Hedge Fund Interventions and Target Firms' Labor Practices

Abstract

Hedge fund activism usually triggers workforce downsizing and labor-related spending cuts in targeted firms. I investigate two non-mutually-exclusive explanations for these effects: (1) myopia/ real earnings management and (2) labor efficiency improvement. While hedge fund interventions, on average, decrease targeted firms' labor size and related spending, such reductions are muted when the activists' stated engagement purposes are more short-term focused. The workforce reductions are not more prominent when the targeted firms are more susceptible to real earnings management activities either. Further, targeted firms experience significant increases in their labor productivity and decreases in their overinvestment in labor following hedge fund interventions. Moreover, the workforce reductions are concentrated among targeted firms that can reap more economic benefits through improving labor efficiency. Additionally, using a proprietary ESG dataset, I show that training, development, health, and safety are likely channels for enhancing labor efficiency. My findings suggest that activist hedge funds' workforce reduction effects are more consistent with the notion that hedge fund interventions make the targeted firms' labor practices leaner. In contrast, they are less consistent with the beliefs that hedge fund activism induces management's real earnings management through trimming workforces.

Keywords: Hedge Fund Activism; Labor Efficiency; Real Earnings Management; Sustainability

JEL Classification: G34, M41, J21, J24, J28

1. Introduction

Activist hedge funds are famous for shaking up targeted firms' operation, finance, and investment activities by various engagement tactics such as demanding board seats or threatening proxy fights (e.g., Brav, Jiang, Partnoy, and Thomas 2008, The Economist 2015). The hedge fund activism literature provides ample evidence on how hedge fund interventions affect targeted firms. Some papers show hedge fund activism has bright side effects for enhancing shareholder values through curbing different agency frictions in targeted firms (e.g., Brav et al. 2008, Cheng, Huang, Li, and Stanfield 2012, Brav, Jiang, and Kim 2015a, Brav, Jiang, Ma, and Tian 2018). However, multiple other papers document that activist hedge funds have dark side effects, for exploiting other corporate stakeholders and harming the business in the long run (e.g., Klein and Zur 2011, Grennan 2019, Agrawal and Lim 2021). While a huge debate exists regarding whether hedge fund activism overall improves corporate governance, recent papers show that the bright-side effects and dark-side effects are not mutually exclusive and could coexist (e.g., Sunder, Sunder and Wongsunwai 2014, DesJardine and Durand 2020).

As institutional investors and regulators are increasingly concerned about environmental, social, and governance (ESG) issues, attention to vital social participants and critical corporate stakeholders—employees— has intensified. Both media articles and academic studies have shown that hedge fund activism leads to employee layoffs and labor-related spending cuts (i.e., a "workforce reduction" effect) in targeted firms (e.g., Nelson 2014, Semuels 2016, Dinapoli et al. 2021, Allaire and Dauphin 2016, DesJardine and Durand 2020). Yet, whether these workforce reductions stem from the bright or the dark side effects (or both) of hedge fund activism remains largely unexplored.

On the one hand, the workforce reduction phenomenon can be consistent with a dark side effect of hedge fund activism. Brav, Jiang, and Kim (2015b) document that hedge fund activists are short-horizon investors, with an average holding period shorter than two years. Multiple papers show short investor

horizons induce management myopia (e.g., Bushee 1998, Cadman and Sunder 2014). Also, the real earnings management literature provides evidence that managers trim the workforces as one way to boost earnings when facing short-term earnings pressures (e.g., Dierynck, Landsman, and Renders 2012, Kama and Weiss 2012, Hall 2016). Therefore, short-horizon activist investors may pressure targeted firms to boost their short-term earnings by reducing workforces.

On the other hand, a workforce reduction can also be consistent with the bright side effect of hedge fund activism. The cost stickiness literature suggests that, on average, firms overinvest in labor (Anderson, Banker, and Janakiraman 2003), and one reason of these labor-overinvestments is empire building (Chen, Lu, and Sougiannis 2012). Gantchev, Sevilir, and Shivdasani (2020) finds that hedge fund activism curbs empire building in merger and acquisition activities. If hedge fund activism also reduces the agency frictions in targeted firms' labor practices and enhances their labor efficiency, it may yield a smaller labor force in the targeted firms.

This paper aims to examine two non-mutually-exclusive possibilities, myopia and labor efficiency improvement, to understand the economic drivers for the workforce reduction phenomenon after hedge fund interventions.

Using an updated sample of activism events from Brav et al. (2008) for the hedge fund interventions, I first validate the workforce reduction effects documented in the previous papers. I implement a match-based difference-in-differences approach, with control firms identified for the nearest propensity of becoming a hedge fund intervention target. Consistent with DesJardine and Durand (2020) and Allaire and Dauphin (2016), I document that following hedge fund interventions, targeted firms, on average, experience significant workforce reductions, as measured by the number of employees and selling, general, and administrative (SG&A) expenses.

To examine whether myopia drives the reductions in targeted firms' workforce (the Myopia Hypothesis), I executed four set of tests. First, I examine whether the employee downsizing effects are more prominent when the hedge fund activists' stated engagement purposes in their SC 13D filings are more short-term focused. If myopia is the main reason for the workforce reductions after hedge fund interventions, targeted firms should experience more (less) layoffs when activists present more short- (long-) term oriented engagement purposes. However, I find the opposite evidence. Targeted firms do not experience significant workforce reductions when the activists state short-term oriented purposes but experience significant workforce reductions when the purposes focus more on the long run. Second, I also investigate whether targeted firms are more likely to experience workforce reductions after hedge fund interventions when they are more susceptible to real earnings management behaviors. The results show that targeted firms just meeting or beating various earnings targets do not experience more workforce reductions than control firms do. Third, inconsistent with the prediction that firms facing lower labor adjustment costs would myopically fire more workers, I do not find that the workforce reductions after hedge fund interventions depend on firms' union participation levels, a proxy for firms' employee termination costs. Last, because boosting earnings myopically through firing workers is not sustainable, I study whether targeted firms' employee sizes reverse in longer periods. The evidence suggests that the targeted firms do not hire employees back in a longer time window. The findings of these four analyses are all inconsistent with the Myopia Hypothesis.

Next, I turn to the Efficiency Improvement hypothesis. That is, targeted firms experience labor downsizing because their workforces become more efficient following hedge fund interventions. I conduct three set of analyses to test this hypothesis. First, I examine whether hedge fund activism positively affects targeted firms' labor productivity, measured by the natural logarithm of sales per employee. I find that when targeted firms illustrate significantly lower productivity levels than control firms in the pre-

intervention periods, their productivities quickly catch up in the post-intervention periods. My findings are Consistent with Brav et al. (2015a) and Brav et al. (2018), who document efficiency improvement effects among manufacturing and innovation industries, respectively. When separately examine hedge fund activism' impacts on sales and employees, I find insignificant changes in targeted firms' sales but significant reductions in their over-investments in labor following hedge fund interventions. Second, I examine whether targeted firms' workforce reductions are more significant when they can benefit more from improving labor efficiency. Relying on the sustainability and the labor economics literature, I identify four separate scenarios in which a firm may benefit more from higher labor efficiency: (1) when SASB considers labor-related matters as material sustainability aspects to the targeted firms' business; (2) when the targeted firms have higher technology levels; (3) when the targeted firms require more skilled workforces; and (4) when targeted firms operate in non-manufacturing industries. I find that the number of employees decrease to a greater extent when firms are expected to enjoy higher marginal benefits from labor efficiency improvements. Last, I investigate whether targeted firms' employee downsizing is associated positively with their subsequent financial profitability and valuation in the post-intervention periods. Using both an accounting-based measure, return on assets, and a market-based measure, Tobin's Q, I document a positive relationship between targeted firms' employee reductions and their subsequent performance. The effects persist in a relatively long window (five years) after hedge fund interventions and do not diminish over time. Moreover, the positive associations between targeted firms' workforce reductions and their economic consequences are concentrated among the four scenarios in which improving labor efficiency are expected to be more beneficial. Altogether, these findings support the hypothesis that hedge fund activism reduces the over-investment in targeted firms' labor practices, which yield a smaller workforce and a higher labor productivity.

Finally, using a multi-sourced proprietary dataset from Arabesque that tracks different aspects of companies' labor practices,[1] I explore the potential channels through which targeted firms enhance their labor efficiency. I find that targeted firms experience improvements in training, development, health, and safety practices following hedge fund interventions. These improvements are more prominent in the four scenarios when targeted firms may benefit more from higher labor efficiency.

This paper contributes to the hedge fund activism literature. I present evidence consistent with the notion that hedge fund interventions improve target firms' labor efficiency. My study joins the growing literature illustrating that activist hedge funds curb targeted firms' agency problems in streamlining their operating, financing, and investing activities (e.g., Cheng et al. 2012, Brav et al. 2015a, Gantchev et al. 2020). Inconsistent with the common public perception that activist hedge funds induce target firms to fire workers myopically that eventually would hurt the business (e.g., Semuels 2016), I provide a more comprehensive interpretation of the workforce downsizing phenomenon following hedge fund interventions. Nevertheless, all my analyses only focus on the economic incentives and consequences of the targeted firms rather than examine the social externalities of these activist engagements. I cannot (and do not intend to) compare the societal and personal losses of the individual workers who are displaced against those who are retained.

In addition, this study contributes to the earnings management literature. Myopia is a widely studied earnings management incentive in accounting, and several papers show that investors' short investment horizons can induce management myopia (e.g., Bushee 1998, Cadman and Sunder 2014). My analyses provide nuanced evidence that short-term investors may not necessarily cause management

[1] Arabesque is an ESG data provider that assesses the performance and sustainability of large public companies worldwide. This dataset contains 22 ESG features on the environmental, social, and governance aspects and an overall ESG score based on materiality, availability, cross-source consistency, and timeliness. See https://www.arabesque.com/s-ray/ for more details. I use the six labor practice features that are most related to companies' rank-and-file employees.

myopia. In addition, whereas significant decreases in discretionary expenses may signal real earnings management (e.g., Roychowdhury 2006, Kothari, Mizik, and Roychowdhury 2016), my findings suggest that under certain circumstances, they could also reflect improvements in firms' efficiency. Future studies using decreases in discretionary expenses to proxy for real earnings management could sharpen their inferences by examining whether these reductions arise from efficiency enhancements.

Moreover, this paper's cross-sectional findings contain practical implications for firms and investors that need to decide whether labor practice is a "material" aspect of an underlying business. In August 2020, the SEC announced Regulation S-K amendments. In Item 101 (c), the regulation requires public firms to include "a description of the registrant's human capital resources to the extent such disclosures would be *material* to an understanding of the registrant's business" in their Form 10-K reports.[2] However, the SEC adopted a "principle-based" approach, hoping that an open-ended rule will lead to meaningful disclosure tailored to firms' individual circumstances. However, investors worry that a lack of detailed guidelines may lead to uninformative disclosures.[3] My cross-sectional analyses shed light on when firms' labor practices may be more "material." For example, by looking at the choice of a specific type of sophisticated investor—activist hedge funds—I present evidence that SASB's materiality map is useful for identifying firms for which human capital management matters to investors. Also, consistent with Romer's (1990, 1992) theory that technology can benefit from and empower human capital, my findings show that active investors consider labor efficiency essential for firms with higher technology levels. Investors of these firms, therefore, may expect more human capital resources disclosures in firms' 10-Ks following the Regulation S-K revision. Relatedly, my findings can also offer insights for standard setters to improve human capital disclosure guidelines.

[2] See https://www.sec.gov/news/press-release/2020-192 for more details.
[3] See https://www.sec.gov/comments/climate-disclosure/cll12-8945393-245744.pdf for example.

This paper proceeds as follows: Section 2 discusses the related literature and develops hypotheses; Section 3 presents the baseline research design and empirical results; Section 4 introduces a proprietary ESG dataset and uses its labor practice measures to test the channels for my findings in Section 3; Section 5 addresses the limitations of my study and concludes.

2. Literature Review and Hypotheses Development

As investment vehicles, hedge funds raise capital from a limited number of sophisticated accredited investors to pursue investment strategies aiming at high returns. Over the past two decades, the total assets managed by hedge funds globally surged from $263 million in 2000 to $4.1 trillion in the first quarter of 2021(BarclayHedge).[4] Among these hedge funds, activist hedge funds are famous for shaking up target companies' businesses by demanding changes, such as cutting costs, scaling back investments, restructuring assets, and distributing cash to shareholders. A hedge fund intervention typically starts with a filing of the Form SC 13D with the SEC, which must be filed by any fund that crosses the threshold of beneficial ownership of more than 5% of a voting class of a public company's equity securities with the intention to influence its business decisions.[5] The tactics deployed by activist hedge funds usually include, but are not limited to, communicating with the executives or the board of directors frequently, seeking board seats, making official shareholder proposals, criticizing the target's management publicly, threatening to initiate proxy campaigns, launching proxy fights, or filing lawsuits against target firms (Brav et al. 2008, Gantchev 2013, The Economist 2015).

Activist hedge funds are unique investors in several aspects. First, unlike passive investors, such as index funds, hedge funds usually adopt a "2 and 20" compensation structure, which means that the fund charges a 2% management fee on the total assets under management, plus 20% on the profits they create

[4] Data are available at https://sophisticated-investor.com/assets-under-management-of-hedge-funds-worldwide-1997-2020/.
[5] See https://www.investor.gov/introduction-investing/investing-basics/glossary/schedules-13d-and-13g for details.

for their investors.[6] The high fees and bonuses enable hedge funds to devote sufficient resources to conduct analyses, attract talented professional fund managers, and incentivize fund managers to take aggressive and costly actions to enhance the return of their underlying investments (Brav et al. 2008, Gantchev 2013). Second, hedge funds generally are excluded from the 1940 Investment Company Act (ICA) because they are "private investment companies."[7] This is unlike most investment companies that are regulated by the ICA, which imposes strict disclosure requirements and places limits on the investment strategies and holdings of registered investment companies. Therefore, activist hedge funds may hold highly concentrated positions in targeted firms and disclose much less information. Third, unlike private equity, whose lock-up periods with investors typically span five to ten years, most hedge funds have short holding periods, typically lasting from six months to two years (Strine, 2017). As a result, most activist hedge funds only hold their position in a company for a short duration. According to Brav et al. (2015b), the average duration from the first Schedule 13D filing to divestment is around 18 months. Fourth, unlike the "corporate raiders" in the 1980s, activist hedge funds typically do not seek full control of the investment targets. According to the literature (e.g., Greenwood and Schor 2009, Brav et al. 2008), activist hedge funds' average ownership in their targets is less than 10%. Because of their relatively small holdings, activist hedge funds typically need the support of other institutional investors, such as mutual funds or pension funds, to vote against the management (Kedia, Starks, and Wang 2021, Brav, Jiang, Li, and Pinnington 2020).

Several papers document the substantial success of activist hedge funds in bringing about significant changes in target firms' business, as well as the positive abnormal market returns surrounding

[6] In 2021, the "2 and 20" structure is no longer the industry standard. According to Mirabella (2021), the median fund manager charges a management fee of about 1.25% and a performance fee of 15%.

[7] According to ICA Section 3(c)(1), if an issuer's outstanding securities are beneficially owned by not more than 100 persons and the issuer does not propose making a public offering of such securities, it is not considered an investment company. See https://www.sec.gov/investment/fast-answers/divisionsinvestmentinvcoreg121504htm.html for more details.

the announcements of these activist engagements (e.g., Brav et al. 2008, Klein and Zur 2009). However, controversies remain regarding whether they are value-enhancing for a firm in the long term (e.g., Bebchuk, Brav, and Jiang 2015, deHaan, Larker, and McClure 2019). There is also an ongoing discussion on whether hedge fund activism makes the corporate pies bigger or simply transfers wealth from other corporate stakeholders (e.g., Brav et al. 2008, Klein and Zur 2011, Sunder et al. 2014). Understanding hedge fund activism's bright and dark side effects becomes even more critical and urgent nowadays because of investors and regulators' increasing attention to ESG matters and business sustainability issues.

This paper focuses on exploring how hedge fund activism affects targeted firm's labor practice, because employees are important corporate stakeholders but recent studies document undesirable labor outcomes following hedge fund interventions. For example, DesJardine and Durand (2020) find that hedge fund interventions decrease target firms' social performance. Although not the focus of their paper, they present evidence that targeted firms' number of employees and SG&A expenses both go down after the interventions. Chen, Meyer-Doyle, and Shi (2020) find that hedge fund interventions cause targeted firms' key employees to leave because these interventions elevate the uncertainties in key employees' careers. Agrawal and Lim (2021) present evidence that targeted companies cut funding to defined benefit plans after HFA interventions and shift pension investments into riskier portfolios. A commonality of these papers is that they all document reductions in the targeted firms' labor force or labor-related spending.

While these workforce reduction outcomes may seem socially undeniable, it is unclear why value-seeking activist hedge funds drive these changes. One possible explanation is that activist hedge funds have myopic investment horizons and thus prefer target firms to report better earnings. Activist investors' earnings pressures may induce management to engage in earnings management activities through trimming their workforces. The real earnings management literature shows that short-investor horizons induce management myopia (e.g., Bushee 1998, Cadman and Sunder 2014). Although costly, real earnings

management become more common after SOX (Cohen, Dey, and Lys 2008, Zang 2012). Several studies find that trimming the workforce is one way managers use to boost earnings when facing earnings pressures (e.g., Dierynck, Landsman, and Renders 2012, Kama and Weiss 2012, Hall 2016). Consistent with this dark side effect story, several studies conclude or suspect that myopia is the reason for the workforce reduction phenomenon after hedge fund interventions (e.g., Agrawal and Lim 2021, DesJardine and Durand)[8].

However, myopia is not the only possible reason. A reduction in the workforce could also stem from an effort to improve targets' labor efficiency. Brav et al. (2018) find that although targeted firms reduce R&D spending after hedge fund interventions, their innovation efficiency goes up, as measured by the patent counts and number of citations. The paper gives credit to the activist hedge funds for the R&D efficiency enhancement as they push the targeted firms towards investing in core business-related R&Ds. In a similar vein, it is possible that targeted firms successfully streamline their labor practice towards higher efficiency after hedge fund interventions, and thus need fewer workers or labor-related expenses for the given amount of business. Such a possibility, however, is commonly ignored in the current studies.

In the following sub-sections, I expand on the two possible reasons for workforce downsizing after hedge fund interventions: myopia and efficiency improvement.

2.1 Myopia/ Real Earnings Management

Roychowdhury (2006) defines real earnings management as "departures from normal operational practices, motivated by managers' desire to mislead at least some stakeholders into believing certain financial reporting goals have been met in the normal course of operations." Graham, Harvey, and Rajgopal (2005) surveyed over 400 business executives and found that over 80% of executive officers are willing to reduce discretionary expenditures to meet earnings targets (i.e., engage in real earnings

[8] DesJardine and Durand (2020) acknowledge that although their findings suggest activist hedge funds drive target firms' myopic social performance, they consider it only a "potential mechanism" and do not test for this mechanism (Page1079).

management). Further, more than 80% of the survey respondents agree that meeting earnings benchmarks helps maintain or boost firms' stock prices. Recent research by Dichev et al. (2013, 2016) shows that roughly 20% of firms intentionally misrepresent earnings through within-GAAP discretions; the economic magnitude of misreporting amounts to about 10 cents per reported dollar.

Because the US General Accepted Accounting Principles (GAAP) treats almost all labor-related expenditures as costs rather than capital, cutting this spending can immediately improve firms' bottom lines. Better net income is usually perceived as good news by the capital market, and it is likely to have positive price effects. Indeed, former papers show that when facing earnings pressures, firms tend to trim workers to temporarily boost earnings. For example, Dierynck, et al. (2012) find managers of Belgian private firms that just beat the zero earnings threshold are more likely to fire employees, especially when the labor adjustment costs are lower. Kama and Weiss (2012) show that US public firms are more likely to reduce SG&A expenses upon sales decline when have incentives to meet or beat different earnings targets. Focusing on the banking industry, Hall (2016) shows that public banks are more likely to reduce labor costs to avoid reporting earnings declines, especially when they do not use other earnings management methods. Because of their huge financial incentives and short intervention durations (Brav et al. 2015b), activist hedge funds may be tempted to give management too much pressure on quickly improving earnings or stock prices, which may induce management to engage real earnings management through trimming labor.

While myopia is a possible reason for targeted firms' workforce reductions following hedge fund interventions, several economic forces are against this argument. First, even though trimming workers can save salary expenses, the direct out-of-pocket cost associated with terminating employees may not be omittable. Even though employers do not bare legal obligations to pay severance, most firms offer a

severance package to workers, typically one to two weeks of pay for each year of an employee's service (Acosta 2021). Therefore, the immediate net impact of firing workers on the earnings may not be positive.

Second, evidence suggests that long-horizon institutional owners can effectively curb earnings management (Bushee 1998, Roychowdhury 2006). As activist hedge funds typically need the support of other institutional investors to go against management (Brav, Jiang, Li, and Pinnington 2020, Kedia, Starks, and Wang 2021), intuitional investors should mitigate the short-termism (if any) introduced by hedge fund activism.

Third, the hedge fund activists may not want the targeted firms to deceive the capital market. Reputation is critical for large activist hedge funds. If an activist hedge fund pushes targeted firms to trim workers only to temporarily boost earnings, even though the activist investor may benefit from misleading the market once, such strategies cannot be deployed repeatedly. Once the capital market figures out these tricks, this activist hedge fund's future deals may all be discounted. In this regard, even though activist hedge funds' average holding period in each target is only about 18 months (Brav et al. 2015b), myopic actions may still be too costly to pursue.

Because of the above countervailing forces, I state my first hypothesis—the Myopia Hypothesis—in the null form:

HYPOTHESIS 1. *Real earnings management/myopia is not the primary reason for activist hedge funds to trigger workforce downsizing in their targets.*

If active hedge funds push targets to myopically boost earnings through downsizing workforce, I anticipate that the reductions in target firms' workforces should be more potent when the activists' stated engagement purposes are more short-term focused and less so when the purposes are less short-term focused. The workforce reductions should also be intensified when targeted firms are more susceptible to conduct earnings management. Further, I expect the workforce reductions to be weaker when targeted

firms expect higher termination costs. Moreover, I expect that the workforce reductions should reverse back because managing earnings by firing workers is not sustainable.

2.2 Labor Efficiency

Mounting anecdotal evidence shows that an efficiency labor force is valuable to firms. For instance, Jet Blue finds that a 5% increase in its employee engagement is associated with a 1% increase in company revenue.[9] In contrast, low labor efficiency can impact firm's productivity. For instance, Survey studies show average employees spend between one and three hours a day surfing the web on personal business at work, shopping, watching videos, paying bills, chatting, posting on social media platforms, and so forth (Heathfield, 2019). Less competent or negligent labor could also lead to more workplace injuries (National Safety Council), which may further imped productivity. Labor inefficiency arising from workplace discrimination, sexual harassment, violence, assault, or distress can also cost companies both monetary and reputational damages (Goldschein and Bhasin 2011).

Academic studies also widely support the idea that good labor practices create long-term value. A firm's labor practices typically include a set of actions, such as recruiting, training, developing, compensating, managing, caring, and terminating employees. Pfeffer (1994) argues that good labor practices can improve firms' productivity because skillful and loyal workforces are more capable of developing cutting-edge technologies, implementing business process improvements, and providing competitive advantages to organizations that cannot be easily imitated. Relatedly, Zingales (2000) characterizes human capital as a firm's "most valuable asset." Supporting these arguments, Edmans (2011) finds that a portfolio investment strategy of holding "Fortune 100 Best Companies to Work for" from 1984 to 2009 produces abnormal risk-adjusted returns of more than 3% per year over a relatively long

[9] See https://www.hcmi.co/Resources/Case-Studies/Profit-to-Engagement-Linkage.

period. Regier and Rouen (2020) also document a sizable and significant abnormal return of investing in portfolio firms with excellent human capital practices.

While labor efficiency is critical, the cost stickiness literature shows that, on average, firms keep slacks in labor resources, as labor-related costs increase more rapidly when sales volume increases than when sales volume decreases (e.g., Anderson et al. 2003, Chen et al. 2012). Anderson et al. (2003) conjecture that the labor cost stickiness behaviors stem partly from the adjustment costs associated with firing and hiring workers, but agency frictions such as management over-optimism and empire-building could cause inefficiencies in firms' labor practices.

Although the literature regarding how hedge fund interventions impact labor efficiency is still emerging, several studies suggest that good corporate governance practices can curb the agency frictions in a firm's labor practice and lead to workforce reductions. For instance, Chen et al. (2012) document evidence that strong corporate governance is negatively associated with the empire building problem in firms' asymmetrical SG&A cost behaviors. Using acquisition data in the healthcare sector, Gao, Sevilir, and Kim (2021) show private equity firms cut invested hospitals' employees but enhance their labor efficiency by enhancing the skilled worker ratios. Malikov, Demirbag, Kuvandikov, and Manson (2021) show that although merger and acquisition (M&A) often leads to employee layoffs, when acquirers have better corporate governance structures, the employment reductions subject to M&A are positively associated with post-acquisition operating performance. Gao et al. (2021) and Malikov et al. (2021) both suggest that a relatively exogenous improvement in corporate governance could lead to higher labor efficiency and workforce reductions.

Because several papers document that activist hedge funds are important corporate governance forces and effective in improving target firms' operating, financing, and investing efficiency (e.g., Cheng et al. 2012, Brav et al. 2015a, Gantchev 2020), it is reasonable to believe that activist hedge funds can also

improve target firms' labor efficiency, especially when the expected benefits of enhancing labor efficiency in the targeted firms are high.

However, a strategy to streamline targets' labor practices can be risker than reorganizing targeted firms' other resources. Property rights protect companies' physical and intellectual properties, but not their human assets. Thus, employees with more knowledge, skills, or competencies are free to leave the target company. The Work Institute estimated the total cost of turnover for US companies in 2016 to be $617 billion (Work Institute, 2019). Workers who can work more intelligently can negotiate for better compensations or shirk, leaving the net benefits of an enhanced labor practice unclear. Furthermore, hedge fund interventions are costly (Gantchev 2013), and activist hedge funds' short investment duration may not allow them to harvest any long-term benefits from a better labor force in the targeted firm.

Following the pros and cons discussed above, I also state my second hypothesis— the Efficiency Hypothesis— in the null form:

HYPOTHESIS 2. *Labor efficiency enhancement is not the primary reason for activist hedge funds to trigger workforce downsizing in their targeted firms.*

Suppose targeted firms yield a smaller workforce because hedge fund activism pushes them to improve labor efficiency. In that case, I expect that targeted firms should experience higher labor productivity and lower slacks in labor practices following hedge fund interventions. Moreover, targeted firms' workforce reductions should be more prominent when they may benefit more from enhanced labor efficiency. Further, the workforce reductions should illustrate a positive association with targeted firms' subsequent economic performances.

3. Research Design and Main Analyses

3.1 Sample Selection

I use the extended Brav et al. (2008, 2010) dataset (expanded until 2016) to identify hedge fund interventions. The dataset is constructed using Schedule 13D filings, 13D/A filings, and related 13F filings available on the SEC's Electronic Data Gathering, Analysis, and Retrieval (EDGAR) dataset, supplemented by media sources. However, filings that involve risk arbitrage, distress financing, and nonregular corporations, such as closed-end funds, are excluded (Brav et al., 2015b).

I merge the hedge fund intervention dataset with the CRSP and Compustat database. The sample begins in 2003, as opposed to earlier, because the Sarbanes–Oxley Act (SOX) was enacted on July 30th, 2002. SOX is a U.S. federal law enacted to respond to several major corporate and accounting scandals. The law has been documented to have a sweeping effect on firms' strategic accounting behaviors. Several studies suggest that after the passage of SOX, firms appear to use real earnings management to substitute accrual earnings management (Cohen, Dey, and Lys 2008, Zang 2012). Because real earnings management is one of my main hypotheses, I retain only the hedge fund interventions after-SOX for analyses.

3.2 Research Design: Model Specification and Endogeneity Concerns

$$Labor\ Outcome\ Variables_{it} = \beta_1\ Post + \boldsymbol{\beta_2}\ HF\ treated\ X\ Post + \sum Controls + \alpha_i + \lambda_t + \varepsilon_{it} \qquad (1)$$

Equation (1) presents my baseline research strategy, a difference-in-differences (DID) design with firm fixed effects (α_i) and year fixed effects (λ_t). The fixed effects capture time-invariant firm characteristics and general trends. *HF Treated* is an indicator that equals one if an activist hedge fund targets the sample firm, and zero otherwise. Because *HF Treated* is invariant for a firm, it is absorbed by the firm fixed effects. The indicator variable *Post* equals one starting from the year the hedge fund interventions occur (i.e., t≥0) for both the treated firms and the corresponding control firms, and zero otherwise. The coefficient on the interaction term, *HF Treated* X *Post*, captures the underlying treatment effect I am interested in. Labor outcome variables are the number of employees (*# Employees*) and the

level of SG&A expense deflated by the company's total assets (*SG&A*). Because *SG&A* also captures non-employee related expenses such as rent, utilities, and supplies, I primarily rely on *# Employees* as the labor practice variable and use the *SG&A* to corroborate the results. In section 4, I also use firms' labor practice scores from a proprietary ESG dataset as the output variable to conduct further analyses.

One empirical challenge of studying the implications of hedge fund activism is that activist investors do not choose targets randomly. Differences between a target and a non-target in the post-intervention period may be due to unobservable factors that drive the intervention in the first place. The hedge fund activism literature (e.g., Brav et al. 2008, Klein and Zur 2009, Bourveau and Schoenfeld 2017) shows that activist hedge funds typically target "value" firms that have a low market to book value but are financially sound. This includes firms with rich cash flow and good profitability, but slow sales growth and low dividend payout ratios. Firms with relatively small market cap and high liquidity are more likely to be targeted because of the difficulties in seizing an influential stake in large or illiquid firms. Relatedly, activist hedge funds tend to target firms with more sophisticated investor clientele, as reflected with higher institutional ownership and more analyst coverage, because they may gain support from these investors to enact strategic, operational, or financial changes. Besides, previous studies also suggest that targeted firms have different financial leverages and technology inputs compared to their peer firms that are not targeted.

I compare financial characteristics in all the firm-years of the firms that were targeted at least once ("treated firms") against the firms that were not treated by any hedge fund interventions ("other firms") during my sample period in Table 2, Panel A. Consistent with the previous literature (e.g., Brav et al. 2008), I find that, compared with other firms, treated firms are, on average, smaller in size and have lower Tobin's Q, sales growth, and dividend yield, as well as worse stock returns. Meanwhile, treated firms have higher returns on assets (*ROA*), capital expenditure, patent value, cash, and more institutional ownership. They are also more liquid in terms of trading volumes.

In Table 2, Panel B, I apply a Probit model using firm characteristics to predict the probability that a firm will be targeted by hedge fund activists in the next year. The dependent variable is a dummy variable that equals one if an activist hedge fund targets the companies and zero otherwise. Because of the previous literature and my findings in Table 2, Panel A, I include the one-year lagged value of company size [*Ln(Total Assets)*], *Tobin's Q*, *Sales Growth*, *ROA*, *Capital Expenditure*, *Cash*, *Leverage*, *Dividend Yield*, *Abnormal Annual Return* (relative to the market), *Patent Value*,[10] number of analyst coverage (*# Analyst Coverage*), *Institutional Ownership*, and stock illiquidity (*Illiquidity*) as the input variables for the prediction model.

The multivariate prediction model shows that smaller firms and firms with lower *Tobin's Q* are more likely to be targeted. They also have more liquid stock (*Illiquidity*) and more sophisticated investor bases, reflected by the positive coefficients on *Institutional Ownership* (though statistically insignificant) and *# Analysts Coverage*. Targeted firms also show signs of underperformance and agency problems in that they have lower *Abnormal Annual Returns*, slower *Sales Growth*, lower *Dividend Yield*, and higher *Capital Expenditures*. Conversely, they have good financial and non-financial resources, as reflected by higher *ROA*, *Cash*, and *Patent Value*. Further, to understand whether hedge funds pick firms based on firms' ex-ante labor practices, in Table 2, Panel B, Column (2), I add the lagged *# Employees* as an additional predictor. However, I do not find significant evidence that activist hedge funds are more likely to target firms with more excessive workforces. Also, the model is relatively stable with or without targets' labor size.

Both panels in Table 2 confirm that hedge fund interventions are endogenous. To disentangle the treatment effects from unobservable factors, I follow the hedge fund activism literature (e.g., Brav et al. 2008, Klein and Zur 2009, Cheng et al. 2012, Bourveau and Schoenfeld 2017, Agrawal and Lim 2021).

[10] Instead of using firms' accounting R&D expense to measure their technology levels, I use the natural logarithm of their patent values following Kogan et al. (2017). The patent value data is available at https://iu.app.box.com/v/patents.

Specifically, to identify control firm-years, I use the prediction model in Table 2, Panel B, Column (1) to compute propensity scores. I then choose sample firms with the nearest propensity of being targeted but not actually targeted in the same industry[11] and same year, with replacement.[12] The pseudo-R-square of my probability model, around 3.6%, is comparable to the matching model used in other papers (e.g., 4.1% in Bourveau and Schoenfeld 2017, 2.7% in Brav et al., 2008).[13] I then drop all the other firm-years that are not identified as control firm-years in the analyses. Also, to focus on the effect of the hedge fund interventions, I only retain the five-year window surrounding (i.e., two years before and two years after) the intervention year for both the treated firms and the matched control firms for the main analysis. After dropping sample firm-years outside of the [-2 years, +2 years] window, I have a sample of 16, 240 firm-years, corresponding to 2,256 interventions and 2,041 controls spanning across years and different industries.

As shown in Table 3, Panel A, after matching, in the year proceeding the hedge fund interventions (i.e., t=-1), the covariates are statistically comparable on most dimensions, excluding *Tobin's Q, ROA, Leverage, and Annual Abnormal Return*. I control for these variables and their interactions with the *HF Treated* indicator in Equation (1) to capture the linear or nonlinear effects that they may have on both the treatment and output variables. [14] Further, because previous studies suggest that firm size and growth are essential factors influencing companies' labor practices (Lerman, McKernan, and Riegg 2004), I also

[11] I begin the matching with firms in the same NAICS first; then, I go to four digits SIC industries if unable to find a match in finer industry classifications. Similarly, if I still can't find a qualified control firm, I repeat the above steps for untargeted firms within the same three-digit SIC industries and then two-digit SIC industries.

[12] Some control firms are matched more than one time with different target firms. Matching with replacement attains better covariate balances. I also match without replacement in robust analysis and document similar DID treatment effects, but the covariates are less balanced.

[13] In robustness analysis, I add more variables according to the Bloomberg Activism Screening Model (Kommel et al., 2021), including 1) DUALCLASS, a dummy variable equals to one when the company has two classes of voting shares, obtained from the IRRC dataset; 2) Relative CEO Pay Rank, calculated as the percentile of CEO's total compensation relative to its same market-cap decile peer firms, obtained from the ISS dataset (missing data are imputed by 50%). Adding these additional variables only increases the Pseudo R-square marginally.

[14] In robustness analyses, I use Entropy Balancing (EB) to match all the input variables for the propensity score matching model at t=-1 to obtain synthesized control firms. Then I redo the main analyses applying the EB weights on the control firm-years and find results robust. The results are presented in Table SA2.

include the natural logarithm of total assets and sales growth and their interaction term with the treatment indicator as additional control variables. When using *SG&A expense* as the output variable, I further control for the number of employees and its interaction with the *HF Treated* indicator as additional size variables. Further, considering that the hedge fund interventions are at the firm level, I cluster standard errors at the firm level for all analyses in Equation (1).

3.3 Hedge Fund Interventions' Effects on Labor Outcomes

Verification of Previous Findings

As mentioned, several papers document that hedge fund interventions trigger workforce reductions (e.g., Allaire and Dauphin 2016, DesJardine and Durand 2020). I first verify this phenomenon for my sample of hedge fund targets in Table 4. I find evidence that, after hedge fund interventions, targeted firms experience decreases in the number of employees (Column 1) and SG&A expenses (Column 3). On average, intervened firms' workforces lose about 440 employees, and experience an *SG&A* cut amounting to around 1% of its total assets. Using alternative measures for employee size in Column (2) and alternative proxy variables for labor-related expenses in Columns (4) and (5) provide consistent inferences.

Figure 1 provides a visual parallel trend analysis. As the figure shows, both treated and control firms' workforce size and related spending followed the same trend until the hedge fund intervention, after which the gross number of employees and SG&A expense of the treated firms were substantially compressed relative to the control firms. My findings in Table 4 and Figure 1 are consistent with previous papers (DesJardine and Durand 2020, Allaire and Dauphin 2016).

However, this paper's purpose is not to examine whether hedge fund interventions lead to workforce reductions, but to unravel the reasons behind this phenomenon. Recall that both myopia/ real earnings management and labor efficiency enhancement can motivate these reductions. Tensions exist in

both hypotheses and the empirical obstacle is that neither motivation is directly observable. Therefore, I test when the workforce reductions are the most salient.

Test of Hypothesis 1: Real Earnings Management (Myopia Hypothesis)

I conduct four sets of analyses to examine Hypothesis 1. First, I examine whether targeted firms experience more (less) workforce reductions when activists' stated engagement purposes are more (less) short-term focused. Second, I test whether the workforce reductions are more salient when targeted firms are more susceptible to conducting real earnings management. Third, I investigate whether the workforce reductions are weaker when targeted firms endure higher termination costs. Fourth, I analyze whether the workforce reductions phenomenon last in a relatively long window after the hedge fund interventions commence.

Are the workforce reductions more salient when activist hedge funds are more short-term focused?

Using the transaction year and the CIKs of the activist hedge funds and the subject targeted firms, I merge my sample with activist hedge funds' initial Form SC 13D filings with the SEC. Then I identify the activist investors' engagement horizons using keywords analyses using the stated transaction purposes (Item 4) in the 13D filings. Specifically, when a filing's Item 4 contains the following keywords: "delist", "sell", "merger", "acquisition", and "dividend", I consider the engagement horizons as more short-term focused. In contrast, when the Item 4 contains keywords such as "undervalue", "board", "strategy", and "operations", I consider the engagement horizons as less short-term focused.

Because only the treated firms have filings, I examine targeted firms' labor outcomes before and after the hedge fund interventions using a single difference test following equation (2):

$$\#\ Employees_{it} = \sum_{-2}^{2} \boldsymbol{\beta_T} * Dummy_T + \sum Controls + \alpha_i + \varepsilon_{it} \dots \textit{(2)}$$

I control for the firms' *Ln (Total Assets)*, *ROA*, *Sales Growth*, and *Abnormal Annual Return* as they are likely to co-move with targeted firms' employee sizes. Also, I include the firm fixed effects to control for any omitted time-invariant correlated variables of # *Employees*.

Table 5 shows that when targeted firms, on average, experience workforce reductions after hedge fund interventions start (Column 1), such workforce reductions are only statistically significant when the engagements are less likely to be short-term oriented (Columns 2 to 4) but are insignificantly from zero when the stated purposes are more short-term focused. The results are inconsistent with the myopia hypothesis.

Are the workforce reductions more potent when targets are more susceptible to real earnings management?

Second, I divide my sample firms into subsamples based on their earnings management pressures. If targeted firms fire workers to boost earnings, the workforce reductions should be intensified when targeted firms just meet or beat their earnings targets. Following the real earnings management literature (e.g., Dechow et al. 1996, Burgstahler and Dichev 1997, Degeorge et al. 2005, Roychowdhury 2006), I use three common scenarios in which firms face financial pressures to engage in earnings management—namely: (1) meet/beat zero earnings, (2) meet/beat last year's earnings, and (3) meet/beat analysts' consensus earnings forecast—to capture firms' myopic incentives. I first partition firms based on whether they just meet or beat last year's earnings, i.e., whether a firm's change in net income from the lagged year, deflated by its lagged total assets, is positive and smaller than 0.0. Secondly, I partition firms into small profit firms if they report positive net income that is smaller or equal to 0.01 of the firms' lagged total assets, and big profit firms if their reported net income is greater than 0.01 of the firms' lagged total assets. Roychowdhury (2006) divides firms into small profit, large profit, and loss firms and shows that firms with small profits are most susceptible to engaging in real earnings management. Because loss firms may have incentives to engage in income-decreasing activities (e.g., Healy, 1985), I excluded these firms

from my second partition. Bhojraj, Hribar, Picconi, and McInnis (2009) document that firms that marginally beat analyst forecasts with reducing discretionary expenditures have more equity issuances and insider selling in the following year, suggesting that these marginal beaters have myopic intentions. They find that the results hold for groups that marginally beat EPS by five cents or less. Building on their findings, my third partition is based on whether the difference between firms' actual earnings per share (EPS) and consensus earnings forecast is between zero and $0.05.

Table 6 shows that, relative to the control firms that are more susceptible to engage in real earnings management, targeted firms with similar incentives do not experience more workforce reductions after hedge fund interventions, suggesting that hedge fund activism does not intensify management's real earnings management through trimming labor, when facing common earnings targets. It is possible that hedge fund activism sets more aggressive earnings goals for targeted firms, which may induce managers to fire workers. However, the results that large profit firms do not induce significant decreases in the number of employees (Panel A, Column 4) suggest that the case is not very likely.

Also, considering the substitution effects of accrual earnings management and real earnings management (e.g., Zang 2011), I expect a firm that has previously exhausted their accrual earnings management rooms to be more likely to fire workers to boost earnings. In Supplementary Appendix Table SA3, Panel A, I divide sample firms into subsamples based on their accrual earnings management levels. However, I do not find the workforce reductions after hedge fund interventions depend on targeted firms' accrual earnings management levels before the hedge fund interventions. Moreover, inconsistent with the notion that hedge fund activism induce management to understate SG&A expenses through accrual earnings management, I do not find targeted firms experience significant increases in their overall accrual earnings management levels following hedge fund interventions, either (Table SA3, Panel B).

Do targeted firms experience more workforce reduction when they face lower termination cost?

If targeted firms cut employees to boost short-term earnings, the workforce downsizing should be more potent when the costs of firing workers are lower. Because unions usually provide information to workers about their employment rights and represent workers to negotiate employment terms with employers, firms with a higher labor union participation usually endure higher costs in firing workers (e.g., Goerke and Pannenberg 2011, Gartland 2020). In Supplementary Appendix Table SA3, Panel C, I use target firms' union coverage[15] to capture the severance cost of firing workers. However, I find that targeted firms with lower union participation do not experience more employee cuts, which is also inconsistent with the myopic story.

Are the decreases of # Employees only temporary?

If targeted firms' employee decreases after hedge fund interventions mainly stem from management's real earnings management activities to boost earnings temporarily, then firms' number of employees and SG&A spending should eventually reverse. To conduct this analysis, I look at treated and control firms that exist in every year between the [-5 years,+5 years] window surrounding the 13D filings. I run the regressions using Equation (3) below and present β_k's, which capture targeted firms' employee size and SG&A spending relative to control firms in *k* years relative to the engagement year.

$$Labor\ Practice\ Variables_{it} = \lambda_k \sum_{k=-4}^{t=+5} t_k + \boldsymbol{\beta_k}\, HF\ Treated\ X \sum_{k=-4}^{t=+5} t_k + \sum Controls + Firm\ FE + Year\ FE + \varepsilon_{it} \ldots (3)$$

However, as shown in Figure 2, neither the *# Employees* nor the *SG&A Expense* reductions seem to reverse in a relatively long window post the interventions.

In sum, I find empirical evidence inconsistent with the hypothesis that myopia drives the workforce reductions after hedge fund interventions.

[15] Partitioning samples based on union membership derive qualitatively and quantitatively similar results (untabulated). The industry-level union membership and coverage data are available at www.unionstats.com.

Test of Hypothesis 2: Labor Efficiency Enhancement

Next, I examine whether labor efficiency enhancement is the primary reason for workforce reductions after hedge fund interventions. I conduct three sets of analyses to test this hypothesis. First, I examine whether the workforce downsizing is more potent in the subsample firms for which improving labor efficiency is expected to be more beneficial. Second, I investigate whether targeted firms' workforce reductions are positively associated with their economic consequences. Third, as a validation, I test whether hedge fund activism improves firms' labor productivity and reduces over-investment in labor.

Do targeted firms experience labor efficiency improvements after hedge fund interventions?

The efficiency improvement hypothesis predicts that hedge fund activism pushes targeted firms to improve labor efficiency, which consequently reduce the targeted firms' workforces and labor-related spendings. In this section, I first test whether hedge fund interventions indeed improve targeted firms' labor efficiency.

I use three variables to measure firms' labor efficiency or inefficiency. The first measure is *Labor Productivity,* defined as the natural logarithm of sales divided by the annual average number of employees. The measure is straightforward and commonly used (e.g., Amess, Girma and Wright 2014, Kuvandikov, Pendleton and Goergen 2021) because it captures the economic output per workforce input.

The second and third measures of labor efficiency come from the labor cost stickiness literature. The literature suggests that, if a firm's sales increases and decreases randomly, it will, on average, over-invests in labor (e.g., Anderson et al. 2003, Chen et al. 2012, Kama and Weiss 2012). Jung, Lee, and Weber (2014) document that better accounting quality can mitigate over-investment in labor. Following their methods, I use *Abnormal_Net_Hire_Industry,* defined as the abnormal percentage change in the number of employees, using the six-digit NAICS industry median as the benchmark to measure targeted firms' overinvestment in labor relative to their industry peers (Jung et al. 2014). Similarly, I use

Abnormal_Net_Hire_Fundamental, defined as the abnormal percentage change in the number of employees, using the Pinnuck and Lillis (2007) model to compute the expected level of net hiring to measure overinvestment in labor relative to their economic conditions (Jung et al. 2014). Because percentage changes in the number of employees difference out the time-invariant firm-level fixed characteristics, I control for industry fixed effects (at the six-digit NAICS level) instead of firm fixed effects. Table 7, Panel A illustrates that, on average, hedge fund interventions enhance labor productivity (Column 1) and curb overinvestment in labor (Columns 2 and 3). Furthermore, Panel B in Table 7 shows weak evidence that the effects are more salient when the targeted firms have lower labor productivity (Column 1) or overinvest in labor (Columns 3 and 5) in the pre-intervention periods. [16] However, only the difference in coefficients between Columns (3) and (4) is statistically significant.

Do targeted firms experience more workforce reductions when higher labor efficiency is more beneficial?

To identify scenarios in which a firm may benefit more from enhancing labor efficiency, I rely on the literature of sustainability standards and labor economic studies. First, I use the Sustainability Accounting Standards Board's (SASB) Materiality Map®[17] to track firms' sustainability performance along with material versus immaterial issues. Khan, Serafeim, and Yoon (2016) find that firms with good performances on material sustainability issues significantly outperform firms with poor performance in stock return, sales growth, and profitability. Moreover, firms that perform low in both material and immaterial issues produce the lowest stock return, whereas the biggest winners appear to be firms that

[16] Anecdotal evidence also supports the notion that hedge fund activism induces employee cuts when firms over-hoard labor. For example, Hess Corp cut about 13% of its workers to streamline operations one month after activist hedge fund Elliott Management launched a campaign against Hess. Hess did not cut staff two years ago even as "some peers let thousands of workers go." See https://www.rigzone.com/news/wire/hess_cutting_hundreds_of_workers_as_it_battles_activist_investor-16-jan-2018-153158-article/.

[17] The Sustainability Accounting Standards Board (SASB) is an independent non-profit organization established in 2011. Informed by its research staff and industry working groups, SASB developed a Materiality Map (accessible at https://www.sasb.org/standards/materiality-map/) to facilitate companies to "focus sustainability strategies on the most important issues and understand the metrics that underpin each disclosure topic" and assist investors to "analyze portfolio exposure to specific sustainability risks and opportunities represented by each issue." See https://materiality.sasb.org for details.

both outperform in material sustainability issues and underperform in immaterial issues. Building on their findings, I expect that when SASB labels a firm's human capital issues as "material," enhancing its labor efficiency would be more beneficial.

Second, Romer (1990, 1992) suggests that technology/ideas can improve the marginal productivity of human and physical assets. Once a firm owns a competitive idea or technology, the intellectual asset serves as a multiplier to the labor input at nearly no cost, boosting the output levels. Moreover, good labor practices (i.e., training) enable innovation success, helping firms sustain competitive technology advantages. Therefore, I expect that high technology firms will benefit more from an enhanced labor practice.

Third, Belo et al. (2017) document that companies' hiring rates are associated negatively with their future stock returns, especially among companies requiring high labor skills.[18] Enhanced labor efficiency should reduce the demand for hiring new workers and the related adjustment costs. Therefore, I expect that firms requiring better labor skills will benefit more from improvements in labor efficiency.

Lastly, the marginal benefits of increasing labor efficiency are determined by firms' production functions. Physical assets and labor can either be substitutes or complements, depending on the business nature. For example, firms that require repetitive labor tasks may enhance overall productivity by automating some labor processes. In contrast, when a business relies heavily on personalized labor inputs, investing in equipment or machinery may be less beneficial than increasing the labor efficiency. Compared with the manufacturing industry, service industries rely more on labor. Therefore, I expect non-manufacturing firms to benefit more from improving labor efficiency.

[18] Belo et al. (2017) define skilled labor as the proportion of workers who need at least two years of training to get ready for their tasks. Examples of industries requiring high skilled labor include software publishers, computer system designs, information services, universities, legal services, etc. In contrast, industries such as grocery stores, apparel knitting mills, restaurants, clothing stores, building services require relatively low-skilled workforces.

In summary, if workforce reductions following hedge fund interventions stem from pursuing labor efficiency, I expect that such reductions would be more potent in four scenarios: (1) when SASB considers labor-related matters as material sustainability aspects to the targeted firms' business; (2) when the targeted firms have high technology levels; (3) when the targeted firms require more skilled labor forces; and (4) when the targeted firms are in non-manufacturing industries.

If the workforce downsizing following hedge fund activism arises from labor efficiency enhancement, the employee and related spending cuts will be more prominent in the above four scenarios. Table 6 contains my empirical findings with each of these cross-sections. [19]

In the first two columns of Table 8, I use the SASB classification of materiality to measure the anticipated benefits from improving labor efficiency. SASB classifies each company into a Sustainable Industry Classification System® (SICS®) category based on its sustainability-related risks and opportunities. I search the SASB SICS® database[20] using companies' stock tickers and company names to obtain the SICS code for each treatment and control firm in my sample.[21] I then match each SICS code to the SASB Materiality Map to obtain the materiality indicator for each firm's different sustainability aspects. The SASB Materiality Map contains three granular workforce-related dimensions, "Employee Engagement, Diversity & Inclusion," "Labor Practices," and "Employee Health & Safety." If any of these three SASB materiality indicators are not zero for an underlying firm, I consider human capital management to be a material sustainability matter for the targeted firm. In contrast, if none of the three aspects is material, I consider labor-related matters to be immaterial. As columns (1) and (2) of Table 8

[19] To alleviate the concerns that the different partition methods in Table 6 capture the same group of firms, in the supplementary table SA1, I present the correlation table of the partition variables. As SA1 shows, the correlations between different partition variables are relatively low.
[20] Accessible at https://www.sasb.org/find-your-industry/.
[21] I conducted the SICS search in Jan 2021 when I collected the data for this paper. Ideally, I should search the historical SICS code of each company for the period that hedge fund interventions took place. However, I think the assumption that firms' SICS category is stable over time is reasonable.

Panel A show, targeted firms in which workforce-related matters are classified as material sustainability issues experience greater drops in *# Employees* than their counterparts after hedge fund interventions.

Next, following Kogan et al. (2017), I divide firms into subsamples depending on whether the sample firms have an above or below the median patent value in the year before the hedge fund intervention.[22] Kogan et al. (2017) calculate companies' patent values based on the stock market's response to news about patent granting. This measure captures the innovation output of a company and thus may serve as a better proxy for the company's technology level than innovation input variables such as R&D expenses (Koh and Reeb 2015). As Columns (3) and (4) of Table 6 show, when firms have a higher patent value in their pre-intervention stage, they experience greater reductions in both employee size and SG&A expense. In untabulated analyses, I also classify firms by their patent citations and get similar results.

Third, Belo et al. (2017) measure firms' required labor skills using an industry-based proxy (at the four-digit NAICS level), defined as the percentage of workers who work on occupations that require a high level of training and preparation (i.e., occupations with Specific Vocational Preparation (SVP)>=7[23]). Dividing sample firms into subsamples with high versus low labor skills by the annual median, I find that firms requiring higher skilled labor experience more reductions in their number of employees and SG&A expenses after the hedge fund interventions (Columns 5 and 6 in Table 6).

Fourth, in columns (7) and (8), I partition sample firms into manufacturing firms (i.e., Fama-French five industry, Code 2) and non-manufacturing firms (i.e., all other firms). I find that non-manufacturing targets show greater workforce downsizing effects than targets in the manufacturing

[22] I replace the sample firm-years missing patent values data with zero patent values. In robust analyses, I divided the sample into subsamples based on above or below the mean, and all results hold.

[23] SVP>=7 means that it takes at least two years to prepare the workers to get ready for their tasks. The Belo et al. (2017) data are only available until 2013. For 2014 and forward, I use the labor skills measure in 2013 as a substitute. The data is available at https://sites.google.com/a/umn.edu/frederico-belo/.

industry. However, the differences between the two subsamples are statistically insignificant. My findings for the manufacturing subsample (though the coefficient is statistically insignificant from zero) are consistent with Brav et al. (2015a), who, using census data on manufacturing firms, show that hedge fund interventions lead workers to work fewer hours. However, Brav et al. (2015) do not investigate hedge fund interventions' impact on non-manufacturing industries' workers. Thus, my findings in the non-manufacturing subsample complement Brav et al. (2015a), by suggesting that the workforce reduction effects exist also in non-manufacturing firms (the coeffects on the *HF Treated* X *Post* variables are significant at p<0.01 level for *# Employees* and p<0.05 level for *SG&A Expense*).

Table 8 provides additional evidence that the post-treatment workforce downsizing stems from an effort to elevate labor efficiency. Next, I further probe the efficiency hypothesis by examining the economic consequences of the workforce reductions following hedge fund interventions.

Are hedge fund activism' workforce reduction effects associated positively with targeted firms' subsequent economic performances?

If the workforce reductions following hedge fund interventions stem from labor efficiency improvements, labor downsizing should have a long-term value enhancement effect after these interventions. Using Equation (4), I test whether a workforce downsize surrounding the hedge fund intervention is positively associated with targets' subsequent profitability (measured by ROA) and value (measured by Tobin's Q). Specifically:

$$\begin{aligned} Performance\ Variables &= \beta_1\ HF\ treated + \beta_2\ Post + \beta_3\ Dummy\_EmployeeDec + \beta_4\ HF\ treated\ X\ Post \\ &+ \beta_5\ HF\ treated\ X\ Dummy\_EmployeeDec + \beta_6 Post\ X\ Dummy\_EmployeeDec \\ &+ \boldsymbol{\beta_7} HF\ treated\ X\ Post\ X\ Dummy\_EmployeeDec + \sum Controls + \delta_i + \lambda_t + \varepsilon_{it} \quad \ldots (4) \end{aligned}$$

I create a dummy variable, *Dummy_EmployeeDec*, to capture a decrease in the number of employees from the two years before the hedge fund intervention to the two years after the hedge fund intervention. Because the variable *Dummy_EmployeeDec* is time-invariant for a firm throughout the intervention window, I include industry fixed effects (at the six-digit NACIS code level) in equation (4) instead of firm fixed effects. This empirical choice enables me to examine the economic consequences of hedge fund interventions' workforce reduction effect relative to both industry peers and to the pre-treatment period. I also include the *HF Treated* variable and the *Dummy_EmployeeDec* variable since they are not absorbed by the fixed effects. Similarly, I include the double interaction terms of *HF Treated X Post*, *HF Treated X Dummy_EmployeeDec*, and *Post X Dummy_EmployeeDec*. The coefficient on the triple interaction term *HF Treated X Post X Dummy_EmployeeDec*, β_7 is the main variable of interest. I include the same set of control variables as in Table 4 to 6, although I exclude *ROA* and *HF Treated X ROA* when using *ROA* as the performance output. Similarly, I excluded *Tobin's Q* and *HF Treated X Tobin's Q* when using *Tobin's Q* as the performance output. To capture the effects of different long-term periods, I estimate equation (4) using alternative windows surrounding the hedge fund interventions (i.e., in the [-2 years, +2 years], [-2 years, +3 years], [-2 years, +4 years], and [-2 years, +5 years] windows respectively). Considering the within-industry comparison, I cluster standard errors at both the firm and industry-year levels for all analyses in this subsection.

As Table 9, Panel A illustrates, when a decrease in the number of employees is typically considered bad news and is negatively associated with firms' *ROA* and *Tobin's Q* (see β_3 and β_6), the coefficients flip signs when the firm experiences hedge fund interventions (see β_7). Indeed, a decrease in the number of employees is positively associated with the target company's post-intervention *ROA* and *Tobin's Q*. This is consistent with the notion that workforce reductions reflect successful labor efficiency

enhancement. Also, the treatment effects remain relatively stable over the longer time windows, suggesting that the efficiency improvement is sustainable, rather than short-lived.

Moreover, I use the same methods in Table 8 to partition the sample into subsamples based on the high or low expected benefits of higher labor efficiency. I then rerun the Columns (4) and (8) of Table 8 in the cross-sections separately. I anticipate that the positive association between targeted firms' workforce reductions and their subsequent economic performances should be concentrated among the four scenarios in which I expect firms to benefit more from improving labor efficiency. Panels B1 and B2 of Table 9 present some evidence that is consistent with this prediction. The positive coefficients of the triple interaction terms (i.e., β_7) are more prominent in Columns (3), (5), and (7) than their counterparts (however, some differences are only significant using one-tailed tests).

Table 9 presents positive associations between targeted firms' employee downsizing after hedge fund activism and their subsequent economic performances. This finding also supports the Labor Efficiency Hypothesis, which posits that targeted firms' workforce downsizing after hedge fund interventions arises from labor efficiency improvements.

Even though the Myopia hypothesis (H1) and the Efficiency hypothesis (H2) are not mutually exclusive, the empirical findings in this paper are less consistent with the Myopia hypothesis but more consistent with the Efficiency hypothesis. In the following section, I explore how the targeted firms achieve higher labor efficiency after hedge fund interventions.

4. Channel Analysis

Although there is a gap in the literature regarding how activist hedge funds influence targeted firms' labor practices, previous studies show that there are multiple ways to improve firms' labor practices for better labor efficiency and higher firm value. For example, Becker (1962) argues that both on-job training and schooling can advance a firm's labor productivity. Black and Lynch (2011) show that promoting joint

decision making, hiring more-educated workers, and deploying computer usage among non-managerial workers all lead to higher productivity. Richard, Triana, and Li (2020) show that a congruently diversified workforce throughout the organization also enhances firms' productivity.

To understand how targeted firms achieve higher labor efficiency following hedge fund interventions, I rely on a multi-sourced proprietary ESG dataset to overcome the empirical challenge that labor practices are essentially unobservable by external parties. In the following subsections, I will describe the data and discuss the findings.

4.1 The Arabesque Dataset

The Arabesque S-Ray data I use for this study is a proprietary ESG dataset that combines thousands of granular level signals into 22 features on companies' ESG practices and one combined ESG score at the daily level. It generates ESG signals from machine-learning techniques on big data, such as companies' reporting and disclosures, conventional and social media news, and searching websites. In addition, Arabesque integrates 12 other independent data providers' signals through multiple layers of data comparison and validation.[24] Based on the data availability, timeliness, and consistency across different data sources, they apply weights in these integration processes. Unlike single-sourced dataset, Arabesques' multi-sourcing methods enables it to provide relatively broader and more extended coverage regarding companies' labor practices.

For my study, I use six dimensions of the human capital features most related to rank-and-file employees. These factors are *Training & Development*, *Operational Health & Safety*, *Human Rights*, *Employment Quality*, *Diversity*, and *Labor Rights. Training & Development* focuses on career development opportunities (e.g., whether companies favor internal promotions) and training (e.g., number

[24] Though I am unable to access these raw data points due to Arabesque's liability to its data vendors, according to Arabesque, their commercial data vendors originate independent signals from a broad range of sources, such as companies' corporate websites, EEOC filings, DOL filings, IRS filings, press releases, legal proceedings, EEOC fines and investigations, employee surveys, crowd-sourced career websites, job postings, union statements, and so forth.

of hours on employee training). *Operational Health & Safety* measures healthcare and injury-related practices (e.g., total injuries per one million hours worked). *Human Rights* evaluates firms' adherence to and promotion of human rights (e.g., protect employees' privacy). *Employment Quality* measures a firm's working condition (e.g., flexible working scheme) and employee satisfaction (e.g., turnover, strikes). *Diversity* measures the inclusion and equal opportunities for the underrepresented workforce, such as minorities and women (e.g., the proportion of women and minority employees). *Labor Rights* evaluates a firm's compliance with internationally recognized labor standards (e.g., audit suppliers for labor practice). Appendix 2, Panel A offers more details and examples of data inputs. The Arabesque ESG scores are available daily but considering that the labor practice scores are relatively steady, I use the annual mean of quarter-end scores for my analyses.

Appendix 2, Panel B describes Arabesque's coverage of US public firms between 2003 and 2019. Horizontally, *Training and Development* and *Employment Quality* are more visible throughout the period than other dimensions. In contrast, operational health and safety, diversity, and human rights may be considered material for a limited number of industries. Vertically, it is noticeable that the number of companies with labor practice scores increases over time. There was a considerable jump in 2016 for most dimensions and another in 2018 in previously under-reported aspects. According to Arabesque, these two jumps in observations are primarily driven by a sizable number of firms starting to include human capital management (HCM) disclosures in their 10-K or ESG reports after the issuance of guidance regarding HCM practices and disclosures. The Global Sustainability Standards Board (GSSB) issued *Global Reporting Initiative (GRI) 401 to 412* in 2016 and the International Organization for Standardization (ISO) published *ISO 30414*: *Human Resource Management* in 2018.[25]

[25] These two guidelines are available at https://www.globalreporting.org/how-to-use-the-gri-standards/gri-standards-english-language and https://www.iso.org/standard/69338.html.

I conduct several analyses to validate the quality of the Arabesque data. First, I compare the Arabesque data with three other ESG datasets that I can access, including data from TruValue Labs (for the years 2007 to 2019), JUST Capital (for the year 2019), and the Drucker Institute's "American's Best-Run Companies" (for the years 2017 to 2019).[26] I calculate the imputed mean of the six Arabesque labor practice features each year for each firm. For every other dataset, I compute similar labor practice scores based on the related data features. Then, I manually match the full Arabesque samples with the other three datasets by stock tickers or names to identify the overlapping sample firms. Correlation analyses show that the imputed Arabesque labor practice scores are significantly positively correlated with the labor practice scores of all the other three datasets (with correlations of 0.42 with the JUST Capital score in 2019, 0.07 with the TruValue Labs score between 2007 and 2019, and 0.26 with the Drucker Institute score between 2017 and 2019). Second, using a similar strategy to Edmans (2011), I form portfolios based on companies' labor practice scores in the dataset and find that investing in companies with above-median labor practice scores generates risk-adjusted returns of 1.4% to 1.8% per year between 2004 and 2019. This is a return level comparable to Edmans (2011).[27] Third, I tested the short-term market response to changes in firms' Arabesque labor practice scores. Although firms' Arabesque labor practice scores are relatively sticky over time, there are positive associations (though sometimes insignificant) between changes in firms' labor practice scores and the cumulative abnormal market reactions during the three-

[26] The TruValue Labs data are primarily based on third-party signals from the media and non-profit organizations. I use its two employee features related to labor practices, namely employee diversity and inclusions and employee health and safety between 2007 and 2019. See https://truvaluelabs.com/ for more details. JUST Capital's data focus on companies' human capital practices and related corporate governance issues. The data are also multi-sourced, containing more than 50 raw input points covering both firms' policies and disclosures and crowd-sourced ratings by anonymous employees. The scores (proprietary) are available for the year 2019 only and cover Russell 1000 companies only. See https://justcapital.com/mission-impact/ for more details. The Drucker Institute has published its ranking on Wall Street Journal every year since 2017. The ranking considers over 14 different vendor sources, covering multiple dimensions of financial and managerial performances for around 800 large US companies, both public and private. I use the "employee engagement and development" scores to validate the Arabesque labor practice scores. See https://www.drucker.institute/2020-drucker-institute-company-ranking/ for more details.

[27] Because Edmans (2011) uses only the Fortune Best 100 Companies to Work for to form investment strategies, my above-the-median strategy captures a larger group of firms, which may explain the milder returns I document.

day window (i.e., [-1 day, +1 day]) surrounding score changes. The positive associations suggest that the Arabesque labor practice scores capture some salient public information related to firms' labor practices promptly. Fourth, I use a Probit model to test and find that the Arabesque labor practice scores positively predict a firms' selection by the Fortune 100 "Best Companies to Work For" for 2014 to 2019. I present these validation analyses in my Supplementary Appendix Figure SA1 and Table SA4.

In sum, these validation tests suggest that the Arabesque dataset offers high-quality signals regarding companies' labor practices.

4.2 Hedge Fund Interventions and Targeted Firms' Labor Practice Scores

Because only about 10% of firm-years in the main analysis have an Arabesque labor practice score, I need to work with a smaller sample for my analyses in this section. I first merge the Compustat-CRSP dataset with the Arabesque ESG dataset, requiring sample firm-years to have at least one non-missing labor practice feature from the Arabesque dataset. Retained firms are much larger than the full sample, with average total assets around $8.1 billion (the average total asset for sample firms in Tables 4 to 8 is around $0.6 billion). Then, I reapply the same matching procedure as described in Section 3.1 by fitting the same prediction model in Table 2, Panel B, Column (1). I present the Probit regression results in my Supplementary Appendix Table SA5. Despite the sharp drop in sample size due to Arabesque's limited data coverage, I find that the coefficients in Table SA5 are similar in magnitudes to those in Table 2, Panel B, Column (1), except for the coefficient on illiquidity (-9.87 in Table SA5 which is -0.16 in Table 5, Panel B). The big negative coefficient on illiquidity in Table SA5 is consistent with the notion that targeting large public firms is difficult. Even if the activist hedge funds have sufficient capital, they still require sufficient stock liquidity to purchase the shares.

Supplementary Appendix Table SA6 presents the characteristics of the matched sample ("Arabesque-confined matched sample") in the year immediately before the hedge fund interventions.

Like Table 3, Panel A, the covariates are mostly balanced after matching, except for *Tobin's Q*, *ROA*, and *Abnormal Annual Returns*. [28]

Applying Arabesque's six labor practice variables as the output variables in Equation (1), I investigate how hedge fund interventions affect targeted firms' labor practices. Table 10 presents the overall effects of hedge fund interventions on the six different labor practice aspects. I find that, on average, targeted firms experience better *Training & Development*, and *Operational Health & Safety* after hedge fund interventions, as illustrated in Columns (1) and (2) of Table 10. In Table 11, Panel A through Panel F, I further analyze the cross-sectional effects of each labor practice aspect based on firms' expected benefits from labor efficiency improvements. Using the same sample partition methods for Table 8 as described in Section 3.3, I find modest evidence that firms' improvements in *Training & Development*, and *Operational Health & Safety* are more prominent when targeted firms may benefit more from higher labor efficiency. There is one exception in which low technology firms experience more advancement in *Operational Health & Safety* than high technology firms (Table 11, Panel B, Columns 3 and 4).

In contrast, I do not find the post-intervention effects on *Human Rights*, *Employment Quality*, *Diversity*, or *Labor Rights* scores to be statistically significant (Table 10, Columns 3 to 6). Moreover, the post-intervention effects on these aspects do not differ depend on the benefits from higher labor efficiency (Table 11, Panels C to F). These findings suggest they are unlikely mechanisms that targeted firms adopt to achieve labor efficiency enhancement after hedge fund interventions.

[28] To validate that pursuing labor efficiency still explains the workforce reductions subject to hedge fund interventions, I replicate Table 4 (Columns 1 and 3) and Table 6 using the Arabesque-confined matched sample. Supplementary Table SA7 presents the results. Although the number of observations is much smaller, and the sample firms are much bigger, targeted firms in the Arabesque-confined matched sample also experience workforce reductions after hedge fund interventions, and these reductions are more prominent in the four scenarios identified in Section 2.2. In these scenarios, firms are expected to benefit more from enhancing labor efficiency. Supplementary tables SA5 to SA7 suggest that although the sample firm-years used for the channel analyses contain fewer observations, the sampling process does not introduce bias in a way that impedes the generalizability of findings in Section 4.

In sum, my findings suggest that targeted firms mainly improve their labor efficiency by enhancing their *Training & Developments* and *Operational Health & Safety* practices after hedge fund interventions[29]. These findings suggest that activist hedge funds exert similar effects on workers as private equity (PE) investors, as papers document that PE investors also improve buyout firms' employee training (Agrawal and Tambe 2016) and workplace safety (Cohn, Nestoriak, and Wardlaw 2021).[30]

5. Conclusion and Limitations

The media and the current literature consider activist hedge funds' impact on labor to be undesirable, arguing that they induce targeted firms' managers to fire workers and cut labor-related spending to boost earnings (e.g., Strine 2016, Agrawal and Lim 2021). In this paper, I document that while hedge fund interventions, on average, reduce the workforces of the targeted firms, such workforce reductions more likely arise from managers pursuing higher labor efficiency instead of conducting real earnings management. Specifically, when activist hedge funds' engagement purposes are short-term focused, I do not find targeted firms experience significant workforce reductions. I also do not find targeted firms experience more workforce reductions after hedge fund interventions when managers are more susceptible to manipulating earnings or when they endure lower employee termination costs.

In contrast, I find that targeted firms' labor productivity increases while overinvestment in labor drops after hedge fund interventions. The workforce reductions are more potent when the targeted firms face higher benefits of enhanced labor efficiency—namely, when SASB identifies human capital material for firms' business, when firms have higher technology levels and require more skilled labor, and when

[29] One limitation of my study is I cannot distinguish whether activist hedged funds demand targeted firms to make these specific changes or managers choose these actions facing hedge funds' broader requests (e.g., improving performance). Based on the stated purposes in firms' 13D filings, it is very rare that hedge fund activists mention training and safety keywords.

[30] Agrawal and Tambe (2016) show that PE acquired firms experience higher labor productivity as employees take training to adapt to rapid technological progress. Their study also shows workers benefit in the long run from the training and enjoy higher salaries and lower unemployment rates. Cohn, Nestoriak, and Wardlaw (2021) document that PE buyouts lead to better workplace safety, as reflected in lower injury rates and fewer OSHA safety violations. Their findings also show that these improvements also improve the profits of PE investors, who enjoy a better chance of exiting through IPO.

firms operate in non-manufacturing sectors. I also present evidence that targeted firms achieve higher labor efficiency by improving training and development and enhancing operational health and safety practices. Targeted firms' workforce reductions are also associated positively with their profitability and capital market valuation after hedge fund interventions. These positive associations last for a relatively long period and do not seem to reverse or diminish.

My findings show that activist hedge funds push targeted firms to improve labor efficiency, especially when targeted firms' labor efficiency are low and when improving labor efficiency is beneficial for enhancing firm values. Activist hedge funds appear to have no significant impact on labor when targeted firms' labor practices are relatively efficient and when the benefits of streamlining labor practices are low. These findings are consistent with the notion that hedge fund activists are rational economic forces that mitigate the agency frictions in targeted firms. To my knowledge, my study is the first paper that offers a more comprehensive view on hedge fund interventions' effect on labor.

However, my study has several limitations. First, activist hedge funds do not randomly target firms. Although I try to mitigate the selection bias concern by using propensity score matching and control variables, other unobservable factors beyond my first-stage prediction model may drive both hedge fund interventions and firms' labor efficiency. Whereas the high-R-squared values in all main tests (in the 0.90 ranges for models with firm fixed effects and year fixed effects) suggest that omitted variables are unlikely to be a major concern, I do acknowledge that including fixed effects might not be enough. At a minimum, my paper should still cast doubt on the argument that activist hedge funds leads to undesirable labor outcomes, which is a prevailing view of the media and the opponents to hedge fund activism.

Second, the channel analysis (Section 4) is based on a relatively small sample of public firms that voluntarily disclose their labor practices. Such disclosures may introduce self-selection issues and limit my ability to generalize to more firms in the capital market. As SEC mandates public firms to disclose

material human resource management aspects starting Nov 9th, 2020, I expect these empirical challenges ammolite in future studies.

Lastly, I mainly focus on two non-mutually-exclusive possibilities for targeted firms' workforce reductions after hedge fund interventions. These two hypotheses are examined because of the common public beliefs and the current debates in the hedge fund literature regarding the bright- and dark-side effects of hedge fund activism. However, other undiscussed incentives (e.g., divesting) may also contribute to the underlying phenomenon. I fully acknowledge this limitation and encourage future studies to probe other incentives and mechanisms regarding how activist hedge funds affect labor.

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Appendix 1. Variable Definitions

Variables	Definitions	Sources
HF Treated	A dummy variable equal to one if there is hedge fund activism targeting the company.	The updated hedge fund campaign sample from Brav et al. (2008, 2010)
Post	A dummy variable equal to one if after the hedge fund announces its intervention of a firm	Computed
Dummy_EmployeeDec	An indicator variable that equals one if a targeted firm's employee number two years after the intervention is smaller than its employee number two years before the intervention, and zero otherwise.	Same as above
Ln (Total Assets)	The natural logarithm of a company's total assets on its Balance Sheet	Compustat
Tobin's Q	The sum of the book value of total liability plus the market value of equity divided by the book total assets	Same as above
Sales Growth	The growth rate of net sales over the previous year	Same as above
ROA	The return on assets, defined as the operating income before depreciation and amortization divided by total assets	Same as above
Capital Expenditure	Capital expenditure, defined as capital expenditure divided by total assets	Same as above
Cash	Cash and cash equivalent deflated by total assets	Same as above
Leverage	Total liability divided by total assets	Same as above
Dividend Yield	Dividend yield, computed as cash dividend per share, divided by the stock price	Same as above
# Employees	Number of employees, in thousands (if not otherwise stated)	Same as above
SG&A	Selling, general, and administrative expense divided by total assets	Same as above
COGS	Cost of goods sold divided by total assets, replace by zero if missing	Same as above
R&D	Research and development expense divided by total assets, replace by zero if missing	Same as above
Patent Value	The natural logarithm of the total nominal patent value for all the patents granted to a firm in a year	From Noah Stoffman's website (https://iu.app.box.com/v/patents)
# Analyst Coverage	The number of unique analysts covering the company in a year	I/B/E/S
Institutional Ownership	The total percentage of shares held by institutional owners	Thomson Reuters Institutional Holdings
Illiquidity	Computed following Amihud (2002), defined as the yearly average of daily data: $1000*\sqrt{(\lvert\text{Return}\rvert / (\lvert\text{Price}\rvert * \text{Trading Volume})}$	CRSP
Annual Abnormal Return	The annual sum of a firm's monthly abnormal stock return (relative to the value-weighted market return).	CRSP
Labor Productivity	The natural logarithm of (annual sales divided by the average number of employees).	Compustat
Abnormal_Net_Hire_Industry	The net hire rate (the percentage change of number of employees) subtracts the industry median of the net hire rate at the six-digit NAICS level	Same as above

Abnormal_Net_Hire_Fundamental	The net hire rate (the percentage change of number of employees) subtracts the predicted net hire rate using the Pinnuck and Lillis (2007) model: $Net\ Hire_{it} = \beta_0 + \beta_1 Sales\ Growth_{i\,t-1} + \beta_2 Sales\ Growth_{it} + \beta_3 \Delta ROA_{i\,t} + \beta_4 \Delta ROA_{i\,t-1} + \beta_5 ROA_{i\,t} + \beta_6 Annual\ Stock\ Return_{i\,t} + \beta_7 Size\_R_{i\,t-1} + \beta_8 Quick_{i\,t-1} + \beta_9 \Delta Quick_{i\,t-1} + \beta_{10} Quick_{i\,t} + \beta_{11} Debt\_to\_Asset_{i\,t-1} + \beta_{12} LossBin1_{i\,t-1} + \beta_{13} LossBin2_{i\,t-1} + \beta_{14} LossBin3_{i\,t-1} + \beta_{15} LossBin4_{i\,t-1} + \beta_{16} LossBin5_{i\,t-1} + \varepsilon_{it}$ *Net Hire* equals the percentage change in the number of employees. *Annual Stock Return* is the annual sum of monthly raw stock return. *Size_R* is the log of market value of equity, ranked into percentiles. *Quick* is the ratio of cash and short-term investments plus receivables to current liabilities; *Debt_to_Asset* is the ratio of long-term debt (both the current liability portion and non-current liability portion) to the total assets. *LossBinK* (K=1 to 5) is the indicator for each 0.005 interval of prior year ROA from 0 to -0.025. All the other variables are defined the same as in this Appendix.	Compustat and CRSP

Appendix 2. About the Arabesque (ARBQ) Data

This appendix describes the Arabesque dataset used in the channel analysis (Section 4). Panel A describes the six dimensions of the labor practices used in this paper as primary output variables. Panel B represents the number of US public firms after merging with the Compustat and CRSP database by year. The Arabesque labor practice scores are between 0 and 100. Higher scores indicate better practices.

Panel A. A Brief Summary of the ARBQ HCM Features

Feature Name	Summary Descriptive	Example of Feature Inputs
Training & Development	Opportunities and programs to enable and support learning across employees and the supply chain	Whether a company provides relevant training to employees, reports the number of training hours or employees trained has a career development policy for employees. The average training hours per employee per year. The total training cost per year. The internal promotion ratio. Hours and expenses of management training and supplier ESG training.
Operational Health & Safety	Workplace-related health and safety performance	Whether a company publishes accidents rates such as fatalities, incidents, injuries. Whether a company performs safety training, has programs and targets to reduce health and safety incidents, and has Health and Safety Certifications. Whether it has not been involved in employee safety & health legal proceedings/lawsuits. Whether it has procedures for health & safety related investigations, provides medical insurance to employees, has Employee and Supply Chain Health & Safety Policy, reports policies or programs on HIV/AIDS for the workplace or beyond. The total number of injuries and fatalities relative to one million hours worked. Number of lost working days relative to total employees.
Human Rights	Adherence to and promotion of human rights throughout all business activities, including the supply chain	Whether the company has a human rights policy. Whether the company respects current/previous employee privacy. Whether the company monitors the implementation of policies on human rights, abides by the UDHR (universal declaration of human rights), has signatory to the Voluntary Principles on Security and Human Rights, provides employee human rights training, reports on human rights policy and performance, and describes the implementation of its human rights policy. Whether the company monitors human rights in its or its suppliers' facilities, reports or shows it uses human rights criteria in the selection or monitoring process of its suppliers or sourcing partners.

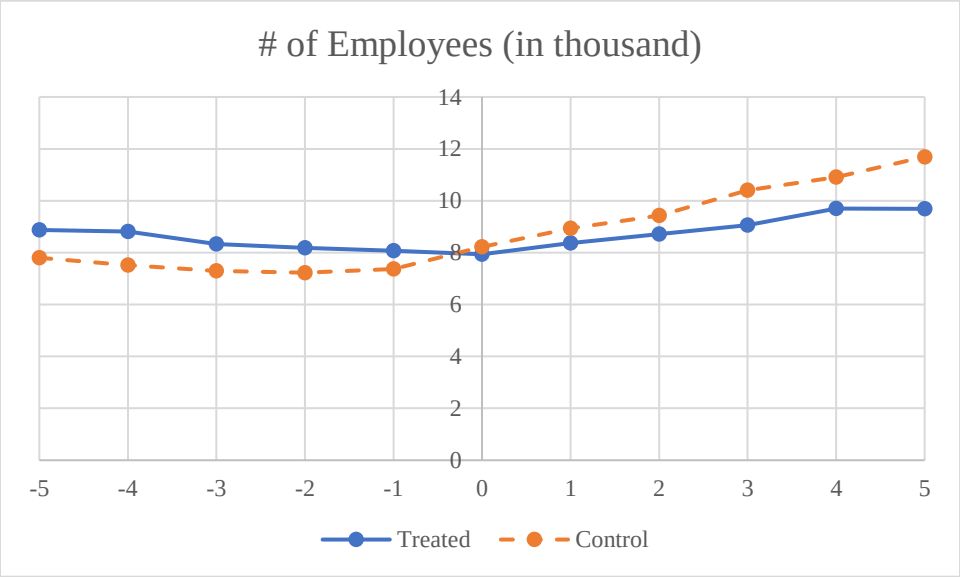
Feature Name	Summary Descriptive	Example of Feature Inputs
Employment Quality	Working conditions and employee satisfaction	Whether a company measures employee satisfaction, publishes employees' turnover rates, has a policy for work-life balance, adopts flexible working schemes, and offers employees day-care services. The disclosed turnover of employees. The incidents of lay-offs, management departures, and strikes.
Diversity	Representation of and equal opportunity for women and minorities in the workforce and on the board	Whether the company has policy/program on eliminating discrimination, has programs to support increase supplier diversity, has diversity and opportunity policies and targets, and has not been involved in discrimination legal proceedings. The percentage of women and/or minorities representation in BOD and in employees. Whether the company is employing disabled individuals. The percentage of women managers.
Labor Rights	Compliance with internationally recognized labor standards, both in-house and across the supply chain	Whether a company provides training on supplier code of conduct, allows its workers to join trade unions or has a trade union representation, and has a policy not to use forced labor or child labor. Whether a company has a supplier Code of Conduct, conducts in-house/third- party inspections of suppliers, reports inspection on suppliers & violation of Code of Conduct, has not been involved in supply chain legal proceedings and abides by ILO Core Labor standards and labor rights policies.

Panel B. Number of Firms Each Year in the ARBQ Dataset with a non-Missing Labor Practice Feature Score

Year	*Employment Quality*	*Training & Development*	*Diversity*	*Labor Rights*	*Operational Health & Safety*	*Human Rights*
2003	291	364	227	63	151	151
2004	292	365	228	79	152	152
2005	407	513	319	126	216	216
2006	458	577	355	172	238	238
2007	458	576	351	190	237	237
2008	479	608	366	246	245	245
2009	646	804	472	364	313	313
2010	748	912	527	439	350	350
2011	776	948	535	489	354	354
2012	783	956	536	494	350	350
2013	784	952	536	485	349	349
2014	786	954	532	496	350	350
2015	788	949	524	487	344	344
2016	1,367	1,571	693	832	454	454
2017	2,033	2,241	830	2,137	554	554
2018	2,210	2,436	813	2,204	545	545
2019	2,473	2,472	2,469	2,222	2,469	2,469

Figure 1. The Unconditional Level of # Employees and SG&A Expense Surrounding Hedge Fund Interventions

The figures present both treated and control firms' labor size and spending over time. The horizontal axles indicate the years relative to the HF intervention events (0 indicates the year that the hedge fund intervention was initiated).



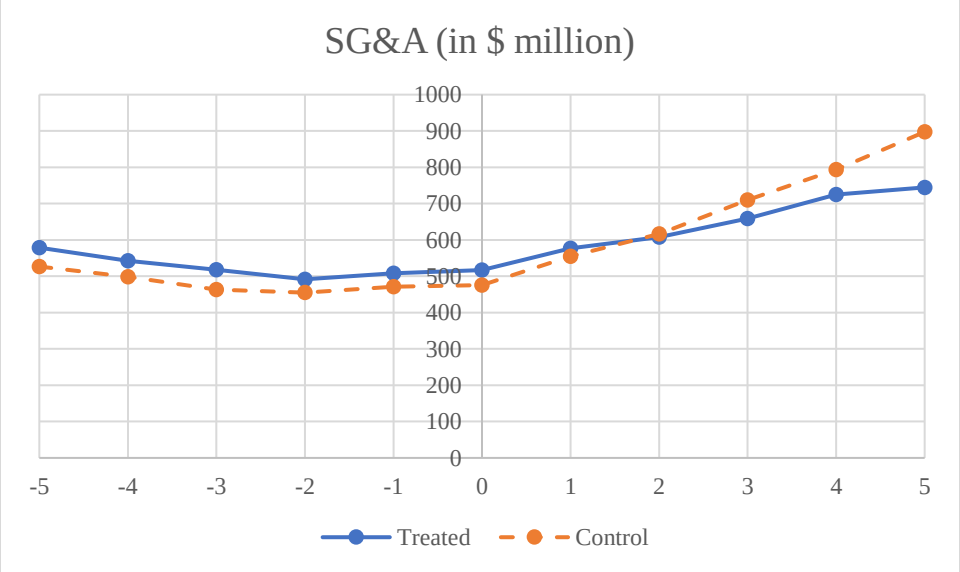


Figure 2. The Dynamic Treatment Effects of Hedge Fund Interventions on # Employees and SG&A Expenses

The figures present the coefficients β_k in Equation (3). Control variables are the same as shown in Table 4, Columns (1) and (3). I use [-5 years, +5 years] window surrounding the hedge fund interventions for this analysis. The year t=-5 is used as the zero benchmark.

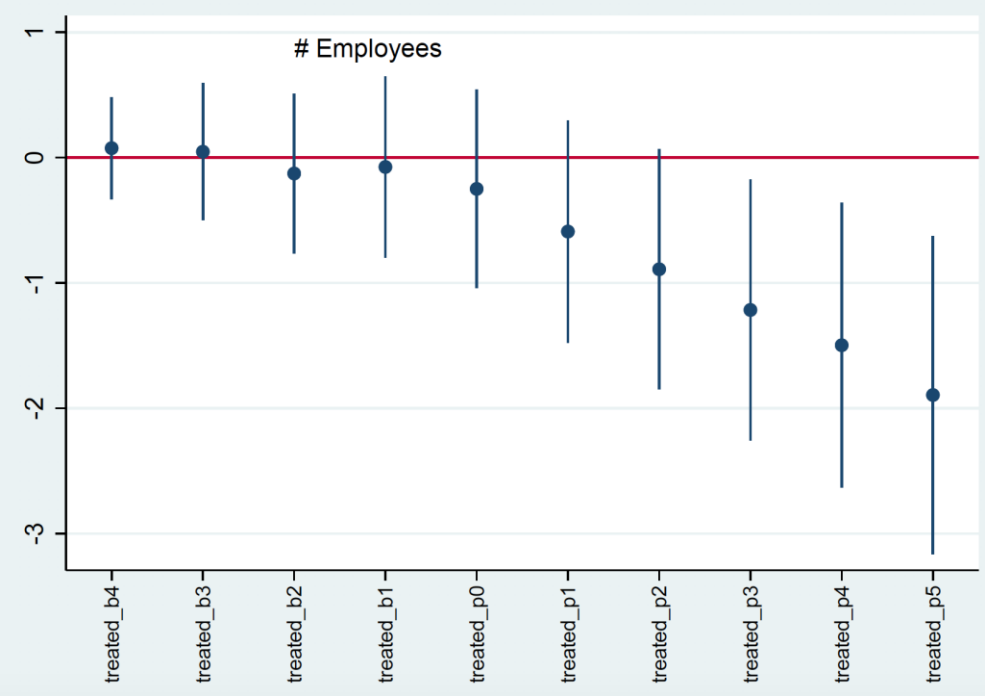


Table 1. Samples

This table summarizes the sample selection for the main analyses.

	# Firm-year Observations
Compustat-CRSP Merged Data 2003-2018	92,802
deduct: samples missing observations in independent variables	-18,608
	74,194
deduct: samples eliminated in matching	-38,755
	35,439
deduct: samples eliminated that is out of the [-2 years, +2 years] window	-19,199
	16,240

Table 2. Pre-matching Descriptive Statistics and Model for Hedge Fund Interventions

Panel A presents the characteristics in all the years of all firms in the Compustat-CRSP Merged database with non-missing variables that were targeted at least once versus those not targeted by any hedge funds during the sample period. Panel B uses firm characteristics to predict the probability a firm is targeted by hedge fund activists in the next year. In Panel B, Column (2), the # Employees is rescaled to millions by dividing 1,000 to show the coefficients. The dependent variable is a dummy variable equal to one if an activist hedge funds target the companies. All independent variables are defined in Appendix 1. Column (1) is the model for propensity score matching, and Column (2) includes the number of employees to check whether activist hedge funds strategically target companies with excessive labor. Robust z-statistics report in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

Panel A: Descriptive Statistics of Firms Targeted Versus Other Firms in All Firm-years

Variables	Targeted at least once	Not Targeted	Diff		
	N=17,925 firm-years	N=52,269 firm-years			t-statistics
Ln (Total Assets)	6.29	6.67	-0.38	***	-20.22
Tobin's Q	1.78	1.93	-0.15	***	-10.85
Sales Growth	0.10	0.14	-0.04	***	-8.94
ROA	0.06	0.05	0.01	***	5.77
Capital Expenditure	0.04	0.04	0.00	***	2.67
Cash	0.21	0.19	0.01	***	7.20
Leverage	0.54	0.54	0.00		-0.93
Dividend Yield	0.90%	1.70%	-0.01	***	-31.78
Patent Value	1.13	0.95	0.18	***	9.87
# Analyst Coverage	3.37	3.25	0.12	**	2.12
Institutional Ownership	0.38	0.32	0.06	***	18.15
Annual Abnormal Return	4.80%	5.70%	-0.01	**	-2.05
Illiquidity	0.38	0.42	-0.04	***	-4.81

Table 2. Pre-matching Descriptive Statistics and Model for Hedge Fund Interventions (Continued)

Panel B: Prediction model for hedge fund interventions

	(1)	(2)
VARIABLES	Hedge Fund Intervention=1	Hedge Fund Intervention=1
Ln (Total Assets)	-0.10***	-0.10***
	(-13.52)	(-13.50)
Tobin's Q	-0.15***	-0.15***
	(-12.69)	(-12.73)
Sales Growth	-0.08***	-0.08***
	(-3.41)	(-3.38)
ROA	0.26***	0.27***
	(3.95)	(3.97)
Capital Expenditure	0.72***	0.71***
	(4.07)	(4.02)
Cash	0.29***	0.29***
	(4.72)	(4.73)
Leverage	0.38***	0.38***
	(8.67)	(8.72)
Dividend Yield	-4.92***	-4.92***
	(-9.88)	(-9.88)
Patent Value	0.02***	0.02***
	(4.11)	(3.98)
# Analyst Coverage	0.01***	0.01***
	(3.40)	(3.36)
Institutional Ownership	0.01	0.01
	(0.96)	(0.97)
Abnormal Annual Return	-0.15***	-0.15***
	(-7.14)	(-7.13)
Illiquidity	-0.16***	-0.16***
	(-9.36)	(-9.42)
# Employees		0.28
		(1.35)
Constant	-1.14***	-1.13***
	(-20.16)	(-19.68)
Model	Probit	Probit
Sample	Full Sample	Full Sample
Observations	63,031	63,031
Pseudo R-squared	0.0352	0.0352

Table 3. Descriptive Statistics of the Matched Samples

This table reports the composition and characteristics of the samples. Panel A compares the attributes of matched treated and control firms in the year proceeding the interventions. Panel B depicts the sample distributions over the years. Panel C reports the sample distributions across industries, according to the Fama-French 12 industry codes. Panel D summarizes the activist hedge funds' stated transaction purposes of these interventions. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

Panel A. Covariate balances in the year prior to the hedge fund interventions

Variables	Treated N=2,256	Control N=2,041	Diff		t
Ln (Total Assets)	6.22	6.29	-0.07		-1.25
Tobin's Q	1.56	1.73	-0.17	***	-5.32
Sales Growth	0.09	0.11	-0.02		-1.52
ROA	0.05	0.07	-0.01	***	-2.74
Capital Expenditure	0.05	0.05	0.00		-0.55
Cash	0.20	0.20	0.00		-0.03
Leverage	0.55	0.53	0.02	**	2.47
Dividend Yield	0.80%	0.80%	0.00%		0.27
Patent Value	1.04	1.12	-0.08		-1.32
# Analyst Coverage	3.43	3.74	-0.31		-1.19
Institutional Ownership	0.35	0.35	0.00		0.36
Annual Abnormal Return	-5.30%	-2.00%	-0.03	**	-2.21
Illiquidity	0.36	0.38	-0.02		-0.84

Panel B. Distribution in the Year of Hedge Fund Interventions

Year of treatment	After Matching			
	Treated		Control	
	Count	Percent	Count	Percent
2003	93	4.12	88	4.31
2004	106	4.7	97	4.75
2005	166	7.36	149	7.3
2006	219	9.71	198	9.7
2007	270	11.97	228	11.2
2008	202	8.95	178	8.72
2009	112	4.96	105	5.14
2010	130	5.76	122	5.98
2011	148	6.56	128	6.27
2012	146	6.47	134	6.57
2013	161	7.14	153	7.5
2014	176	7.8	161	7.89
2015	161	7.14	144	7.06
2016	166	7.36	156	7.64
Total	2,256	100	2,041	100

Table 3. Descriptive Statistics of the Matched Samples (Continued)

Panel C: Industry distribution of hedge fund intervention targets

	Treated		Control	
Fama-French industry (12 industries)	Count	Percent	Count	Percent
Consumer NonDurables	98	4.34	85	4.16
Consumer Durables	64	2.84	66	3.23
Manufacturing	187	8.29	171	8.38
Oil, Gas, and Coal	95	4.21	77	3.77
Chemicals and Allied Products	50	2.22	47	2.30
Business Equipment	516	22.87	458	22.44
Telephone and Television Transmission	89	3.95	86	4.21
Utilities	30	1.33	32	1.57
Wholesale, Retail, and Some Service	255	11.3	222	10.88
Healthcare, Medical Equipment, and Drug	241	10.68	223	10.93
Finance	315	13.96	290	14.21
Other	316	14.01	284	13.91
Total	2,256	100	2,041	100

Panel D. The stated engagement purposes

Stated Purposes	n	Mean	Std. Dev.	Min	Max
Strategy & Operation	2,256	0.39	0.49	0	1
Undervalue	2,256	0.19	0.39	0	1
Board	2,256	0.25	0.44	0	1
Delist	2,256	0.06	0.24	0	1
Sell	2,256	0.24	0.42	0	1
Merger &Acquisition	2,256	0.23	0.42	0	1
Dividend	2,256	0.13	0.33	0	1

Table 4. PSM-based Difference-in-Differences Test of Hedge Fund Activism's Impact on Targeted Firms' Labor Practices

This table reports the regression analyses using Equation (1). In Columns (3) to (5), the input variable # Employees is rescaled into millions by dividing 1,000 to present the coefficients. All variables are defined in Appendix 1. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

VARIABLES	(1) *# Employees*	(2) *Ln # Employees*	(3) *SG&A*	(4) *SG&A+COGS*	(5) *SG&A+COGS+R&D*
Post	0.00	0.02***	0.01***	0.03***	0.04***
	(0.00)	(2.64)	(3.00)	(3.32)	(3.38)
HF Treated X Post	-0.44**	-0.03***	-0.01**	-0.03***	-0.03***
	(-2.57)	(-4.51)	(-2.26)	(-2.60)	(-2.76)
# Employees			0.81***	1.05	1.58
			(3.15)	(1.03)	(1.52)
HF Treated X			-0.01	1.82	1.51
# Employees			(-0.04)	(1.34)	(1.05)
Ln (Total Assets)	3.47***	0.30***	-0.13***	-0.33***	-0.35***
	(7.02)	(14.27)	(-13.76)	(-9.38)	(-9.62)
Tobin's Q	0.10	0.02***	0.02***	0.09***	0.10***
	(0.40)	(3.29)	(4.75)	(3.30)	(3.30)
ROA	-2.55***	-0.09**	-0.28***	-1.18***	-1.30***
	(-3.42)	(-2.10)	(-7.36)	(-3.54)	(-3.81)
Sales Growth	0.10	0.00	0.02***	0.11***	0.12***
	(0.75)	(0.09)	(3.01)	(4.19)	(4.09)
Abnormal Return	-0.06	-0.02***	-0.02***	-0.06***	-0.06***
	(-0.39)	(-3.38)	(-6.68)	(-3.85)	(-4.26)
HF Treated X	-0.60	-0.02	0.01	-0.01	-0.01
Ln (Total Assets)	(-0.97)	(-0.58)	(0.53)	(-0.14)	(-0.19)
HF Treated X	-0.01	-0.01	-0.00	-0.04	-0.04
Tobin's Q	(-0.03)	(-1.05)	(-0.67)	(-1.16)	(-0.98)
HF Treated X	0.21	-0.04	-0.00	0.47	0.46
ROA	(0.21)	(-0.82)	(-0.07)	(1.31)	(1.27)
HF Treated X	0.40*	0.04***	-0.00	-0.04	-0.04
Sales Growth	(1.86)	(3.51)	(-0.30)	(-1.37)	(-1.32)
HF Treated X	0.06	0.00	0.01**	0.01	0.02
Abnormal Annual Return	(0.37)	(0.68)	(2.08)	(0.80)	(0.95)
Observations	16,240	16,240	14,499	14,499	14,499
Adjusted R-squared	0.96	0.98	0.92	0.90	0.89
Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes

Table 5. Activists' Stated Engagement Purposes and Impacts on Targeted Firms' Workforce Sizes: The Myopia Hypothesis

This table examines the workforce reduction effects of hedge fund interventions within the treated firms only following Equation (2). I use textual analysis to identify the keywords in activist hedge funds' stated purposes of transactions (Item 4 in Form SC 13D). Column (1) reports the regression analysis result of the full sample, and Columns (2) to (8) report the regression results of the subsamples with specific engagement purposes. I consider Columns (2) to (4) to be less likely to capture activists' short engagement horizons and Columns (5) to (8) to be more likely to capture activists' short engagement horizons. I include the firm fixed effects in all regressions to control for time-invariant omitted correlated variables. All other variables are defined in Appendix 1. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES				*# Employees*				
Stated Purposes	Full Sample	Strategy & Operation	Undervalue	Board	Delist	Sell	Merger &Acquisition	Dividend
T=-2	0.02	-0.26	-0.13	-0.14	-0.12	-0.13	-0.34*	-0.12
	(0.14)	(-1.37)	(-0.54)	(-0.66)	(-0.45)	(-0.68)	(-1.76)	(-0.52)
T=-1	0.03	-0.18	-0.13	0.03	-0.19	-0.19	-0.20	-0.03
	(0.40)	(-1.09)	(-0.77)	(0.18)	(-0.88)	(-1.19)	(-1.32)	(-0.19)
T=+1	-0.29***	-0.31*	-0.31*	-0.46	-0.08	0.08	-0.03	-0.15
	(-2.79)	(-1.67)	(-1.66)	(-1.45)	(-0.60)	(0.42)	(-0.23)	(-1.01)
T=+2	-0.49***	-0.65***	-0.81***	-0.78**	0.09	-0.13	-0.23	-0.23
	(-3.04)	(-2.92)	(-3.22)	(-2.02)	(0.55)	(-0.77)	(-1.50)	(-1.18)
Ln (Total Assets)	2.96***	3.02***	2.78***	1.83***	0.54**	2.67***	1.95***	1.40***
	(8.23)	(8.69)	(6.50)	(3.37)	(2.04)	(4.78)	(4.33)	(4.04)
Tobin's Q	0.11	0.23**	0.04	0.06	0.05	0.25**	0.22***	0.11**
	(1.01)	(2.33)	(0.29)	(0.67)	(1.16)	(2.04)	(2.97)	(2.12)
ROA	-2.51***	-1.42***	-1.01	-0.99*	-0.69*	-0.68	-0.37	-0.54
	(-3.95)	(-2.97)	(-1.31)	(-1.87)	(-1.85)	(-0.98)	(-0.46)	(-1.42)
Sales Growth	0.48***	0.34**	0.50**	0.28**	0.26*	0.18	0.20	0.13
	(2.79)	(2.01)	(2.52)	(2.04)	(1.84)	(0.75)	(1.42)	(0.92)
Abnormal Annual Return	-0.03	0.11	0.12	0.06	-0.07	0.11	-0.10	0.01
	(-0.37)	(1.14)	(0.91)	(0.50)	(-1.02)	(1.07)	(-1.19)	(0.13)
Observations	8,316	3,181	1,465	1,968	460	1,828	1,852	970
Adjusted R-squared	0.97	0.96	0.98	0.96	0.97	0.98	0.98	0.99
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 6. Activist Hedge Funds' Impacts on Targeted Firms' Workforce Sizes and Targets' Earnings Management Incentives: The Myopia Hypothesis

This table reports the cross-sectional analyses of subsample firms based on their myopic incentives according to Equation (1). I control for the same control variables as in Table 4, Column (1) for analyses using *# Employees* as the dependent variables. I control for the same control variables as in Table 4, Column (3) for analyses using SG&A as the dependent variables. If a firm's net income subtracts its lagged net income over its lagged total assets is positive but smaller than 0.01, it is analyzed in Column (1) and otherwise in Column (2). If a firm's net income over its total assets is positive but smaller than 0.01, it is analyzed in Column (3), and if its net income over its total assets is greater than 0.01, it is analyzed in Column (4). If a firm's annual EPS beats the consensus analyst forecast by $0.05, it is analyzed in Column (5) and otherwise in Column (6). I fully interact the partition variable with the regression variables to obtain the F-test on the equality of the two coefficients of the variable of interests in the subsamples. All other variables are defined in Appendix 1. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	**Just meet/beat last year' earnings**		**Just meet/beat zero earnings**		**Just meet/beat analyst forecast**	
Subsample	Yes	No	Yes	No	Yes	No
			# Employees			
Post	-0.24	0.01	-0.15	-0.45	-2.26**	0.08
	(-0.55)	(0.08)	(-0.78)	(-1.52)	(-2.56)	(0.23)
HF Treated X Post	0.47	-0.51***	0.30	-0.34	1.63**	-1.01***
	(0.85)	(-2.78)	(1.30)	(-1.23)	(2.10)	(-2.86)
F-test on Coef	p=0.04		p=0.01		p=0.22	
Observations	1,114	14,367	830	9,443	1,503	5,373
Adjusted R-squared	0.98	0.96	0.99	0.96	0.97	0.96
			SG&A Expense			
Post	0.00	0.01***	-0.00**	0.00	-0.00	0.01***
	(0.22)	(2.95)	(-2.07)	(1.21)	(-0.27)	(3.06)
HF Treated X Post	0.00	-0.01**	0.01*	-0.01*	0.01	-0.01**
	(0.01)	(-2.42)	(1.74)	(-1.87)	(0.96)	(-2.23)
F-test on Coef	p=0.61		p=0.02		p=0.04	
Observations	944	12,869	750	8,494	1,384	4,743
Adjusted R-squared	0.98	0.92	0.98	0.93	0.95	0.93
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 7. Hedge Fund Interventions' Effects on Targeted Firms' Labor Efficiency

This table uses alternative measures to test whether hedge fund interventions enhance targeted firms' labor efficiency. All variables are defined in Appendix 1. Panel A reports the results on the pooled sample and Panel B reports the subsample results based on whether the dependent variables in the year before the interventions (t=-1) are above or below the annual median. All models control for the industry fixed-effects and year fixed-effects. I fully interact the partition variable with the regression variables to obtain the F-test on the equality of the two coefficients of the variable of interests in the subsamples. All other variables are defined in Appendix 1. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

Panel A: Overall Effects

VARIABLES	(1) *Labor Productivity*	(2) *Abnormal_Net_Hire _Industry*	(3) *Abnormal_Net_Hire _Fundamental*
HF Treated	0.17*	-0.02	-0.01
	(1.69)	(-1.25)	(-0.43)
Post	-0.03*	-0.02***	-0.01
	(-1.89)	(-3.03)	(-1.45)
HF Treated X Post	0.04**	-0.02**	-0.02*
	(2.08)	(-2.10)	(-1.78)
Ln (Total Assets)	0.07***	0.00	-0.00
	(6.45)	(1.61)	(-0.90)
Tobin's Q	0.01	0.01***	0.01
	(0.62)	(2.60)	(1.43)
ROA	1.32***	0.09***	0.05*
	(8.68)	(2.90)	(1.80)
Sales Growth	0.31***	0.24***	0.02
	(8.54)	(8.94)	(0.61)
Abnormal Return	-0.04*	0.02**	-0.00
	(-1.83)	(2.29)	(-0.44)
HF Treated X Ln (Total Assets)	-0.03**	0.00	0.00
	(-1.99)	(0.79)	(0.15)
HF Treated X Tobin's Q	0.03	-0.00	-0.00
	(1.15)	(-0.36)	(-0.47)
HF Treated X ROA	0.02	-0.01	-0.00
	(0.09)	(-0.27)	(-0.08)
HF Treated X Sales Growth	-0.12***	-0.01	0.01
	(-2.59)	(-0.37)	(0.28)
HF Treated X Abnormal Annual Return	0.01	0.01	0.00
	(0.35)	(0.72)	(0.34)
Observations	15,835	16,147	12,796
Adjusted R-squared	0.54	0.14	0.02
Industry FE, Year FE	Yes	Yes	Yes

Table 7. Hedge Fund Interventions' Effects on Targeted Firms' Labor Efficiency (Continued)

Panel B: Cross-sectional effects based on the pre-intervention labor inefficiency

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	*Labor Productivity*		*Abnormal_Net_Hire_Industry*		*Abnormal_Net_Hire_Fundamental*	
HF Treated	0.22*	-0.01	0.01	-0.05*	0.03	-0.03
	(1.87)	(-0.09)	(0.35)	(-1.71)	(1.00)	(-1.32)
Post	0.01	-0.06***	-0.07***	0.04***	-0.08***	0.05***
	(0.52)	(-3.09)	(-8.07)	(5.11)	(-8.35)	(6.85)
HF Treated X Post	0.05	0.01	-0.04***	-0.01	-0.03*	-0.01
	(1.49)	(0.60)	(-3.10)	(-0.85)	(-1.79)	(-1.42)
F-test of Coef	p=0.68		p=0.04		p=0.49	
Pre-Intervention Labor Productivity	Low	High				
Pre-Intervention Abnormal Net Hire (Overinvestment in labor)			High	Low	High	Low
Observations	7,359	8,365	8,018	7,973	6,287	6,454
Adjusted R-squared	0.62	0.65	0.17	0.11	0.05	0.03
Controls, Industry FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 8. Cross-sectional Test of HF Intervention's Impact on Targeted Firms' Labor Practices: The Efficiency Hypothesis

This table reports the cross-sectional analyses on subsample firms based on the benefits of improving labor efficiency. The same control variables in Table 4 are included but compressed. If the SASB considers human capital management as a material aspect for the company, it is analyzed in Column (1) and otherwise in Column (2). I excluded the sample firms that are unidentifiable in the SASB SICS database. If a firm's patent value using the Kogan et al. (2017) measure exceeds the sample median in the year before the intervention, it is analyzed in Column (3) and otherwise in Column (4). If a firm's required labor skills using the Belo et al. (2017) measure exceed the sample median, it is analyzed in Column (5) and otherwise in Column (6). If a firm is a manufacturing firm according to Fama-French Five industry codes, it is analyzed in Column (8) and otherwise in Column (7). I fully interact the partition variable with the regression variables to obtain the F-test on the equality of the two coefficients of the variable of interests in the subsamples. All other variables are defined in Appendix 1. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	**SASB HCM Material**		**Patent Value**		**Labor Skill Level**		**Manufacturing Industry**	
Subsample	Yes	No	High	Low	High	Low	No	Yes
					# Employees			
Post	-0.43*	0.25	0.14	-0.03	0.12	-0.09	-0.05	0.16
	(-1.76)	(1.13)	-0.55	(-0.16)	-0.43	(-0.33)	(-0.37)	(0.37)
HF Treated X Post	-0.66**	-0.29	-0.64**	-0.32*	-0.57**	-0.27	-0.45***	-0.28
	(-2.11)	(-1.62)	(-2.17)	(-1.90)	(-2.50)	(-1.03)	(-2.91)	(-0.66)
F-test on Coef		p=0.05		p=0.05		p=0.19		p=0.23
Observations	5,489	10,748	4,881	11,234	8,130	7,986	13,514	2,725
Adjusted R-squared	0.96	0.97	0.97	0.96	0.96	0.97	0.96	0.96
					SG&A Expense			
Post	0.00	0.01***	0.01***	0.01**	0.01**	0.01**	0.01**	0.01*
	(0.40)	(3.05)	(2.60)	(2.01)	(1.98)	(2.47)	(2.57)	(1.87)
HF Treated X Post	-0.01	-0.01	-0.02***	-0.00	-0.01**	-0.00	-0.01**	-0.01
	(-1.36)	(-1.40)	(-3.07)	(-0.79)	(-2.14)	(-0.63)	(-2.19)	(-1.29)
F-test on Coef		p=0.64		p=0.06		p=0.13		p=0.85
Observations	5,055	9,441	4,419	9,959	6,773	7,605	12,029	2,469
Adjusted R-squared	0.92	0.93	0.92	0.93	0.90	0.95	0.93	0.92
Controls, Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 9. Test of the Efficiency Hypothesis Using the Economic Consequences

This table reports the economic consequences of hedge fund interventions' impacts on targets' workforce over different windows surrounding the interventions using Equation (4). Panel A presents the overall effects over different horizons: Columns (1)-(4) use *ROA* as the output variable to measure the firms' profitability, and Columns (5)-(8) use *Tobin's Q* as the output variable to measure the firms' value. Panels B1 and B2 jointly present the cross-sectional effects of [-2, +5] window on subsamples partitioned in the same way as described in Table 6: Panel B1 reports the results using ROA as the output variables, and Panel B2 reports the results using Tobin's Q as the output variables. All control variables are included as in Table 4 but are compressed. Industry fixed effects (instead of firm fixed effects) are included because the *Dummy_EmployeeDec* variable is invariant at the firm level. I fully interact the partition variable with the regression variables to obtain the F-test on the equality of the two coefficients of the variable of interests in the subsamples. All other variables are defined in Appendix 1. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

Panel A: Overall effect over different horizons

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES		***ROA***				***Tobin's Q***		
Sample window in years	[-2, +2]	[-2, +3]	[-2, +4]	[-2, +5]	[-2, +2]	[-2, +3]	[-2, +4]	[-2, +5]
HF Treated X Post X Dummy_EmployeeDec	0.03***	0.03***	0.03***	0.03***	0.10	0.11*	0.11*	0.13**
	(3.65)	(3.73)	(3.69)	(3.80)	(1.61)	(1.71)	(1.84)	(2.12)
HF Treated	0.03	0.02	0.02	0.02	-0.07	-0.08	-0.09	-0.09
	(1.28)	(1.04)	(1.06)	(1.03)	(-0.61)	(-0.71)	(-0.80)	(-0.76)
Post	0.00	0.01	0.01	0.01	-0.03	-0.02	-0.02	-0.01
	(0.93)	(1.23)	(1.33)	(1.23)	(-0.95)	(-0.68)	(-0.55)	(-0.45)
Dummy_EmployeeDec	-0.02***	-0.02***	-0.02***	-0.02***	-0.09**	-0.09**	-0.09**	-0.09**
	(-2.60)	(-2.61)	(-2.63)	(-2.65)	(-2.16)	(-2.15)	(-2.13)	(-2.12)
HF Treated X Post	-0.01	-0.01	-0.00	-0.00	-0.06*	-0.06*	-0.06	-0.06
	(-1.27)	(-1.09)	(-0.96)	(-0.88)	(-1.76)	(-1.69)	(-1.61)	(-1.58)
HF Treated X Dummy_EmployeeDec	-0.00	-0.00	-0.00	-0.00	-0.03	-0.03	-0.03	-0.03
	(-0.21)	(-0.12)	(-0.10)	(-0.05)	(-0.67)	(-0.66)	(-0.63)	(-0.60)
Post X Dummy_EmployeeDec	-0.03***	-0.03***	-0.03***	-0.03***	-0.07	-0.07	-0.07	-0.07
	(-4.76)	(-4.59)	(-4.41)	(-4.27)	(-1.46)	(-1.54)	(-1.39)	(-1.46)
Observations	16,240	18,611	20,700	22,357	16,240	18,611	20,700	22,357
Adjusted R-squared	0.39	0.39	0.39	0.39	0.32	0.32	0.31	0.31
Controls, Industry FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 9. Test of the Efficiency Hypothesis Using the Economic Consequences (Continued)

Panel B1: ROA as the outcome variable

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	**SASB HCM Material**		**Patent Value**		**Labor Skill Level**		**Manufacturing Industry**	
Subsample	Yes	No	High	Low	High	Low	No	Yes
				ROA				
HFA Treated X Post	0.03*	0.03***	0.04**	0.02**	0.05***	0.01**	0.03***	0.01
X Dummy_EmployeeDec	(1.68)	(3.03)	(2.42)	(2.17)	(3.43)	(2.35)	(3.54)	(0.56)
F-test on Coef	p=0.62		p=0.20		p=0.06		p=0.20	
Observations	7,857	14,500	6,780	15,391	11,131	11,227	18,500	3,858
Adjusted R-2	0.39	0.40	0.53	0.35	0.40	0.38	0.40	0.30
Single Effects and Double Interactions	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls, Industry FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel B2: Tobin's Q as the outcome variable

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	**SASB HCM Material**		**Patent Value**		**Labor Skill Level**		**Manufacturing Industry**	
Subsample	Yes	No	High	Low	High	Low	No	Yes
				Tobin's Q				
HF Treated X Post	0.15	0.11	0.32**	0.04	0.20**	0.01	0.15**	0.06
X Dummy_EmployeeDec	(1.41)	(1.42)	(2.45)	(0.67)	(2.03)	(0.18)	(2.13)	(0.58)
F-test on Coef	p=0.85		p=0.07		p=0.14		p=0.17	
Observations	7,857	14,500	6,780	15,391	11,131	11,227	18,500	3,858
Adjusted R-squared	0.35	0.35	0.36	0.31	0.28	0.38	0.31	0.36
Single Effects and Double Interactions	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls, Industry FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 10. Hedge Fund Interventions and Targeted Firms' Labor Practice Scores-Overall Effects

This table reports the analyses of hedge fund intervention's impact on targets' labor practices. See Appendix 2 for the Arabesque labor practice variables and Supplementary Appendix Table SA5 to SA7 for more details about the sample matching details. The same control variables in Table 4 are included but compressed. All other variables are defined in Appendix 1. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

	(1)	(2)	(3)	(4)	(5)	(6)
Labor Practice Variables	*Training & Development*	*Operational Health & Safety*	*Human Rights*	*Employment Quality*	*Diversity*	*Labor Rights*
Post	-0.65	-1.69**	-2.90	0.71	-0.50	-2.47*
	(-1.04)	(-2.07)	(-1.38)	-1.63	(-0.68)	(-1.81)
HF Treated X Post	1.45**	1.60*	1.82	0.50	0.36	1.67
	(2.20)	(1.79)	(0.76)	(1.14)	(0.44)	(1.26)
Observations	1,610	504	504	1,272	865	788
Adjusted R-squared	0.89	0.84	0.84	0.87	0.81	0.87
Controls, Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 11. Hedge Fund Interventions and Targeted Firms' Labor Practice Scores-Cross Sectional Effects

This table reports the analyses presented in Table 9 on the sample samples based on the expected benefits from enhancing labor efficiency. Panels A to F use the *Training & Development*, *Operational Health& Safety*, *Human Rights*, *Employment Quality*, *Diversity*, and *Labor Rights* as labor practice variables, respectively. See Appendix 2 and Supplementary Appendix Table SA5 to SA7 for more details about the labor practice variables and the sample matching details. In each panel, Columns (1) to (8) partition samples into subsamples based on the expected benefits of improving labor efficiency, following the same partition methods described in Table 6. All models include the same set of control variables as in Table 4, but the statistics of the control variables are compressed. All models also control for the firm fixed-effects and year fixed-effects. I fully interact the partition variable with the regression variables to obtain the F-test on the equality of the two coefficients of the variable of interests in the subsamples. All other variables are defined in Appendix 1. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

Panel A: *Training & Development* scores as the output labor practice variable

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	**SASB HCM Material**		**Patent Value**		**Labor Skill Level**		**Manufacturing Industry**	
Subsample	Yes	No	High	Low	High	Low	No	Yes
Post	-0.63	-0.60	-0.94	-0.48	-0.02	-1.08	-1.31*	1.27
	(-0.66)	(-0.76)	(-1.11)	(-0.56)	(-0.02)	(-1.26)	(-1.67)	(1.31)
HF Treated X Post	1.78*	0.70	2.29**	1.30	1.95**	1.03	2.80***	-2.63**
	(1.82)	(0.78)	(2.34)	(1.49)	(2.11)	(1.17)	(3.50)	(-2.21)
F-test of Coef	p=0.38		p=0.58		p=0.56		p=0.00	
Observations	837	773	644	932	726	873	1,145	465
Adjusted R-squared	0.90	0.88	0.91	0.88	0.92	0.87	0.89	0.90
Controls, Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: *Operational Health & Safety* scores as the output labor practice variable

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	**SASB HCM Material**		**Patent Value**		**Labor Skill Level**		**Manufacturing Industry**	
Subsample	Yes	No	High	Low	High	Low	No	Yes
Post	-1.03	-2.15**	-1.12	-0.57	-1.52	-0.88	-2.00*	3.33**
	(-1.09)	(-2.44)	(-0.93)	(-0.40)	(-1.49)	(-0.78)	(-1.73)	(2.49)
HF Treated X Post	2.10*	0.39	-0.58	1.93	3.42***	-0.92	2.92***	-4.82**
	(1.83)	(0.32)	(-0.37)	(1.65)	(3.24)	(-0.67)	(2.99)	(-2.49)
F-test of Coef	p=0.46		p=0.11		p=0.01		p=0.00	
Observations	263	241	221	276	246	249	352	152
Adjusted R-squared	0.87	0.80	0.85	0.83	0.86	0.82	0.83	0.79
Controls, Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 11. Hedge Fund Interventions and Targeted Firms' Labor Practice Scores-Cross Sectional Effects (Continued)

Panel C: *Human Rights* scores as the output labor practice variable

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	**SASB HCM Material**		**Patent Value**		**Labor Skill Level**		**Manufacturing Industry**	
Subsample	Yes	No	High	Low	High	Low	No	Yes
Post	-2.27	-0.53	-2.08	-3.11	-3.07	0.87	-5.63*	4.14
	(-1.64)	(-0.14)	(-0.92)	(-0.88)	(-1.59)	(0.30)	(-1.94)	(1.65)
HFA Treated X Post	1.62	-1.63	-1.02	2.50	5.98**	-1.93	5.77**	-8.41***
	(0.75)	(-0.41)	(-0.32)	(0.86)	(2.34)	(-0.59)	(2.20)	(-2.78)
F-test of Coef	p=0.77		p=0.38		p=0.10		p=0.00	
Observations	263	241	221	276	246	249	352	152
Adjusted R-squared	0.87	0.80	0.85	0.83	0.86	0.82	0.83	0.79
Controls, Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel D: *Employment Quality* scores as the output labor practice variable

	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	**SASB HCM Material**		**Patent Value**		**Labor Skill Level**		**Manufacturing Industry**	
Subsample	Yes	No	High	Low	High	Low	No	Yes
Post	1.45**	-0.46	0.63	0.94*	1.14	0.28	0.70	0.30
	(2.29)	(-0.99)	(1.02)	(1.75)	(1.57)	(0.46)	(1.20)	(0.44)
HFA Treated X Post	0.51	0.49	0.58	-0.02	0.50	0.73	0.21	1.39
	(0.79)	(0.92)	(0.83)	(-0.05)	(0.74)	(1.15)	(0.37)	(1.48)
F-test of Coef	p=0.66		p=0.23		p=0.61		p=0.48	
Observations	652	620	482	764	569	692	926	346
Adjusted R-squared	0.87	0.88	0.89	0.86	0.88	0.87	0.86	0.89
Controls, Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 11. Hedge Fund Interventions and Targeted Firms' Labor Practice Scores-Cross Sectional Effects (Continued)

Panel E: *Diversity* scores as the output labor practice variable

	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	**SASB HCM Material**		**Patent Value**		**Labor Skill Level**		**Manufacturing Industry**	
Subsample	Yes	No	High	Low	High	Low	No	Yes
Post	-0.39	-0.19	0.00	-0.38	0.89	-1.63	-0.76	-1.17
	(-0.40)	(-0.20)	(0.00)	(-0.37)	(0.74)	(-1.61)	(-0.78)	(-1.06)
HFA Treated X Post	0.82	-0.72	-1.13	1.61	0.06	0.60	1.45	-1.11
	(0.72)	(-0.67)	(-0.89)	(1.49)	(0.05)	(0.38)	(1.39)	(-0.69)
F-test of Coef	p=0.21		p=0.02		p=0.82		p=0.22	
Observations	467	398	383	465	437	420	623	242
Adjusted R-squared	0.77	0.87	0.82	0.82	0.80	0.83	0.78	0.90
Controls, Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel F: *Labor Right* scores as the output labor practice variable

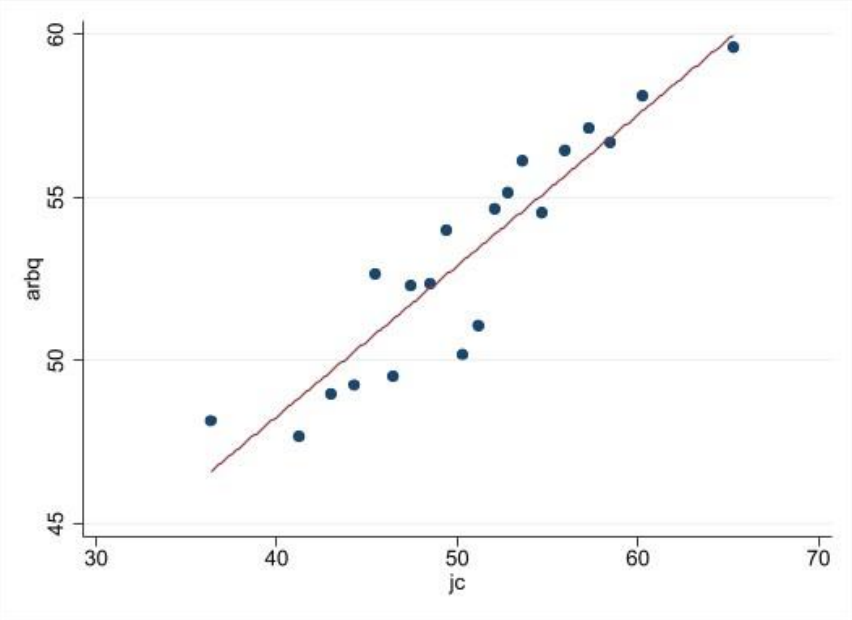
	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	**SASB HCM Material**		**Patent Value**		**Labor Skill Level**		**Manufacturing Industry**	
Subsample	Yes	No	High	Low	High	Low	No	Yes
				Labor Rights				
Post	-1.35	-2.67	-5.31**	0.96	-0.74	-2.86	-1.61	-1.25
	(-0.93)	(-1.33)	(-2.50)	(0.78)	(-0.41)	(-1.60)	(-1.22)	(-0.48)
HFA Treated X Post	-0.74	2.37	2.62	-0.29	-1.05	3.55**	2.05	-1.63
	(-0.41)	(1.24)	(1.04)	(-0.18)	(-0.53)	(2.02)	(1.36)	(-0.68)
F-test of Coef	p=0.02		p=0.23		p=0.23		p=0.06	
Observations	406	382	252	513	324	457	546	242
Adjusted R-squared	0.89	0.85	0.88	0.87	0.91	0.84	0.87	0.87
Controls, Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Supplementary Appendices

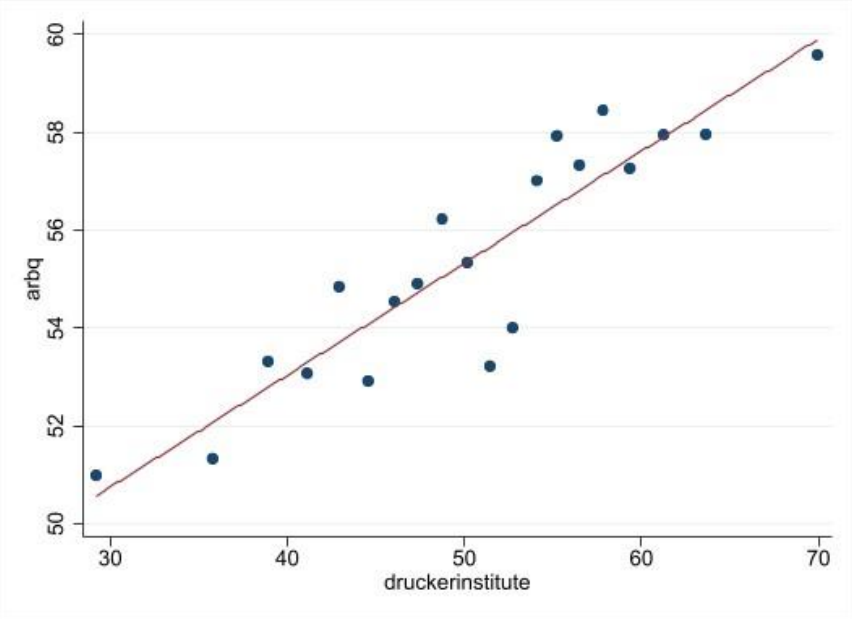
Figure SA 1. Validation Test of Arabesque Data with Alternative Datasets

Panels A to C present the validation tests on Arabesque data with alternative datasets. I merge the Arabesque dataset with three alternative datasets, namely Just Capital (data is available for the year 2019), the Drucker Institute (data is available for years 2017-2019), and TruValue Labs (data is available for years 2007-2019). Figure 1a to 1c presents the bin-scattered plots on the imputed mean of labor practice scores from Arabesque (on the vertical axis) and three validating datasets (on the horizontal axis), respectively.

Panel A: Bin Scattered Plots on the Association between Arabesque Labor Practice Scores and Just Capital Score in 2019



Panel B: Bin Scattered Plots on the Association between Arabesque Labor Practice Scores and Drucker Institute's Employee Engagement and Development Scores between 2017 and 2019



Panel C: Bin Scattered Plots on the Association between Arabesque Labor Practice Scores and TruValue Lab's Labor Practice Scores between 2007 and 2019

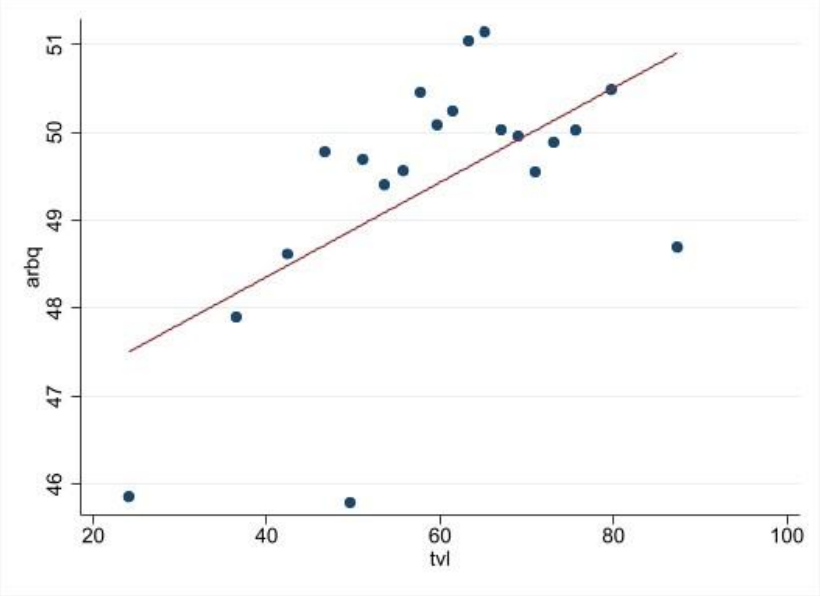


Table SA1. Pairwise correlation for partition variables

This table reports the pairwise correlation for the partition variables used in Table 6 and Table 8 in the year that the intervention occurs.

	Just meet or beat last year earnings	Just meet or beat zero earnings	Just meet/ beat analyst earnings forecast	Material	High Technology levels	High labor skills	Non-manufacturing
Just meet or beat last year earnings	1.00						
Just meet or beat zero earnings	0.22	1.00					
Just meet/beat analyst forecast	0.06	0.00	1.00				
Material	-0.09	-0.17	0.05	1.00			
High technology levels	-0.09	-0.13	0.03	0.05	1.00		
High labor skills	-0.08	-0.14	0.00	0.13	0.17	1.00	
Non-manufacturing	0.05	0.07	0.07	0.05	-0.19	0.18	1.00

Table SA2. Robustness analysis using Entropy Balancing

This table presents the robustness analyses of Table 4 using entropy balancing. I first use Entropy Balancing (EB) to match all the input variables for the propensity score matching model at t=-1 to obtain synthesized control firms. Then I redo the main analyses applying the EB weights on the control firm-years and find results robust.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES					*# Employees*				
	Pooled	SASB Material	SASB Immaterial	High Tech Level	Low Tech Level	High Labor Skills	Low Labor Skills	Non Manufacturing	Manufacturing
Post	0.12	-0.12	0.24	0.18	0.12	0.19	0.01	0.09	0.21
	(0.71)	(-0.41)	(1.20)	(0.74)	(0.72)	(0.74)	(0.06)	(0.51)	(0.54)
HF Treated X Post	-0.43**	-0.72*	-0.25	-0.65**	-0.29*	-0.53**	-0.28	-0.45**	-0.33
	(-2.43)	(-1.95)	(-1.34)	(-2.06)	(-1.70)	(-2.17)	(-1.07)	(-2.27)	(-0.75)
VARIABLES					SG&A Expense				
	Pooled	SASB Material	SASB Immaterial	High Tech Level	Low Tech Level	High Labor Skills	Low Labor Skills	Non Manufacturing	Manufacturing
Post	0.01**	-0.00	0.01**	0.01**	0.00	0.01**	0.01*	0.01**	0.01
	(2.26)	(-0.00)	(2.36)	(2.32)	(1.24)	(1.98)	(1.93)	(2.52)	(1.61)
HF Treated X Post	-0.01*	-0.00	-0.01*	-0.02***	-0.00	-0.01*	-0.00	-0.01**	-0.01
	(-1.80)	(-0.28)	(-1.77)	(-2.85)	(-0.28)	(-1.87)	(-0.49)	(-2.12)	(-1.10)
Controls, Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table SA3. Additional analyses for the Myopia Hypothesis

Panel A. Targeted firms' accounting quality and workforce reductions after hedge fund interventions

	(1)	(2)	(3)	(4)
VARIABLES	*# Employees*	*# Employees*	*# Employees*	*# Employees*
Models for abnormal accruals	McNichols		Jones	
SD(|Abnormal Accruals|) from t=-5 to t=-1	Low	High	Low	High
Post	0.04	-0.18	0.06	-0.19
	(0.16)	(-0.56)	(0.36)	(-0.64)
HF Treated X Post	-0.54*	-0.42**	-0.47**	-0.32*
	(-1.87)	(-1.99)	(-2.28)	(-1.68)
F-test of coef	p=0.32		p=0.25	
Observations	8,077	6,927	8,519	7,414
R-squared	0.97	0.97	0.97	0.97
Controls, Firm FE, Industry FE	Yes	Yes	Yes	Yes

Panel B. Targeted firms' accrual earnings management after hedge fund interventions

	(1)	(2)
VARIABLES	*Abnormal Accruals-McNichols*	*Abnormal Accruals Jones*
Post	0.02	0.02
	(0.81)	(0.58)
HF Treated X Post	-0.08	-0.05
	(-0.97)	(-1.13)
Observations	15,273	16,216
Controls, Firm FE, Industry FE	Yes	Yes
R-squared	0.18	0.30

Panel C. Targeted firms' union coverage and workforce reductions after hedge fund interventions

	(1)	(2)	(3)	(4)
VARIABLES	*# Employees*	*# Employees*	*SG&A Expense*	*SG&A Expens*
Union Coverage	High	Low	High	Low
Post	0.25	-0.18	0.00	0.01***
	(0.81)	(-0.73)	(0.91)	(2.66)
HF Treated X Post	-0.47*	-0.43*	-0.01**	-0.00
	(-1.72)	(-1.95)	(-2.33)	(-1.11)
F-test of coef	p=0.83		p=0.28	
Observations	6,190	9,926	5,522	8,855
Adjusted R-squared	0.97	0.96	0.92	0.93
Controls, Firm FE, Year FE	Yes	Yes	Yes	Yes

Table SA4. Validation Analyses of Arabesque Labor Practice Scores

In this table, I use different methods to validate the quality of Arabesque's labor practice scores. Panel A presents the simulated monthly investment returns of holding portfolio companies based on their labor practice scores between 2004 and 2019. Portfolios are created and rebalanced based on companies' labor practice scores in the previous year. Panel A contains companies with non-missing labor practice scores that are above the median. The *Alpha* in Panel A illustrates the average monthly stock return formed by each aspect of labor practice after adjusting the Fama-French Carhart (Carhart 1997) four risk factors. Panel B regresses firms' three-day cumulative abnormal returns (computed using the four-factor model) on the non-zero changes in labor practice scores between 2004 and 2019, controlling for firm and day fixed effects. Panel C presents the probability analysis using lagged Arabesque labor practice scores (annual imputed mean) to predict firms' chance of being selected as the "Fortune Best 100 Companies to Work For" between 2014 and 2019. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

Panel A: Portfolio return analysis based on companies' Arabesque labor practice scores

	Equal weighted portfolio monthly return (risk-free rate adjusted)					
Labor Practice Variables	*Employment Quality*	*Training & Development*	*Diversity*	*Labor Rights*	*Operational Health & Safety*	*Human Rights*
MRKTRF	1.044***	1.042***	1.050***	1.061***	1.064***	1.058***
	(0.014)	(0.015)	(0.0160)	(0.0160)	(0.017)	(0.017)
SMB	0.333***	0.322***	0.349***	0.345***	0.378***	0.387***
	(0.024)	(0.025)	(0.0270)	(0.0270)	(0.029)	(0.029)
HML	0.0486**	0.0651***	0.0613**	0.0675***	0.034	0.022
	(0.022)	(0.023)	(0.0250)	(0.0250)	(0.027)	(0.027)
UMD	-0.180***	-0.174***	-0.187***	-0.191***	-0.198***	-0.194***
	(0.013)	(0.014)	(0.0150)	(0.0150)	(0.016)	(0.016)
Alpha	0.00153***	0.00153***	0.00119**	0.00144**	0.00114*	0.00124**
	(0.001)	(0.001)	(0.0010)	(0.0010)	(0.001)	(0.001)
Observations	192	192	192	192	192	192
Adjusted R-squared	0.981	0.978	0.977	0.976	0.973	0.973

Panel B: The association between short-term abnormal market reaction and changes in firms' labor practice scores

	CAR [-1,1]					
Labor Practice Variables	*Employment Quality*	*Training & Development*	*Diversity*	*Labor Rights*	*Operational Health & Safety*	*Human Rights*
Change in Labor Practice Scores	0.0041**	0.0002	0.0002	0.0004	0.0007	0.0006*
	(2.2018)	(0.1417)	(0.5379)	(0.7039)	(0.9857)	(1.6752)
Observations	4,660	3,366	30,460	6,192	3,569	6,931
Adjusted R-squared	0.0150	-0.0234	0.0402	0.0456	0.0087	-0.0273
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Date FE	Yes	Yes	Yes	Yes	Yes	Yes

Panel C: The association between firms' Arabesque labor practice scores and the likelihood of being selected as "Fortune Best 100 Companies to Work For"

	Fortune 100 Best Companies to Work For=1					
Labor Practice Variables	*Employment Quality*	*Training & Development*	*Diversity*	*Labor Rights*	*Operational Health & Safety*	*Human Rights*
Labor Practice Scores	0.0374***	0.0201***	0.0184***	0.001	0.0162***	0.002
	(0.003)	(0.002)	(0.005)	(0.002)	(0.006)	(0.014)
Constant	-4.089***	-3.069***	-3.076***	-2.100***	-2.797***	-2.191**
	(0.184)	(0.114)	(0.280)	(0.101)	(0.299)	(0.882)
Model	Probit	Probit	Probit	Probit	Probit	Probit
Observations	7,646	8,660	3,589	6,553	2,373	2,456

Table SA5. Propensity Model for Hedge Fund Interventions Using the Arabesque-confined Sample

This table replicates Table 2, Panel B, Column (1) using the Compustat-CRSP Merged (CCM) sample with at least one dimension of Arabesque labor practice scores ("Arabesque-confined sample"). ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

VARIABLES	Hedge Fund Interventions=1
Ln (Total Assets)	-0.10**
	(-2.47)
Tobin's Q	-0.26***
	(-4.44)
Sales Growth	0.14
	(0.82)
ROA	0.74
	(1.49)
Capital Expenditure	0.50
	(0.68)
Cash	0.31
	(1.05)
Leverage	0.44**
	(2.35)
Dividend Yield	-10.69***
	(-4.47)
Patent Value	0.02*
	(1.73)
# Analyst Coverage	0.01***
	(2.62)
Institutional Ownership	-0.01
	(-0.35)
Abnormal Annual Return	-0.63***
	(-5.44)
Illiquidity	-9.87**
	(-2.22)
Constant	-0.90**
	(-2.03)
Model	Probit
Sample	Arabesque-confined Sample
Observations	7,256
Pseudo R2	0.0660

Table SA6. Firm characteristics for the matched Arabesque-confined sample

This table replicate Table 3, Panel A using the Arabesque-confined sample. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

	Arabesque Sample After Matching			
	Treated	Control	Diff	
Covariates (t=-1)	N=223	N=156		
Ln (Total Assets)	9.02	8.91	0.12	
Tobin's Q	1.66	2.15	-0.49	***
Sales Growth	0.08	0.07	0.00	
ROA	0.13	0.16	-0.04	***
Capital Expenditure	0.05	0.05	0.00	
Cash	0.14	0.16	-0.02	
Leverage	0.60	0.57	0.03	
Dividend Yield	1.21%	1.26%	-0.05%	
Patent Value	3.15	3.94	-0.79	
# Analyst Coverage	11.97	11.92	0.05	
Institutional Ownership	0.59	0.65	-0.06	
Annual Abnormal Return	-8.90%	0.76%	-9.66%	***
Illiquidity	0.02	0.02	0.00	

Table SA7. Replication of Table 6 using the matched Arabesque-confined sample

This table replicates Table 4, Columns (1) and (2) and Table 6 using the Arabesque-confined sample. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	**Full Sample**	**SASB HCM Material**		**Patent Value**		**Labor Skill Level**		**Manufacturing Industry**	
Subsample	NA	Yes	No	High	Low	High	Low	No	Yes
					# Employees				
Post	0.28	0.69	0.37	1.89	-2.10	0.96	-0.14	0.57	-0.80
	(0.21)	(0.30)	(0.35)	(1.20)	(-0.56)	(0.63)	(-0.07)	(0.30)	(-0.78)
HF Treated X Post	-2.91*	-5.06*	-0.41	-4.04**	-2.63	-1.35	-3.93	-3.75*	1.78
	(-1.80)	(-1.70)	(-0.35)	(-2.25)	(-0.77)	(-0.84)	(-1.53)	(-1.67)	(1.33)
	NA	p=0.00		p=0.70		p=0.22		p=0.00	
Observations	1,610	837	773	644	932	726	873	1,145	465
Adjusted R-squared	0.97	0.96	0.99	0.99	0.95	0.99	0.96	0.97	0.98
					SG&A Expense				
Post	0.00	0.01	-0.00	0.01	0.00	0.03***	-0.01	0.01*	-0.00
	(1.00)	(1.43)	(-0.31)	(1.44)	(0.18)	(2.81)	(-1.40)	(1.91)	(-0.52)
HF Treated X Post	-0.01*	-0.02**	-0.01	-0.02*	-0.01	-0.03***	-0.00	-0.02***	-0.00
	(-1.81)	(-2.16)	(-1.19)	(-1.67)	(-1.06)	(-2.70)	(-0.39)	(-2.59)	(-0.62)
	NA	p=0.22		p=0.15		p=0.00		p=0.18	
Observations	1,474	780	694	616	828	620	848	1,033	441
Adjusted R-squared	0.97	0.96	0.98	0.95	0.98	0.95	0.98	0.96	0.98
Controls, Firm FE, Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes