable, we report the mean, standard deviation, 25th, 50th and 75th percentiles. We also report the t-statistics for the differences in mean values between the target and matched firms. ***, **, and * indicate significance at the 10%, 5%, and 1% level, respectively.

	Target Firms					Control Firms						
	Mean	S.D.	p25	p50	p75	Mean	S.D.	p25	p50	p75	Diff.	t-stat
Total Assets	7,253.95	24,448.7	412.88	1,095.69	3,806.18	6,683.88	19,209.74	384.68	1,221.2	4,553.53	570.07	0.58
Market Cap	4,277.54	12,545.13	363.07	879.56	2,797.16	4,213.81	10,009.49	400.69	1,010.67	3,337.02	63.73	0.13
R&D	0.03	0.06	0.0	0.0	0.04	0.04	0.07	0.0	0.0	0.05	-0.0	-1.32
ROA	0.02	0.11	-0.0	0.03	0.07	0.02	0.12	0.0	0.04	0.07	0.0	0.01
Market-to-Book	1.71	0.89	1.12	1.44	1.96	1.79	1.03	1.15	1.43	2.03	-0.08*	-1.94
Leverage	0.23	0.21	0.04	0.2	0.36	0.23	0.22	0.04	0.19	0.35	-0.0	-0.08
CSR	-0.17	0.57	-0.5	-0.19	0.04	-0.19	0.53	-0.5	-0.25	0.09	0.02	0.92
COM	-0.0	0.16	0.0	0.0	0.0	0.01	0.15	0.0	0.0	0.0	-0.01	-0.85
DIV	-0.12	0.35	-0.5	0.0	0.14	-0.15	0.34	-0.5	0.0	0.14	0.04**	2.31
EMP	-0.06	0.2	-0.25	0.0	0.0	-0.05	0.2	-0.25	0.0	0.0	-0.01	-1.32
ENV	0.01	0.16	0.0	0.0	0.0	0.01	0.16	0.0	0.0	0.0	0.0	0.64
HUM	-0.01	0.14	0.0	0.0	0.0	-0.01	0.11	0.0	0.0	0.0	-0.0	-0.01

Table 3: CSR after Hedge Fund Activism

This table presents difference-in-difference regression of CSR performance on hedge fund activism events for the period from 1995 to 2016. The sample is the stacked 5 years before and after each activism event, including the target and matched non-target firm. HFA is the indicator for the target firm and Post is the indicator for post-event. In column (1) the dependent variable is the composite CSR score while in column (2) and (3) the dependent variables are sub-scores reflecting environmental and social performance of firms, respectively. In all specifications, we control for year and firm fixed effects. The t-statistics adjusted for standard errors clustered at the firm level are reported in the parentheses. *,**,*** indicates significance level at 10%, 5%, 1% level.

	(1)	(2)	(3)	(4)
VARIABLES	CSR	ENV	Social	Log(Cont($m))
HFA×Post	-0.020	-0.007	-0.013	-0.195*
	(-0.97)	(-1.25)	(-0.68)	(-1.80)
Post	-0.008	-0.008	-0.000	0.080
	(-0.50)	(-1.56)	(-0.01)	(0.80)
Market Value	0.000*	0.000	0.000*	0.000
	(1.73)	(0.32)	(1.93)	(1.46)
Sale Growth	0.002	0.004	-0.003	0.027
	(0.11)	(1.09)	(-0.19)	(0.20)
R&D expenses	0.038	0.009	0.029	4.810*
	(0.17)	(0.17)	(0.14)	(1.85)
ROA	-0.012	-0.006	-0.006	-0.337
	(-0.25)	(-0.51)	(-0.13)	(-0.67)
Market-to-book	-0.016**	-0.005**	-0.011	-0.055
	(-2.01)	(-2.27)	(-1.59)	(-0.86)
Cash Holding	0.078	0.023	0.055	1.235***
	(1.38)	(1.55)	(1.08)	(2.75)
Leverage	0.126**	0.025*	0.101*	0.865**
	(2.32)	(1.69)	(1.95)	(2.36)
Dividends	-0.051	0.018	-0.070	0.008
	(-0.13)	(0.16)	(-0.20)	(0.00)
No. of Obs	17,599	17,599	17,599	1,270
R^2	0.66	0.60	0.63	0.57

Table 4: CSR with Proxy Fights and Director Turnover

This table presents the results of triple difference-in-difference regressions of CSR performance on hedge fund activism events in relation to proxy fights and director turnover for the period from 1995 to 2016. The sample is the stacked 5 years before and after each activism event, including the target and matched non-target firm.HFA is the indicator for the target firm and Post is the indicator for post-event. In column (1) and (4) the dependent variable is the composite CSR score. In column (2) and (5) the dependent variables are social score of a firm. *Proxy* is a dummy variable that takes a value of one when a firm experiences proxy fights. The variable, *Dir.Turnover*, is a dichotomous variable that has a value of one if a firm experiences director turnover. In all specifications, we control for year and firm fixed effects. The t-statistics adjusted for standard errors clustered at the firm level are reported in the parentheses. *,**,*** indicates significance level at 10%, 5%, 1% level.

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	CSR	Social	ENV	CSR	Social	ENV
HFA×Post×Proxy	-0.395*	-0.359*	-0.036			
	(-1.71)	(-1.78)	(-1.03)			
HFA×Post×Dir. Turnover				-0.044	-0.034	-0.010
				(-1.05)	(-0.91)	(-0.78)
HFA×Post	-0.022	-0.012	-0.010	-0.005	-0.001	-0.004
	(-1.02)	(-0.63)	(-1.58)	(-0.22)	(-0.06)	(-0.58)
Post	-0.011	-0.003	-0.008	-0.023	-0.011	-0.012**
	(-0.69)	(-0.20)	(-1.62)	(-1.20)	(-0.63)	(-2.17)
Proxy	-0.229	-0.192	-0.037**			
	(-1.29)	(-1.06)	(-2.21)			
HFA×Proxy	0.238	0.212	0.026			
	(1.32)	(1.15)	(1.22)			
Post×Proxy	0.426*	0.373*	0.052			
	(1.88)	(1.89)	(1.60)			
HFA×Dir. Turnover				0.045	0.021	0.023
				(1.15)	(0.61)	(1.64)
Post×Dir. Turnover				0.045	0.033	0.012
				(1.39)	(1.13)	(1.20)
Market Value	0.000*	0.000**	0.000	0.000*	0.000**	0.000
	(1.80)	(2.01)	(0.26)	(1.82)	(2.04)	(0.27)
Sale Growth	0.003	-0.001	0.004	0.003	-0.000	0.004
	(0.25)	(-0.04)	(1.06)	(0.24)	(-0.03)	(1.03)
R&D expenses	0.035	0.024	0.011	0.039	0.029	0.010
	(0.17)	(0.13)	(0.21)	(0.19)	(0.16)	(0.20)
ROA	-0.018	-0.012	-0.006	-0.015	-0.009	-0.006
	(-0.40)	(-0.28)	(-0.55)	(-0.33)	(-0.21)	(-0.55)
Market-to-book	-0.014*	-0.010	-0.004**	-0.015**	-0.010	-0.005**
	(-1.96)	(-1.56)	(-2.19)	(-1.99)	(-1.58)	(-2.23)
Cash Holding	0.075	0.053	0.022	0.076	0.054	0.021
	(1.34)	(1.04)	(1.50)	(1.35)	(1.06)	(1.49)
Leverage	0.125**	0.099*	0.026*	0.127**	0.101*	0.026*
	(2.31)	(1.94)	(1.71)	(2.33)	(1.96)	(1.72)
Dividends	-0.127	-0.121	-0.006	-0.106	-0.107	0.001
	(-0.40)	(-0.41)	(-0.07)	(-0.33)	(-0.37)	(0.02)
Dir. Turnover				-0.059**	-0.031	-0.029**
				(-2.03)	(-1.14)	(-2.51)
No. of Obs	17,599	17,599	17,599	17,599	17,599	17,599
R^2	0.66	0.63	0.60	0.66	0.63	0.60

Table 5: Employee Satisfaction and Hedge Fund Activism

This table presents difference-in-difference regression of employee satisfaction on hedge fund activism campaigns for the period from 2008 to 2016. The sample is the stacked 3 years before and after each activism event, including the target and matched non-target firm. HFA is the indicator for the target firm and Post is the indicator for post-event. From column (1) to (6), the dependent variables are the satisfaction scores on compensation, senior management, work-life balance, career prospects, corporate culture, and overall, respectively. In all specifications, we control for year and firm fixed effects. The t-statistics adjusted for standard errors clustered at the firm level are reported in the parentheses. *,**,*** indicates significance level at 10%, 5%, 1% level.

	(1) Compensation	(2) Senior Mgmt	(3) Work&life Balance	(4) Career Prospects	(5) Corporate Culture	(6) Overall
HFA×Post	0.070	0.143**	0.147**	0.070	0.055	0.111**
	(1.41)	(2.37)	(2.39)	(1.24)	(1.03)	(2.17)
Post	-0.014	-0.105**	-0.069	-0.056	-0.067*	-0.095**
	(-0.38)	(-2.20)	(-1.41)	(-1.30)	(-1.76)	(-2.41)
Market Value	0.000***	0.000**	-0.000	0.000	0.000**	0.000
	(2.60)	(2.07)	(-0.04)	(1.21)	(2.06)	(1.02)
Sale Growth	-0.077	0.096	-0.019	-0.016	0.029	0.073
	(-0.92)	(0.86)	(-0.21)	(-0.16)	(0.28)	(0.75)
R&D expenses	-1.183	-2.081	-1.832	0.168	-2.067	-1.239
	(-1.22)	(-1.39)	(-1.16)	(0.19)	(-1.03)	(-1.00)
ROA	0.259	0.281	-0.003	0.142	0.310	0.353
	(1.48)	(1.33)	(-0.01)	(0.51)	(1.30)	(1.39)
Market-to-book	-0.009	0.057*	-0.029	0.042	0.017	0.002
	(-0.31)	(1.73)	(-0.78)	(1.20)	(0.51)	(0.06)
Cash Holding	0.141	-0.142	0.033	0.065	-0.152	0.003
	(0.64)	(-0.44)	(0.10)	(0.22)	(-0.47)	(0.01)
Leverage	0.116	0.054	-0.008	-0.044	0.119	-0.066
	(0.53)	(0.24)	(-0.03)	(-0.19)	(0.48)	(-0.28)
Dividends	-0.153	0.326	-0.134	0.357	0.205	0.530
	(-0.12)	(0.21)	(-0.09)	(0.23)	(0.15)	(0.39)
No. of Obs	1,701	1,701	1,701	1,701	1,701	1,701
R^2	0.77	0.58	0.63	0.56	0.66	0.64

Table 6: Employee Satisfaction with Proxy Fights

This table presents the results of triple difference-in-difference regressions of employee satisfaction on hedge fund activism events in relation to proxy fights and director turnover for the period from 1995 to 2016. The sample is the stacked 3 years before and after each activism event, including the target and matched non-target firm. HFA is the indicator for the target firm and Post is the indicator for post-event. From column (1) to (6), the dependent variables are the satisfaction scores on compensation, senior management, work-life balance, career prospects, corporate culture, and overall, respectively. *Proxy* is a dummy variable that takes a value of one when a firm experiences proxy fights. The variable, $Dir.Turnover$, is a dichotomous variable that has a value of one if a firm experiences director turnover. In all specifications, we control for year and firm fixed effects. The t-statistics adjusted for standard errors clustered at the firm level are reported in the parentheses. *,**,*** indicates significance level at 10%, 5%, 1% level.

VARIABLES	(1) Compensation	(2) Senior Mgmt	(3) Work&life Balance	(4) Career Prospects	(5) Corporate Culture	(6) Overall
HFA×Post×Proxy	0.019	-0.592***	0.352***	-0.225*	-1.007***	0.033
	(0.13)	(-4.49)	(2.91)	(-1.87)	(-7.76)	(0.30)
Post	-0.012	-0.106**	-0.066	-0.057	-0.068*	-0.094**
	(-0.33)	(-2.19)	(-1.35)	(-1.31)	(-1.75)	(-2.37)
HFA×Post	0.051	0.134**	0.118*	0.052	0.029	0.092*
	(1.03)	(2.15)	(1.88)	(0.91)	(0.54)	(1.75)
1.proxy	-0.046	-0.256***	-0.025	-0.144***	-0.371***	-0.106***
	(-1.24)	(-5.45)	(-0.55)	(-3.61)	(-9.64)	(-2.72)
HFA×1.proxy	-0.065	0.173*	-0.172**	0.023	0.177**	-0.016
	(-0.62)	(1.93)	(-2.20)	(0.27)	(2.17)	(-0.21)
Post×1.proxy	0.146***	0.707***	-0.100*	0.405***	1.279***	0.143**
	(2.63)	(10.87)	(-1.89)	(7.34)	(19.29)	(2.34)
Market Value	0.000**	0.000**	-0.000	0.000	0.000**	0.000
	(2.44)	(2.22)	(-0.20)	(1.36)	(2.03)	(0.95)
Sale Growth	-0.068	0.096	-0.013	-0.021	0.036	0.079
	(-0.84)	(0.89)	(-0.14)	(-0.22)	(0.37)	(0.82)
R&D expenses	-1.138	-1.859	-1.747	0.264	-1.887	-1.095
	(-1.14)	(-1.26)	(-1.10)	(0.31)	(-0.93)	(-0.88)
ROA	0.252	0.282	-0.015	0.154	0.303	0.351
	(1.46)	(1.34)	(-0.06)	(0.56)	(1.29)	(1.39)
Market-to-book	0.000	0.059*	-0.015	0.041	0.024	0.009
	(0.02)	(1.96)	(-0.45)	(1.41)	(0.76)	(0.31)
Cash Holding	0.124	-0.163	-0.021	0.041	-0.193	-0.016
	(0.56)	(-0.50)	(-0.06)	(0.14)	(-0.58)	(-0.06)
Leverage	0.126	0.069	0.002	-0.028	0.140	-0.055
	(0.57)	(0.30)	(0.01)	(-0.12)	(0.57)	(-0.23)
Dividends	-0.002	0.289	-0.197	0.392	0.247	0.404
	(-0.00)	(0.22)	(-0.16)	(0.29)	(0.21)	(0.35)
No. of Obs	1,701	1,701	1,701	1,701	1,701	1,701
R^2	0.77	0.58	0.63	0.56	0.66	0.64

Table 7: Employee related Litigation and Hedge Fund Activism

This table presents difference-in-difference regression of labor-related litigation on hedge fund activism events for the period from 1995 to 2016. The sample is the stacked 5 years before and after each activism event, including the target and matched non-target firm. HFA is the indicator for the target firm and Post is the indicator for post-event. In column (1) the dependent variable is the logarithm of total labor-related litigation number of a firm in a year while in column (2) the dependent variable is the logarithm of number of new labor-related litigation filed. In column (3) and (4), the dependent variable is the logarithm of total labor discrimination litigation number and the logarithm of number of new labor discrimination litigation filed, respectively. The labor discrimination litigation belong to 442 nature of suits in Federal Judicial Center database. In all specifications, we control for year and firm fixed effects. The t-statistics adjusted for standard errors clustered at the firm level are reported in the parentheses. *,**,*** indicates significance level at 10%, 5%, 1% level.

	(1)	(2)	(3)	(4)
VARIABLES	Ln(Cases filed)	Ln(Ongoing)	Ln(Cases filed):442	Ln(Ongoing):442
HFA×Post	-0.037***	-0.055***	-0.027**	-0.044***
	(-3.51)	(-3.89)	(-2.45)	(-3.06)
Post	0.035***	0.050***	0.031***	0.042***
	(3.92)	(4.15)	(3.31)	(3.55)
Market Value	0.000	0.000	0.000	0.000
	(0.66)	(0.71)	(1.50)	(1.35)
Sale Growth	-0.023***	-0.030***	-0.022***	-0.029***
	(-2.80)	(-2.94)	(-2.83)	(-3.13)
R&D expenses	-0.056	-0.046	-0.008	0.003
	(-0.88)	(-0.57)	(-0.12)	(0.04)
ROA	-0.054**	-0.064**	-0.042*	-0.056**
	(-2.10)	(-2.15)	(-1.66)	(-2.10)
Market-to-book	-0.005	-0.009	-0.005	-0.010*
	(-1.14)	(-1.44)	(-1.24)	(-1.79)
Cash Holding	-0.073**	-0.092**	-0.056*	-0.064
	(-2.25)	(-2.16)	(-1.78)	(-1.53)
Leverage	-0.023	-0.030	-0.033	-0.046
	(-0.84)	(-0.82)	(-1.11)	(-1.23)
Dividends	0.265	0.405*	0.282	0.433*
	(1.44)	(1.76)	(1.53)	(1.93)
No. of Obs	17,599	17,599	17,599	17,599
R^2	0.65	0.70	0.67	0.72
Firm FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Table 8: Pollution and Hedge Fund Activism

This table presents difference-in-difference regression of different sources of pollution on hedge fund activism events for the period from 1992 to 2016. The sample is the stacked 5 years before and after each activism event, including the target and matched non-target firm. HFA is the indicator for the target firm and Post is the indicator for post-event. In column (1) the dependent variable is the logarithm of the amount of chemicals emitted to air. From column (2) to (4), the dependent variables are the logarithm of the amount of chemicals emitted to water, land, and other where a plant is located, respectively. From column (5) to (7), the same definition used for offsite emission. The data is from Toxics Release Inventory maintained by EPA. In all specifications, we control for county*year, facility*chemical, chemical*year and industry*year fixed effects. The t-statistics adjusted for standard errors clustered at the firm level are reported in the parentheses. *,**,*** indicates significance level at 10%, 5%, 1% level.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		Onsite			Off-site		
VARIABLES	Air	Water	Land	Other	Water	Land	Other
HFA×Post	-0.138*	-0.040	-0.005	0.007	0.055	0.015	0.342**
	(-1.86)	(-1.04)	(-0.09)	(0.34)	(1.03)	(0.16)	(2.16)
HFA	0.146	0.160***	0.014	-0.019	-0.054	-0.340*	-0.295
	(0.68)	(2.88)	(0.15)	(-0.63)	(-0.70)	(-1.77)	(-1.35)
Post	0.006	0.020	0.091**	-0.021	-0.041	-0.041	-0.200*
	(0.08)	(0.64)	(2.15)	(-1.39)	(-0.98)	(-0.58)	(-1.87)
No. of Obs	66,894	66,894	66,894	66,894	66,894	66,894	66,894
R^2	0.96	0.89	0.96	0.87	0.89	0.89	0.81
County*Year FE	YES	YES	YES	YES	YES	YES	YES
Facility*Chemical FE	YES	YES	YES	YES	YES	YES	YES
Chemical*Year FE	YES	YES	YES	YES	YES	YES	YES
Industry*Year	YES	YES	YES	YES	YES	YES	YES

Table 9: Environmental Violation and Penalty

This table presents difference-in-difference regressions of environmental violation and penalties on hedge fund activism campaigns for the period from 1992 to 2016. The sample is the stacked 5 years before and after each activism event, including the target and matched non-target firm. HFA is the indicator for the target firm and Post is the indicator for post-event. In column (1) the dependent variable is the logarithm of the total number of environmental violation while in column (2) the dependent variable is the logarithm of total number of violation related to Clean Air Act. In column (3) the dependent variable is the logarithm of total penalties paid by a firm to federal, state, and local agencies. For column (4) and (5), the dependent variables are the logarithm of costs of complying action and supplemental environmental project, respectively. The enforcement data is obtained from Enforcement and Compliance History Online. In all specifications, we control for county*year, facility*chemical, chemical*year and industry*year fixed effects. The t-statistics adjusted for standard errors clustered at the firm level are reported in the parentheses. *,**,*** indicates significance level at 10%, 5%, 1% level.

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Violation	CAA	Penalty	Complying	Supplement
HFA×Post	0.002	-0.004**	-0.074**	-0.088**	-0.050***
	(0.44)	(-2.25)	(-1.98)	(-2.55)	(-3.07)
HFA	0.002	-0.002	0.001	0.021	0.041**
	(0.24)	(-0.93)	(0.01)	(0.41)	(2.15)
Post	0.001	-0.000	0.038	0.028	0.026**
	(0.38)	(-0.02)	(1.22)	(1.13)	(1.98)
No. of Obs	22,969	22,969	22,969	22,969	22,969
R^2	0.11	0.06	0.07	0.06	0.04
Firm FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES

Table 10: Types of chemicals and Hedge Fund Activism

This table presents difference-in-difference regression of different types of pollution on hedge fund activism events for the period from 1992 to 2016. The sample is the stacked 5 years before and after each activism event, including the target and matched non-target firm. HFA is the indicator for the target firm and Post is the indicator for post-event. In column (1) the dependent variable is the logarithm of the amount of Ozone chemicals emitted to air. For column (2) and (3), the dependent variables are the logarithm of the amount of chemicals emitted to air related to Particulate Matter (PM) and Lead, respectively. In column (4), the dependent variable is the logarithm of the amount of chemicals emitted to air that is tracked by EPA's Air Quality System (AQS). The emission data is from Toxics Release Inventory and AQS montior data is from the EPA website. In all specifications, we control for county*year, facility*chemical, chemical*year and industry*year fixed effects. The t-statistics adjusted for standard errors clustered at the firm level are reported in the parentheses. *,**,*** indicates significance level at 10%, 5%, 1% level.

	(1)	(2)	(3)	(4)
VARIABLES	Ozone	PM	Lead	AQS
HFA×Post	-0.089	-0.211*	-0.125	-0.247**
	(-0.80)	(-1.88)	(-0.65)	(-2.05)
HFA	-0.016	0.551***	0.235	-0.192
	(-0.05)	(3.25)	(0.77)	(-0.73)
Post	0.103	0.000	-0.008	0.113
	(1.09)	(0.00)	(-0.04)	(1.16)
No. of Obs	39,101	29,317	4,916	40,951
R^2	0.96	0.94	0.95	0.96
County*Year FE	YES	YES	YES	YES
Facility*Chemical FE	YES	YES	YES	YES
Chemical*Year FE	YES	YES	YES	YES
Industry*Year	YES	YES	YES	YES

Table 11: Effect of Hedge Fund Activism on Pollution around Monitoring Stations

This table presents the results of triple difference-in-difference regression of pollution on hedge fund activism events with monitoring site opening and closure for the period from 1992 to 2016. The sample is the stacked 5 years before and after each activism event, including the target and matched non-target firm. HFA is the indicator for the target firm and Post is the indicator for post-event. From column (1) to (4), the dependent variables are the logarithm of the amount of chemicals emitted to air while we only maintain chemicals that are tracked by AQS monitors in column (3) and (4). The variable *Increase* (*Decrease*) takes a value of one when a plant experiences new establishment (closure) of monitoring site whose monitoring equipment's measurement coverage includes the firm's location. We only consider the most important monitors that contribute to National Ambient Air Quality Standards (NAAQS). The emission data is from Toxics Release Inventory and AQS montior data is from the EPA website. In all specifications, we control for facility*chemical, chemical*year and industry*year fixed effects. The t-statistics adjusted for standard errors clustered at the firm level are reported in the parentheses. *,**,*** indicates significance level at 10%, 5%, 1% level.

	(1)	(2)	(3)	(4)
VARIABLES	ln_onsite_air	ln_onsite_air	ln_onsite_air	ln_onsite_air
HFA×Post×Increase	-0.127*		-0.156**	
	(-1.85)		(-2.26)	
HFA×Post×Decrease		0.713**		0.861***
		(2.06)		(2.79)
Increase	-0.033		-0.036	
	(-0.96)		(-0.88)	
Decrease		0.203		0.188
		(1.30)		(1.58)
HFA×Increase	0.048		0.034	
	(1.03)		(0.64)	
Post×Increase	0.041		0.017	
	(0.75)		(0.31)	
HFA×Decrease		-0.373**		-0.242*
		(-2.20)		(-1.71)
HFA×Post	-0.061	-0.082	-0.018	-0.040
	(-1.20)	(-1.59)	(-0.23)	(-0.50)
Post×Decrease		-0.260		-0.329
		(-0.85)		(-1.46)
HFA	-0.072	-0.060	-0.284**	-0.282**
	(-0.71)	(-0.60)	(-2.41)	(-2.39)
Post	-0.040	-0.034	-0.030	-0.029
	(-0.94)	(-0.79)	(-0.52)	(-0.50)
No. of Obs	69,271	69,271	43,316	43,316
R^2	0.95	0.95	0.95	0.95
Facility*Chemical FE	YES	YES	YES	YES
Chemical*Year FE	YES	YES	YES	YES
Industry*Year	YES	YES	YES	YES

Table 12: Effect of Hedge Fund Activism on Pollution and Governance

This table presents the results of triple difference-in-difference regression of pollution on hedge fund activism events with governance measures for the period from 1992 to 2016. The sample is the stacked 5 years before and after each activism event, including the target and matched non-target firm. HFA is the indicator for the target firm and Post is the indicator for post-event. From column (1) to (5), the dependent variables are the logarithm of the amount of chemicals emitted to air. The governance variables include E-index, Lerner index, the percentage of institutional ownership, board independence, and a dummy variable that takes a value of one when CEO is a chairman of board. In all specifications, we control for facility*chemical, chemical*year and industry*year fixed effects. The t-statistics adjusted for standard errors clustered at the firm level are reported in the parentheses. *,**,*** indicates significance level at 10%, 5%, 1% level.

	(1)	(2)	(3)	(4)	(5)
VARIABLES	ln_onsite_air	ln_onsite_air	ln_onsite_air	ln_onsite_air	ln_onsite_air
HFA	-0.005	0.107	-0.096	1.210**	0.431*
	(-0.01)	(0.53)	(-0.26)	(2.49)	(1.87)
Post	0.106	-0.165**	-0.366	-0.400	-0.014
	(0.98)	(-2.06)	(-1.55)	(-1.15)	(-0.16)
HFA×Post	-0.543*	-0.117	0.245	-0.654	-0.305**
	(-1.93)	(-0.89)	(0.77)	(-1.29)	(-2.44)
E-index	-0.045				
	(-1.14)				
HFA×c.E-index	0.017				
	(0.22)				
Post×c.E-index	-0.070				
	(-1.56)				
HFA×Post×c.E-index	0.188**				
	(2.14)				
Lerner Index		-0.475			
		(-1.47)			
HFA×c.Lerner Index		-0.397			
		(-0.57)			
Post×c.Lerner Index		1.437***			
		(3.73)			
HFA×Post×c.Lerner Index		-0.184			
		(-0.20)			
Inst. Ownership %			-0.250		
			(-0.75)		
HFA×c.Inst. Ownership %			0.252		
			(0.65)		
Post×c.Inst. Ownership %			0.514*		
			(1.79)		
HFA×Post×c.Inst. Ownership %			-0.557		
			(-1.40)		
Independence				-0.007	
				(-0.02)	
HFA×c.Independence				-1.292**	
				(-2.31)	
Post×c.Independence				0.527	
				(1.22)	
HFA×Post×c.Independence				0.604	
				(0.99)	
CEO-Chairman Duality					0.061
					(0.83)
HFA×CEO-Chairman Duality					-0.362**
					(-2.44)
Post×CEO-Chairman Duality					0.151*
					(1.67)
HFA×Post×CEO-Chairman Duality					0.107
					(0.67)
No. of Obs	34,221	61,579	61,604	51,324	51,862
R^2	0.96	0.96	0.96	0.96	0.96
County*Year FE	YES	YES	YES	YES	YES
Facility*Chemical FE	YES	YES	YES	YES	YES
Chemical*Year FE	YES	YES	YES	YES	YES
Industry*Year	YES	YES	YES	YES	YES

Table IA.1: Various Social Dimension and Hedge Fund Activism

VARIABLES	(1) Com	(2) Div	(3) Emp	(4) Hum
Post	0.006	0.000	-0.004	-0.002
	(1.07)	(0.04)	(-0.71)	(-0.43)
HFA×Post	-0.000	-0.003	-0.000	-0.008
	(-0.06)	(-0.27)	(-0.06)	(-1.17)
Market Value	0.000	0.000	0.000**	-0.000
	(0.34)	(1.54)	(2.27)	(-0.33)
Sale Growth	-0.005	0.006	0.003	-0.006
	(-0.93)	(0.70)	(0.70)	(-1.51)
R&D expenses	0.036	-0.067	0.096	-0.037
	(0.70)	(-0.44)	(1.38)	(-0.91)
ROA	0.007	-0.021	0.050***	-0.045***
	(0.45)	(-0.73)	(2.65)	(-3.39)
Market-to-book	-0.002	-0.006	0.001	-0.003
	(-0.82)	(-1.45)	(0.33)	(-1.36)
Cash Holding	0.028*	0.023	-0.036*	0.039***
	(1.86)	(0.60)	(-1.74)	(2.86)
Leverage	0.043***	0.056	-0.003	0.004
	(2.86)	(1.53)	(-0.12)	(0.21)
Dividends	-0.028	-0.034	0.014	-0.066
	(-0.29)	(-0.15)	(0.10)	(-0.81)
No. of Obs	17,599	17,599	17,599	17,599
R^2	0.44	0.65	0.58	0.39

Table IA.2: Various Social Dimension and Hedge Fund Activism with Proxy Fights

VARIABLES	(1) Com	(2) Div	(3) Emp	(4) Hum
Post	0.006	-0.000	-0.006	-0.002
	(1.03)	(-0.02)	(-1.05)	(-0.43)
HFA×Post	0.002	-0.000	-0.000	-0.013*
	(0.30)	(-0.04)	(-0.07)	(-1.79)
1.proxy	-0.012	-0.047	-0.113	-0.020
	(-0.57)	(-0.36)	(-1.24)	(-0.81)
HFA×1.proxy	0.002	0.086	0.115	0.009
	(0.09)	(0.66)	(1.26)	(0.31)
Post×1.proxy	0.002	0.083	0.271**	0.016
	(0.09)	(0.83)	(2.57)	(0.58)
HFA×Post×1.proxy	-0.018	-0.097	-0.258**	0.014
	(-0.64)	(-0.93)	(-2.42)	(0.46)
Market Value	0.000	0.000	0.000**	-0.000
	(0.34)	(1.51)	(2.22)	(-0.32)
Sale Growth	-0.005	0.006	0.004	-0.005
	(-0.94)	(0.67)	(0.73)	(-1.46)
R&D expenses	0.035	-0.070	0.093	-0.034
	(0.68)	(-0.46)	(1.35)	(-0.83)
ROA	0.007	-0.022	0.048***	-0.045***
	(0.42)	(-0.77)	(2.58)	(-3.34)
Market-to-book	-0.002	-0.006	0.001	-0.003
	(-0.85)	(-1.47)	(0.42)	(-1.31)
Cash Holding	0.028*	0.023	-0.037*	0.039***
	(1.87)	(0.59)	(-1.79)	(2.85)
Leverage	0.042***	0.056	-0.003	0.004
	(2.83)	(1.51)	(-0.14)	(0.26)
Dividends	-0.023	-0.035	0.009	-0.072
	(-0.25)	(-0.15)	(0.07)	(-0.87)
No. of Obs	17,599	17,599	17,599	17,599
R^2	0.44	0.65	0.58	0.39

Table IA.3: Outcome for Employees of Target Firms

VARIABLES	(1) ln(Employment)	(2) ln(Staff cost)	(3) ln(Cost of incentive pay)	(4) Employment risk
Post	0.030**	0.026	-0.007	-0.003
	(2.05)	(0.66)	(-0.28)	(-0.21)
HFA×Post	-0.134***	-0.103	-0.059*	0.026
	(-6.39)	(-1.63)	(-1.71)	(1.49)
Market Value	0.000***	0.000*	0.000***	-0.000
	(8.41)	(1.76)	(6.08)	(-1.30)
Sale Growth	0.119***	0.015	0.068***	0.011
	(5.12)	(0.15)	(2.87)	(0.84)
R&D expenses	0.374	-19.672***	0.052	0.186
	(0.75)	(-3.84)	(0.13)	(0.99)
ROA	-0.008	1.270	-0.124	-0.117**
	(-0.13)	(1.13)	(-1.58)	(-2.56)
Market-to-book	-0.095***	-0.138***	-0.052***	0.010*
	(-7.37)	(-2.95)	(-3.28)	(1.67)
Cash Holding	-1.012***	-1.030**	-0.624***	0.037
	(-11.78)	(-2.43)	(-5.34)	(0.70)
Leverage	0.302***	0.365	-0.159	-0.010
	(2.92)	(1.51)	(-1.63)	(-0.22)
Dividends	-1.260	0.010	0.310	-0.031
	(-1.25)	(0.01)	(0.47)	(-0.11)
No. of Obs	17,513	2,023	15,235	16,854
R^2	0.97	0.97	0.88	0.66

Table IA.4: Labor Related Litigation Risk across Different Nature of Suit

VARIABLES	(1) ln(Case 710)	(2) ln(Case 720)	(3) ln(Case 790)	(4) ln(Ongoing 710)	(5) ln(Ongoing 720)	(6) ln(Ongoing 790)
Post	0.003	0.002	-0.000	0.001	0.003	0.001
	(1.15)	(0.94)	(-0.06)	(0.33)	(1.00)	(0.42)
HFA×Post	-0.006	-0.001	-0.003	-0.005	-0.001	-0.003
	(-1.55)	(-0.24)	(-0.95)	(-0.76)	(-0.21)	(-0.88)
Market Value	0.000	0.000	0.000	-0.000	0.000	0.000
	(0.29)	(0.92)	(0.97)	(-0.28)	(1.00)	(0.74)
Sale Growth	-0.002	-0.001	-0.004	-0.005	-0.002	-0.006*
	(-0.47)	(-0.60)	(-1.55)	(-0.98)	(-0.77)	(-1.83)
R&D expenses	-0.014	0.019	0.009	-0.007	0.029	0.011
	(-0.63)	(1.36)	(0.50)	(-0.22)	(1.39)	(0.44)
ROA	-0.018	-0.000	0.007	-0.010	0.001	0.008
	(-1.32)	(-0.04)	(0.99)	(-0.51)	(0.12)	(0.83)
Market-to-book	0.000	-0.001*	-0.003**	0.001	-0.001*	-0.003**
	(0.36)	(-1.65)	(-2.38)	(0.44)	(-1.85)	(-2.06)
Cash Holding	-0.015	-0.010**	-0.009	-0.019*	-0.013**	-0.014
	(-1.54)	(-2.38)	(-1.03)	(-1.69)	(-2.41)	(-1.35)
Leverage	0.000	0.007	0.013	-0.001	0.007	0.020*
	(0.03)	(0.86)	(1.45)	(-0.03)	(0.88)	(1.72)
Dividends	-0.014	0.060	-0.035	-0.027	0.078	-0.058
	(-0.20)	(0.98)	(-0.35)	(-0.28)	(1.09)	(-0.58)
No. of Obs	17,599	17,599	17,599	17,599	17,599	17,599
R^2	0.35	0.36	0.30	0.41	0.40	0.34

Table IA.5: Regulation Effect of Emission Reduction by Hedge Fund Activism

VARIABLES	(1) ln_onsite_air	(2) ln_onsite_air	(3) ln_onsite_air
HFA	-0.073	-0.077	-0.061
	(-0.75)	(-0.75)	(-0.60)
Post	-0.041	-0.052	-0.036
	(-0.94)	(-1.18)	(-0.83)
HFA×Post	-0.050	-0.059	-0.076
	(-0.98)	(-1.14)	(-1.49)
HFA×Post×1.na_1_hr_ozone_1979	-0.215*		
	(-1.78)		
HFA×Post×1.na_pm_2_5_1997		-0.169	
		(-1.62)	
HFA×Post×1.na_lead_2008			-0.097
			(-0.33)
No. of Obs	69,271	69,271	69,271
R^2	0.95	0.95	0.95
Facility*Chemical FE	YES	YES	YES
Chemical*Year FE	YES	YES	YES
Industry*Year	YES	YES	YES

Table IA.6: Emission Abatement of Target Firms and Hedge Fund Activism

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	sr_gop	sr_ic	sr_slp	sr_rmm	sr_pm	sr_cd	sr_spf	sr_ptm
HFA	-0.033	0.005	-0.042***	0.029*	-0.018	-0.007	0.005	0.007
	(-1.47)	(0.48)	(-3.00)	(1.90)	(-1.01)	(-1.38)	(0.54)	(1.30)
Post	-0.002	0.001	-0.004	0.004	0.006	0.001	0.007*	-0.001
	(-0.19)	(0.17)	(-0.59)	(0.67)	(0.74)	(0.35)	(1.79)	(-0.16)
HFA×Post	0.001	-0.012*	0.008	0.000	0.005	-0.001	-0.001	0.003
	(0.13)	(-1.78)	(0.92)	(0.03)	(0.55)	(-0.34)	(-0.23)	(0.48)
No. of Obs	20,838	20,838	20,838	20,838	20,838	20,838	20,838	20,838
R^2	0.61	0.48	0.48	0.49	0.51	0.45	0.49	0.50
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES

References

Barnett, M. L., J. Hartmann, and R. M. Salomon. 2018. Have you been served? extending the relationship between corporate social responsibility and lawsuits. *Academy of Management Discoveries* 4:109–26. doi:10.5465/amd.2015.0030.

Barry, J., A. Brav, and W. Jiang. 2020. Hedge fund activism updated tables and figures. *Working paper* .

Berg, F., J. Kölbel, and R. Rigobon. 2020. Aggregate confusion: The divergence of esg ratings. *Working paper* .

Boyd, C., and D. Hoffman. 2017. The use and reliability of federal nature of suit codes. *Empirical Studies eJournal* .

Boyson, N. M., N. Gantchev, and A. Shivdasani. 2017. Activism mergers. *Journal of Financial Economics* 126:54 – 73.

Boyson, N. M., and P. Pichler. 2018. Hostile Resistance to Hedge Fund Activism. *The Review of Financial Studies* 32:771–817. ISSN 0893-9454. doi:10.1093/rfs/hhy058.

Brav, A., W. Jiang, and H. Kim. 2015. The real effects of hedge fund activism: Productivity, asset allocation, and labor outcomes. *The Review of Financial Studies* 28:2723–69.

Brav, A., W. Jiang, S. Ma, and X. Tian. 2018. How does hedge fund activism reshape corporate innovation? *Journal of Financial Economics* 130:237–64.

Brav, A., W. Jiang, F. Partnoy, and R. Thomas. 2008. Hedge fund activism, corporate governance, and firm performance. *The Journal of Finance* 63:1729–75.

Chen, T., H. Dong, and C. Lin. 2019. Institutional shareholders and corporate social responsibility. *Journal of Financial Economics* .

Cornell, B., and A. Shapiro. 1987. Corporate stakeholders and corporate finance. *Financial Management* 16:5–14.

Cremers, K. M., E. Giambona, S. M. Sepe, and Y. Wang. 2015. Hedge fund activism and long-term firm value. *Working paper* .

Currie, J., L. Davis, M. Greenstone, and R. Walker. 2015. Environmental health risks and housing values: Evidence from 1,600 toxic plant openings and closings. *American Economic Review* 105:678–709. doi: 10.1257/aer.20121656.

Deng, X., J.-k. Kang, and B. S. Low. 2013. Corporate social responsibility and stakeholder value maximization: Evidence from mergers. *Journal of financial Economics* 110:87–109.

Dyck, A., K. V. Lins, L. Roth, and H. F. Wagner. 2019. Do institutional investors drive corporate social responsibility? international evidence. *Journal of Financial Economics* 131:693–714.

Edmans, A. 2011. Does the stock market fully value intangibles? employee satisfaction and equity prices. *Journal of Financial Economics* 101:621 – 640. ISSN 0304-405X. doi:https://doi.org/10.1016/j.jfineco.2011.03.021.

Green, T. C., R. Huang, Q. Wen, and D. Zhou. 2019. Crowdsourced employer reviews and stock returns. *Journal of Financial Economics* 134:236 – 251. ISSN 0304-405X. doi:https://doi.org/10.1016/j.jfineco.2019.03.012.

Greenstone, M. 2003. Estimating regulation-induced substitution: The effect of the clean air act on water and ground pollution. *American Economic Review* 93:442–8. doi:10.1257/000282803321947498.

Grennan, J. 2019. A corporate culture channel: how increased shareholder governance reduces firm value .

Hong, H. G., J. D. Kubik, I. Liskovich, and J. Scheinkman. 2019. Crime, punishment and the value of corporate social responsibility. *Working Paper* .

Hutton, I., D. Jiang, and A. Kumar. 2015. Political values, culture, and corporate litigation. *Management Science* 61:2905–25. doi:10.1287/mnsc.2014.2106.

Johnson, W. C., J. M. Karpoff, and S. Yi. 2015. The bonding hypothesis of takeover defenses: Evidence from ipo firms. *Journal of Financial Economics* 117:307–32.

Karpoff, J., and E. Rice. 1989. Organizational form, share transferability, and firm performance. *Journal of Financial Economics* 24:69 – 105.

Lins, K. V., H. Servaes, and A. Tamayo. 2017. Social capital, trust, and firm performance: The value of corporate social responsibility during the financial crisis. *The Journal of Finance* 72:1785–824. doi:10.1111/jofi.12505.

Shleifer, A., and L. H. Summers. 1988. *Breach of trust in hostile takeovers*, 33–56. Chicago: University of Chicago Press.

Stein, J. 1988. Takeover threats and managerial myopia. *Journal of Political Economy* 96:61 – 80.