Do Employee-Friendly Firms Invest More Efficiently? Evidence from Employment Decisions

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Abstract

This study investigates the impact of corporate employee treatment policies on labor investment efficiency. Using a sample of 20,583 US firm-year observations that represents more than 3,000 individual firms over the period of 1995 to 2015, we provide evidence that employee-friendly treatment is significantly associated with lower deviations of labor investment from the level justified by economic fundamentals, i.e., higher labor investment efficiency. We also find results that inefficient labor investments lead to significant deterioration in firms' labor productivity and profitability. To address endogeneity issue, we find that other elements of corporate social responsibility (CSR), beyond employee treatment, are not associated with labor investment efficiency and are not reliably associated with performance. This placebo test leaves employee treatment as the best indicator of labor investment efficiency, productivity and profitability and facilitates to minimize the omitted correlated variable concern. The instrumental variables under 2SLS estimation and propensity score matching also further confirm our results. Our results are robust to a battery of sensitivity tests and are economically as well as statistically significant.

Keywords: Employee Treatment; Corporate Social Responsibility; Labor Investment Efficiency; Firm Performance.

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1 INTRODUCTION

Irrespective of the company size, employees usually are argued as a firm's most valuable asset and a critical source of corporate success. For example, Jack Welch, the former CEO of GE said that '*There are only three measurements that tell you nearly everything you need to know about your organization's overall performance: employee engagement, customer satisfaction, and cash flow. It goes without saying that no company, small or large, can win over the long run without energized employees who believe in the mission and understand how to achieve it.*' In today's competitive labor market, firms are facing the challenge of recruiting and retaining human capital by investing in employee-friendly treatment. Numerous prior studies find labor-friendly corporate practices are positively associated with better firm performance (Edmans 2011; Edmans et al. 2016; Faleye and Trahan 2011; Ertugrul 2013; Fauver et al. 2017). Recent studies in employee treatment investigate how a firm's labor-friendly corporate practices can influence its innovation, financial policies and capital structure decisions (Bae et al. 2011; Chemmanur et al. 2013; Ghaly et al. 2015; Chen et al. 2016; Serfling 2016) whereas very little is known about the impact of employee treatment on firms' employment decisions.

This paper investigates the impact of employee treatment on firms' labor investment efficiency. We follow prior literature (Pinnuck and Lillis 2007; Jung et al. 2014; Ben-Nasr and Alshwer 2016; Ghaly et al. 2017b) and define labor investment efficiency as an inverse measure of 'the absolute deviation of actual net hiring from expected level' (Jung et al, 2014, p.1048). We also address the economic implication of employee treatment and labor investment efficiency for firms' value creation by investigating their impact on firm performance. In light of prior studies, we expect that employee-friendly policies facilitate better firm performance measured as labor productivity and profitability, whereas high deviations of labor investment from the level justified by economic fundamentals (i.e., low labor investment efficiency) leads to deterioration in firm performance.

Prior studies suggest that labor-friendly corporate practices are positively associated with better firm performance (Edmans 2011; Edmans et al. 2016; Faleye and Trahan 2011; Ertugrul 2013; Fauver et al. 2017) and evidence that employee treatment can influence innovation, financial policies and capital structure decisions (Bae et al. 2011; Chemmanur et al. 2013; Ghaly et al. 2015; Chen et al. 2016; Mao and

Weathers 2015; Serfling 2016). As yet, however, little is known about the impact of employee treatment on firms' employment decisions, in particular those on labor investment efficiency. In particular, finance research has long shown that agency conflicts and information asymmetry between managers and outsiders lead firms to undertake suboptimal levels of investment. A number of recent studies have explored the factors that can mitigate such market imperfections and improve investment efficiency (Healy and Palepu 2001; Biddle and Hilary 2006; Lambert et al. 2007; Biddle et al. 2009). However, the extant finance literature on investment efficiency predominantly focuses on investment activities related to capital, rather than on labor. This may be because the classical view considers labor as a variable factor that does not involve any adjustment costs and therefore the financing imperfections caused by information asymmetry are irrelevant for employment decisions. However, previous labor economics literature suggests that labor frictions in fact exist and the associated costs can be substantial (Diamond 1982; Mortensen and Pissarides 1994; Danthine and Donaldson 2002; Yashiv 2007; Pissarides 2011). We develop this line of research by extending capital investment efficiency to investment efficiency in labor, a crucial factor of production that has been largely overlooked by previous literature.

In order to examine the relation between employee treatment and labor investment efficiency, we follow Pinnuck and Lillis (2007) and use firms' labor investment (percentage change in the number of employees) to proxy for investment in labor. The expected level of net hiring based on the model of Pinnuck and Lillis (2007) includes economic variables that explain normal hiring practices such as sales growth, liquidity, leverage, and profitability. Our main proxy for labor investment efficiency is the absolute value of the difference between the observed level of labor investment and the one justified by economic fundamentals. This difference represents the abnormal net hiring that captures the amount of net hiring not attributable to underlying economic factors. Therefore, the lower this difference is, the higher the labor investment efficiency is. Our employee treatment measure is obtained from MSCI ESG Research, formerly known as KLD. The KLD database has been extensively employed in previous studies of employee welfare (Cronqvist et al. 2009; Verwijmeren and Derwall 2010; Bae et al. 2011; Faleye and Trahan 2011; Ertugrul 2013; Ghaly et al. 2015). Our employee treatment measure uses KLD's *'Employee Relations'* metrics and we sum identified strengths less concerns in a given year (Cronqvist et al. 2009; Verwijmeren and Derwall 2010; Bae et al. 2011; Faleye and Trahan 2011; Ertugrul 2013; Ghaly et al. 2015). Specifically, the employee

treatment variable contains labor-relevant components including union relations, cash profit sharing, employee involvement and retirement benefits. Following Ertugrul (2013) and Ghaly et al. (2015), we also include the *'Work/Life Benefits'* variable from the *'Diversity'* dimension.

Using a sample of 20,583 US firm-year observations over the period from 1995 to 2015, our results show that employee-friendly policies (i.e., higher employee treatment scores) is associated with lower deviations of labor investment from the level justified by economic fundamentals, i.e., higher labor investment efficiency. Our results are robust to a battery of sensitivity tests and additional controls. As well as being statistically significant, our results also shows that the impact of employee treatment on labor investment efficiency is economically highly significant. Specifically, we find a one standard deviation increase in employee treatment is associated with a 4.3% decrease in labor investment inefficiency. Consistent with prior studies, we find that employee-friendly policies lead to better firm performance measured by labor productivity and profitability. In addition, we shed further new light by showing that abnormal investment in labor leads to significant deterioration in labor productivity and profitability.

As with most prior CSR-related studies, it is difficult to prove causality in the absence of an exogenous shock. It could be argued that good economic performance provides the resources for management to treat their employees well, rather than employee treatment generating good performance. It could also be that an omitted variable, for example management competence or strategic position, influences both employee treatment and performance. We have minimized the impact of these concerns by using a variety of estimation methods, not least using firm fixed effects to mitigate the impact of unobservable firm-specific time-invariant omitted variables. In addition, we also gain confidence from our CSR dimensions test that serves as the placebo test. If a firm's good employee treatment is merely a reflection of a firm's social performance, or omitted variables such as performance, management competence and/or strategic advantage are driving our results, they are also expected to have significant and positive influence on other dimensions of CSR. Our results mitigate this concern since we do not find significant results on other CSR dimensions and leave employee treatment as the best indicator of labor investment efficiency, productivity and profitability. We further address the endogeneity concern by using instrumental variables under 2SLS estimation and propensity score matching (PSM) approaches. The results from 2SLS and PSM approaches confirm our main results. However, in a panel data setting, typical for

archival research of this type, even though we have attempted to address the endogeneity in a number of approaches, we admit that it is difficult to demonstrate causality without the benefit of an exogenous shock and we are therefore cautious about making any causal claims.

Our study contributes to the literature in several ways. First, we focus on employee treatment and emphasize the investment efficiency of labor rather than capital. Hence, we contribute to relevant literature by extending capital investment efficiency to labor investment efficiency. To the best of our knowledge, this is the first paper to investigate the relationship between employee treatment and labor investment efficiency. Second, previous literature has documented that financial reporting quality, stock price informativeness, institutional investors' horizons and laborism can affect labor investment efficiency (Jung et al. 2014; Ben-Nasr and Alshwer 2016; Jung et al. 2016; Ghaly et al. 2017b), our study also contributes to the emerging literature on the determinants of labor investment efficiency. Third, Servaes and Tamayo (2013) suggest that the employee dimension of CSR can be a fruitful area for empirical research. Our study specifically investigates one part of CSR, employee treatment, and its impact on labor investment efficiency and firm performance measured as labor productivity and profitability. We further investigate how the abnormal net hiring negatively affects firm performance. Even though prior studies have already identified the generally favorable impact of employee-friendly policies on firm performance, and in this regards our paper only marginally contributes to the literature, our study emphasizes more the implication of labor investment efficiency on firm performance and identifies a new channel through which better employee treatment polices can improve firm performance. Hence, our study extends the recent literature by addressing the economic implications of employee treatment and labor investment efficiency for firms' value creation.

2 LITERATURE AND HYPOTHESIS

2.1 Market frictions and capital investment efficiency

In the frictionless capital market of Modigliani and Miller (1958) firms invest until the marginal benefit of capital investment equals the marginal costs, investing in all projects with positive net present value and none with negative net present value. In practice, however, firms face capital market imperfections stemming from information asymmetry and may either over- or under- invest.

Previous literature has identified moral hazard and adverse selection as the two primary imperfections in the market that make firms depart from the optimal investment level (Biddle and Hilary 2006; Biddle et al. 2009; Jensen and Meckling 1976; Jensen 1986; Stein 2003). Moral hazard may lead to managers pursuing self-serving objectives to maximize their own personal welfare and invest in projects that are not in line with shareholder wealth maximization (Jensen and Meckling 1976). This can contribute to either over- or underinvestment, depending on the availability and cost of capital. Overinvestments are more likely to occur if firms have resources to invest. In that case, managers have incentives to consume resources and engage in empire building (Jensen 1986; Richardson 2006). Conversely, underinvestment occurs when ex-ante capital is rationed, or managers shirk so that projects with positive net present value are neglected (Bertrand and Mullainathan 2003; Lambert et al. 2007). Adverse selection stems from information asymmetry between managers and suppliers of capital, which can also potentially affect the efficiency of capital investment. If managers are better informed about the value of firms' securities than investors, they are more likely to time capital issuance in order to issue overpriced securities (Baker et al. 2003). However, investors may respond to their information disadvantage by discounting newly issued securities and charging a higher cost of capital. If managers are reluctant to raise funds at a discounted price, projects with positive NPV will be missed and underinvestment occurs (Myers and Majluf 1984). Generally, moral hazard and adverse selection are the two primary imperfections in the market making firms depart from the optimal investment level is considered relevant to capital investment efficiency whilst we extend it to labor investment efficiency and believe information asymmetry can also affect the investment efficiency of labor.

2.2 Employee treatment and labor investment efficiency

Recent studies have paid attention to firm employee treatment schemes and their relevance to firm performance. They find that better employee treatment schemes are usually associated with better performance (Edmans 2011; Edmans et al. 2016; Faleye and Trahan 2011; Ertugrul 2013; Fauver et al. 2017). For example, Edmans (2011) contends that firms with satisfied employees exhibit more positive earnings surprises, announcement returns, and long-term stock returns. Fauver et al. (2017) find that firms with employee-friendly culture are valued higher and perform better. Chen et al. (2016) and Mao and Weathers (2015) find that firms treating their employees well produce more and better patents. This

suggests that better employee treatment schemes are in line with benefits to shareholders. Other studies examine the impact of employee treatment on firms' capital structure decisions and financial policies (Bae et al. 2011; Chemmanur et al. 2013; Ghaly et al. 2015; Simintzi et al. 2014). Several papers test Titman (1984) predictions by studying the relationship between leverage and employee treatment. For instance, Chemmanur et al. (2013) find that leverage has a positive and significant influence on average employee pay, and that the incremental total labor expenses associated with an increase in leverage offset the incremental tax benefits of debt. Their findings support the theoretical prediction that labor costs constrain the use of debt. Similarly, Bae et al. (2011) report that firms treating their employees well maintain low debt ratios and suggest that firms' incentives to treat their employees well is an important determinant of their financing policies. In addition, some studies also investigates the influence of various employment protection legislations (Agrawal and Matsa 2013; Banker et al. 2013; Dou et al. 2016; Scoppa 2010; Serfling 2016). For instance, Serfling (2016) finds that firms adopting state-level labor protection laws that exogenously increase employee firing costs reduce their debt ratios. Other prior studies also suggest that firms with better employee treatment schemes, and operating in industries with a higher share of skilled workers, tend to hold larger cash balances (Ghaly et al. 2015, 2017a). In general, CSR, of which employee treatment is usually an integral part, has been found to reduce information asymmetry (Dhaliwal et al. 2011; Cho et al. 2013) and analyst forecast error (Dhaliwal et al. 2012), and to increase financial reporting quality (Kim et al. 2012) and investment efficiency (Benlemlih and Bitar 2015).

On the other hand, numerous studies investigates the influential determinants for labor investment efficiency, an inverse measure of the deviations of labor investment from the level justified by a firm's economic fundamentals (Jung et al. 2014; Ben-Nasr and Alshwer 2016; Jung et al. 2016; Ghaly et al. 2017b). For example, Ben-Nasr and Alshwer (2016) document that stock price informativeness is positively associated with labor investment efficiency because managers use the information incorporated in stock prices in making human capital investment. Ghaly et al. (2017b) find that the monitoring function of long-horizon institutional investors decrease agency conflicts in firms' labor investment decisions, leading to higher labor investment efficiency. Jung et al. (2014) focus on the impact of financial reporting quality on labor investment efficiency and find that high-quality financial reporting can facilitate firms to have higher labor investment efficiency. In light of their study, we focus on the impact of employee treatment on labor

investment, concentrating on labor investment efficiency. We argue that the relation between employee treatment and firms' net hiring stems from two potential sources, information asymmetry and employee governance.

2.3 Information asymmetry and labor investment efficiency

One possible explanation for the connection between employee treatment and firms' net hiring can stem from information asymmetry. The classical view considers labor as a variable factor that does not involve significant adjustment and financing costs. However, labor economists find that labor frictions arise from search and matching (Diamond 1982; Mortensen and Pissarides 1994; Pissarides 2011), direct wage costs (Danthine and Donaldson 2002) and hiring and firing costs (Yashiv 2007). Further, recruiting, training, firing and disruption costs suggest that adjusting labor stock for firms is a long way from costless and such costs can be substantial (Farmer 1985; Hamermesh 1993). As firms become more human-capital-intensive, management of human resources is likely to become increasingly important (Turban and Greening 1997; Zingales 2000).

Stakeholder theory (Cornell and Shapiro 1987) suggests that financial stakeholders are more likely to increase costly explicit claims if they doubt a firm's ability to honor its implicit claims to non-financial stakeholders (Cornell and Shapiro 1987; Maksimovic and Titman 1991). Zingales (2000, p. 1634) argues: *"Once we recognize the existence of implicit contracts, then there are other residual claimants besides equity holders who may need to be protected. It then becomes unclear whether control should reside in the hands of shareholders, because the pursuit of shareholder's value maximization may lead to inefficient action, such as the breach of value implicit contracts"*. Prior studies find that firms having harmonious relations with their stakeholders enjoy higher value of implicit claims to their stakeholders and their future cash flows and firm values are less likely to be adversely affected by unsatisfied non-financial stakeholders, thus leading to lower financing costs (Dhaliwal et al. 2011; El Ghoul et al. 2011; Cheng et al. 2014). A firm's failure to achieve good employee relations can lead to low employee morale and high employee turnover, which can ultimately erode their reputation in the labor market. Poor employee relations is expected to make non-financial stakeholders doubt the firm's ability to honor their implicit claims and lead to a reduction in the value of implicit claims to new stakeholders, resulting in a reduction in future cash flows and the value of the firm (Cornell and Shapiro 1987; Bowen et al. 1995). In

addition, internal CSR actions (e.g employees, managers, owners) reflect more inward-looking practices that require real actions to develop organizational capabilities and often involve significant changes in core practices, norms and structures, and routines or even long-term investments to adapt corporate policies and organizational culture(Eccles et al. 2014; Hawn and Ioannou 2016). In contrast, external CSR actions (e.g society, government, customers, and suppliers) usually are perceived by external stakeholders through communication by symbolic means (Yanow 1996). In this respect, given previous literature showing that employee-friendly policies can reduce information asymmetry and improve financial reporting quality and investment efficiency (Dhaliwal et al. 2011; Kim et al. 2012; Cho et al. 2013; Benlemlih and Bitar 2015), we argue that employees as the internal stakeholders can be the key stakeholder group of many CSR schemes and how a firm treats its employees therefore can convey additional information to the market about a firm's ability to honor implicit claims, which ultimately helps to reduce the information asymmetry between corporate managers and market participants that creates market friction.

2.4 Employee governance and labor investment efficiency

A second potential mechanism by which employee treatment may affect labor investment efficiency can stem from employee governance. The human capital theory of corporate governance emphasizes the importance of shifting from the classical agency problem between manager and shareholder to examining human capital treatment for corporate governance (Rajan and Zingales 1998, 2000; Zingales 2000). For instance, Guo et al. (2015) find that employee treatment policies are an important predictor of ineffective internal control and firms with employee-friendly policies enjoy significantly lower propensity for employee-related material weaknesses. By aligning the interest between firms and their employees, firms with employee-friendly treatment mitigate moral hazard problems by enabling more effective internal monitoring, thus contributing to lower information asymmetry.

In addition, previous literature shows that employment contracts are generally incomplete because it is too costly to specify all aspect of labor performance (Demski and Feltham 1978; Klein 1980). Divergence also exists among different groups in society regarding employee monitoring since each group has its own rationale for or against employee monitoring whether it be economic, legal or ethical (Martin and Freeman 2003). Consequently, firms face various adverse behavior situations where the interests of

employees and the firm are misaligned, and employees' motivation and effort are imperfectly observed (Flammer and Luo 2017).

Examples of adverse employee behavior include counterproductive and disengaged behavior, such as shirking responsibilities, on-the-job searches for better jobs and using company resources for personal business. Flammer and Luo (2017) suggest that if employees perceive their current job to be superior to their alternatives, they are less likely to engage in adverse behavior. One way to lower the attractiveness of alternative options and mitigate adverse behavior is to align employees and their firms' interests. Akerlof (1982) and Akerlof and Yellen (1986, 1990) suggest that the reciprocity in the gift exchange model makes employees invest more effort in work because they treat the benefits from their firms as a gift and are assumed to respond to the benefits by making greater effort. Moreover, employee-friendly treatment aligns the interests between employees and their firms, which makes employees more likely to perceive their current employment special and hence mitigates employee adverse behavior (Organ 1997; Shapiro and Stiglitz 1984; Akerlof and Yellen 1986).

Flammer and Luo (2017) find that relationship-based incentives such as CSR can be used as employee governance tools. These encourage nurturing and constraining mechanisms that facilitate alignment of interests between employees and their firms, lower the attractiveness of alternative options and diminish information asymmetry. We argue that employee-friendly treatment mitigates employees' adverse behavior. Firms with employee-friendly treatment therefore may suffer less abnormal employment changes.

We firstly hypothesize that employee-friendly treatment schemes enable firms to maintain employment levels close to that justified by their underlying economics. Consequently, we expect a firm's employee treatment to be negatively associated with labor investment inefficiency:

Hypothesis 1: Employee treatment is negatively associated with labor investment inefficiency.

We also examine the impact of employee treatment and abnormal net hiring on firm performance. Prior studies show that CSR, including employee-friendly practices, can facilitate higher labor productivity (Faleye and Trahan 2011; Sun and Stuebs 2013; Hasan et al. 2018). For instance, Faleye and Trahan (2011)

find that top executives derive no pecuniary benefits from labor-friendly practices and genuine concern for employees facilitates higher productivity and profitability. We propose that one of the channels via which employee treatment and labor investment efficiency can affect value creation is via labor productivity and therefore examine the impact of employee treatment and abnormal net hiring on labor productivity. In light of the previous literature suggesting that employee-friendly policies can positively influence value creation, we hence expect that firms treating their employees well may enjoy higher labor productivity and profitability. Further, abnormal net hiring suggests a deviation from the employment level justified by underlying economics and signals inefficient labor investment and we therefore predict that abnormal net hiring has negative impact on a firm's employee productivity and profitability. Therefore, we hypothesize that there is a positive relation between employee treatment and labor productivity/profitability and a negative relation between abnormal net hiring and labor productivity/profitability:

Hypothesis 2: Employee treatment is positively associated with employee productivity whereas labor investment inefficiency is negatively associated with employee productivity.

3. RESEARCH DESIGN

We estimate the impact of employee treatment on the absolute value of abnormal net hiring and the impact of both employee treatment and abnormal net hiring on various measures of firm performance. Our primary analysis is based on a panel data-set with fixed effects for firm and year. Prior research has typically used industry and year fixed effects to test the association between test and outcome variables. For our sample this produces somewhat higher coefficients and statistical significance than a firm fixed effects model. However, it is unclear whether the direction of causality is as hypothesized or whether correlated omitted variables are influencing the results. The problem can be easily seen from our sample descriptive statistics in Table 2. From the turn of the century our sample size increases, abnormal labor investment also increases and the employee treatment metric declines. In the absence of firm fixed effects this would tend to produce a negative correlation between employee treatment and abnormal investment. This would be reduced, but is unlikely to be eliminated, by control variables such as size. By using firm fixed effects we further mitigate, but may not eliminate, these problems.

Our sensitivity tests include alternative measures of both the independent and test variables and provide broad support for our results. We also re-estimate our main models using an instrumental variable approach via 2SLS estimation and adopts PSM approach, which provides some reassurance that the main results are reliable. We also gain confidence in our results from a placebo test. We re-estimate the main test equations using dimensions of CSR other than employee treatment. Our contention is that if reverse causality, or omitted correlated variables, caused the statistically significant association between CSR and abnormal net hiring or productivity, this could also be expected to show up as an association between the other CSR dimensions and the dependent variables. In general, we do not find this to be the case.

3.1 Sample

Our sample selection process is detailed in Table 1. The sample selection begins with all COMPUSTAT firm-years between 1991-2016 with non-negative sales and assets and non-missing historical SIC codes. We merge our data with CRSP to obtain total annual stock return and also exclude observations from financial services (primary two-digit SIC codes between 60-69). We further delete 24,257 firm-years with insufficient data to estimate abnormal net hiring. This leaves us with 96,221 observations to estimate Model 1. We obtain the industry-level rate of industry unionization from the website of UNIONSTATS which provides estimates of union membership and coverage data by industry. After merging with the KLD database, and restricting the sample to 1995-2015, our sample consists of an unbalanced panel of 20,583 firm-year observations from more than 3,000 US firms. In order to test the impact of employee treatment and abnormal net hiring on employee productivity, we exclude between 6,902 and 9,434 firm-years with insufficient data to compute Model 3, resulting in a test sample of 11,149 to 13,681 firm-years.

[Insert Table 1 near here]

3.2 Measure of labor investment efficiency

To measure labor investment, we use firms' net hiring, measured as the percentage change in the number of employees (Pinnuck and Lillis 2007). We follow previous literature (Pinnuck and Lillis 2007; Jung et al. 2014; Ben-Nasr and Alshwer 2016) and estimate labor investment efficiency as the absolute value

of the difference between the observed level of labor investment and the one justified by economic fundamentals. This difference represents the abnormal net hiring that captures the amount of net hiring not attributable to underlying economic factors. Abnormal net hiring is the absolute value of the residuals from the following equation (Model 1) and the lower this difference is, the higher the labor investment efficiency is.

$$\begin{aligned} NET\ HIRE_{it} = {} & \beta_0 + \beta_1 SALES\_G_{it-1} + \beta_2 SALES\_G_{it} + \beta_3 \Delta ROA_{it} + \beta_4 \Delta ROA_{it-1} + \beta_5 ROA_{it} \\ & + \beta_6 RETURN_{it} + \beta_7 SIZE\ P_{it} + \beta_8 LIQ_{it-1} + \beta_9 \Delta LIQ_{it-1} + \beta_{10} \Delta LIQ_{it} + \beta_{11} LEV_{it} \\ & + \beta_{12} LOSSBIN1_{it-1} + \beta_{13} LOSSBIN2_{it-1} + \beta_{14} LOSSBIN3_{it-1} \\ & + \beta_{15} LOSSBIN4_{it-1} + \beta_{16} LOSSBIN5_{it-1} + Industry\ \ Fixed\ Effect + \varepsilon_{it} \end{aligned}$$

Following prior research *NET_HIRE* is the percentage change in employees; *SALES_G* is the percentage change in sale revenue; *ROA* is net income scaled by beginning of the year total assets; *RETURN* is the annual stock return; *SIZE_P* is the percentile of the log of market value of equity at the beginning of the year; *LIQ* is the ratio of cash and short-term investments plus receivables to current liabilities; *LEV* is the ratio of long-term debt to total assets at the beginning of the year; *LOSSBIN* is an indicator variables for each 0.005 interval of prior year ROA from 0 to -0.025, where in all cases i indicates the firm and t the year.

Consistent with prior studies (Pinnuck and Lillis 2007; Jung et al. 2014; Ben-Nasr and Alshwer 2016) , we find NET_HIRE_{it} is positively associated with sale growth ($SALES\_G_{it}$, $SALES\_G_{it-1}$), profitability (ΔROA_{it-1}, ROA_{it}), stock return ($RETURN_{it}$), firm size ($SIZE_{it-1}$), and liquidity (LIQ_{it-1}, ΔLIQ_{it-1}). It is negatively associated with current year changes in profitability (ΔROA_{it}) and small reported losses ($LOSSBIN_{it-1}$) variables; liquidity (ΔLIQ_{it}) and leverage (LEV_{it-1}). We report the descriptive statistics and results for Equation 1 in the Appendix.

3.3 Measure of employee treatment

In order to assess a firm's employee treatment, we use data from KLD. KLD, now MSCI ESG Research, has expanded its coverage and included CSR strengths and weaknesses for a large subset of its constituent firms. The database covers firms that comprise the Standard & Poor's (S&P) 500 and the

Domini 400 Social Index up to 2000. In 2001, it further extended its coverage to firms in the Russell 1,000 Index. It includes approximately 650 firms for the period from 1991 to 2000, 1,100 firms for 2001 to 2002, and 3,000 or more firms for the period from 2003 to 2015. The database has been widely used in previous research (Deng et al. 2013; Servaes and Tamayo 2013; Flammer 2015; Khan et al. 2016; Lins et al. 2017). The KLD database estimates a firm's CSR performance using many sources, including company filings, government data, nongovernmental organization data, and more than 14,000 global media sources. It contains seven dimensions of CSR: community, employee relations, diversity, environment, human rights, product quality and corporate governance. It also excludes from classification firms in the 'sin' industries: alcohol, firearms, gambling, tobacco, nuclear power, and military contracting.

Following previous studies in employee treatment and welfare(Bae et al. 2011; Cronqvist et al. 2009; Ertugrul 2013; Faleye and Trahan 2011; Ghaly et al. 2015; Verwijmeren and Derwall 2010), we construct our employee treatment scores using KLD's rating on *'Employee Relations'*, with a higher net score demonstrating better employee treatment performance. Our primary measure of employee treatment, *EMP_TREAT*, is estimated by adding identified strengths and subtracting identified concerns included in *'Employee Relations'* dimensions in each year (Faleye and Trahan 2011; Verwijmeren and Derwall 2010). The employee treatment variable contains labor-relevant components including union relations, cash profit sharing, employee involvement and retirement benefits. Following Ertugrul (2013) and Ghaly et al. (2015), we also include the *'Work/Life Benefits'* variable from the *'Diversity'* dimension. In the robustness tests, we we further use alternative employee treatment proxies from ASSET4 database and the *Fortune* magazine's list of the *'100 Best Companies to Work For In America'* from the personal website of Alex Edmans. We construct the alternative employee treatment proxy from four employee-relevant variables in ASSET4: *Health & Safety, Employment Quality, Training and Development,* and *Diversity and Opportunities*.

3.4 Empirical models

Our primary analyses on the relation between employee treatment and labor investment efficiency are based on the following model (Model 2):

$$AB\_NETHIRE_{it} = \beta_0 + \beta_1 EMP\_TREAT_{it} + \beta_2 MTB_{it-1} + \beta_3 SIZE_{it-1} + \beta_4 LIQ_{it-1} + \beta_5 LEV_{it-1} + \beta_6 DIVD_{it-1} + \beta_7 TANGIBLES_{it-1} + \beta_8 LOSS_{it-1} + \beta_9 LABINT_{it-1} + \beta_{10} SD\_CFO_{it-1} + \beta_{11} SD\_SALES_{it-1} + \beta_{12} SD\_NETHIRE_{it-1} + \beta_{13} UNION_{it-1} + \beta_{14} AB\_INVEST_{it} + Firm\ \ Fixed\ Effect + Year\ \ Fixed\ Effect + \varepsilon_{it}$$

Following prior research (Jung et al. 2014; Ben-Nasr and Alshwer 2016), *AB_NETHIRE* is the absolute value of the difference between actual net hiring and the expected level; *EMP_TREAT* is the employee treatment score constructed from KLD database; *MTB* is the ratio of market to book value of common equity at the beginning of the year; *SIZE* is the log of market value of equity at the beginning of the year; *LIQ* is the ratio of cash and short-term investments plus receivables to current liabilities; *LEV* is the ratio of long-term debt to total assets at the beginning of the year; *DIVD* is an indicator variable equal to 1 if the firm pays dividends in the previous year, 0 otherwise; *TANGIBLES* is the ratio of property, plant and equipment to total assets at the beginning of the year; *LOSS* is an indicator variable equal to 1 if the firm reported a loss in the previous year, 0 otherwise; *LABINT* is the ratio of employees to total assets at the beginning of the year; *SD_CFO* is the standard deviation of cash flow from operation over year t-5 to t-1; *SD_SALES* is the standard deviation of sales revenue over year t-5 to t-1; *SD_NETHIRE* is the standard deviation of percentage change in employees over year t-5 to t-1; *UNION* is the industry-level rate of labor unionization for year t-1; *AB_INVEST* is the absolute value of the residual from the following model (Biddle et al. 2009): $INVEST_{it} = \beta_0 + \beta_1 SALEsGROWTH_{it-1} + \varepsilon_{it}$; and i identifies the firm and t the year.

Our analyses on the impact of employee treatment and abnormal net hiring on labor productivity and profitability are based on the following model (Model 3):

$$EMP\_PRODC_{it} = \beta_0 + \beta_1 EMP\_TREAT_{it-1} + \beta_2 AB\_NETHIRE_{it-1} + \beta_3 SIZE_{it-1} + \beta_4 LIQ_{it-1} + \beta_5 LEV_{it-1} + \beta_6 MTB_{it-1} + \beta_7 TANGIBLES_{it-1} + \beta_8 AB\_INVEST_{it-1} + \beta_9 LOSS_{it-1} + \beta_{10} SALE\_G_{it} + \beta_{11} SALES\_G_{it-1} + \beta_{12} GOVERN_{it-1} + \beta_{13} CAPEX_{it-1} + Firm\ Fixed\ Effect + Year\ Fixed\ Effect + \varepsilon_{it}$$

Here EMP_PRODC_{it} is one of four indicators of performance: *SALES* is employee productivity, measured as the natural logarithm of sales divided by the number of employee; *GPROFIT* is employee productivity, measured as the natural logarithm of sales minus cost of goods sold divided by the number of employee; *NETINCOME* is employee productivity, measured as the natural logarithm of net income divided by the number of employees; ROA is return on assets. Two additional control variables, not used in model 2, are introduced following prior research; *GOVERN* is the corporate governance scores from the KLD database; and *CAPX* is the ratio of capital expenditures to total assets.

4 RESULTS

4.1 Descriptive statistics

In order to obtain our primary measure of abnormal net hiring, we first estimate Model 1. The descriptive statistics and preliminary results are reported in Appendix 2. Following Pinnuck and Lillis (2007), we winsorize all continuous variables at the 1st and 99th percentiles of their respective distribution to reduce the influence of outliers. Our descriptive statistics for the percentage change in the number of employees and other control variables are comparable to those reported in Pinnuck and Lillis (2007) and Jung et al. (2014), and our results and the sign of each variable are consistent with the results of prior studies. Our model has an adjusted R^2 of approximately 21.4 percent in comparison with 24.5 percent in Pinnuck and Lillis (2007) and 27.2 percent in Jung et al. (2014). Overall, the specification of our model is generally consistent with prior studies, and the model provides reasonable estimates for the expected level of net hiring. The absolute value of the difference between actual net hiring and the expected level is our measure of abnormal net hiring.

In panel A of Table 2, we present descriptive statistics for the variables used in Models 2 and 3. The dependent variable, *AB_NETHIRE*, has a mean of 0.12 and a median of 0.08 with a standard deviation of 0.18. This is close to Jung et al. (2014) results with a mean of 0.11 and median of 0.07 with standard deviation of 0.13 for abnormal net hiring. We also divided the variable into two subsamples based on the sign of abnormal net hiring. Positive abnormal net hiring, *OVER_LABOR*, indicates that a firm's actual net hiring is greater than expected whilst *UNDER_LABOR*, indicates that actual net hiring is less than expected. Consistent with Ghaly et al. (2015), our main variable of interest, *EMP_TREAT*, ranges from -4 to 4 with

a mean of -0.08 and median of 0, suggesting that the number of firms with negative employee treatment scores outweigh the number of firms with positive employee treatment scores. Approximately 18 percent of the sample score -1, 64 percent 0 and 11 percent +1, so only 7 percent fall outside those classifications. The descriptive statistics of other control variables are generally consistent with Biddle et al. (2009) and Jung et al. (2014). For Model 3, our descriptive statistics include three labor productivity measures, *SALES*, *GPROFIT* and *NETINCOME*, all per employee, plus *ROA* and additional control variables including corporate governance ($GOVERN_{it-1}$) and capital expenditure ($CAPX_{it-1}$). In Panel B of Table 2, we report the frequency of firms in our sample by year plus the mean employee treatment and abnormal net hiring variables per year.

[Insert Table 2 near here]

In Panel C of Table 2, we contrast the descriptive statistics of firms with positive, zero, and negative employee treatment scores. We define firms with positive employee treatment scores as employee-friendly firms in Section A, and firms with negative employee treatment scores as non-employee-friendly firms in Section B. The comparison indicates that firms with employee-friendly treatment policies have lower mean (median) abnormal net hiring of 10.6% (7%) than those with negative employee treatment of 12.8% (8.2%). These differences are statistically significant at the 1% level for both the mean and median. Neutral firms generally fall in the middle between the two groups with the mean of 12.4% and median of 7.5% for abnormal net hiring. The differences between the productivity and profitability variables are also all statistically significant at the 1% level, with firms with positive employee treatment outperforming those with negative. Mean per employee sales are 5.8 vs. 5.5, per employee gross profit 4.9 vs. 4.3, and per employee net income, 3.3, vs. 2.6 and return on assets 6.3%, vs. 3.8%.

Table 3 presents Pearson correlation coefficients for all variables in Model 2 and 3. We find a negative and significant correlation between the employee treatment score (*EMP_TREAT*) and the level of abnormal net hiring (*AB_NETHIRE*), indicating that firms with good employee treatment practices are generally associated with a higher level of labor investment efficiency. The correlations among other variables are generally consistent with our expectations. For instance, we find firms with higher growth

options, higher levels of liquidity and higher concurrent abnormal non-labor investments are more likely to have higher abnormal net hiring. However, larger firms, firms paying dividends in the past and firms with a higher level of tangibility are negatively associated with abnormal net hiring. In addition, we generally find abnormal net hiring is negatively associated with labor productivity and profitability whereas employee treatment is positively associated with labor productivity and profitability.

[Insert Table 3 near here]

4.2 The impact of employee treatment on abnormal labor investment

Table 4 shows the main results for the relationship between employee treatment score (*EMP TREAT*) and abnormal net hiring. Column 1 shows the results for our baseline regression model using the absolute value of the residual, *AB_NETHIRE,* as the dependent variable and the estimated coefficient on *EMP_TREAT* is negatively and statistically significant. The results provide evidence that supports our hypothesis, suggesting that higher employee treatment scores are associated with a level of investment in labor that is close to the one justified by economic fundamentals, i.e., higher labor investment efficiency. Moreover, we find *EMP_TREAT* is also economically highly significant. Our results shows that a one standard deviation increase in employee treatment is associated with a 4.3% decrease in labor investment inefficiency[1]. We also find that larger firms and firms with a higher level of tangibility exhibit more efficient labor investments, whilst those with higher level of liquidity, leverage and higher abnormal non-labor investments are more likely to suffer labor investment inefficiency.

In columns 2 and 3 of Table 4, we estimate our baseline model based on the subsamples of firms that exhibit overinvestment (actual net hiring greater than expected, i.e., positive abnormal net hiring) and underinvestment (actual net hiring less than expected, i.e., negative abnormal net hiring) of labor. The results confirm that firms with higher employee treatment scores tend to have less labor overinvestment but also less labor underinvestment. In column 4 of Table 4, we use the Fama-MacBeth approach to

[1] The sample average value *AB_NETHIRE* is 0.122. The coefficient for *EMP_TREAT* is equal to -0.00652 and its standard deviation is equal to 0.804. A one standard deviation increase in *EMP_TREAT* is associated with a 4.3% decrease in labor investment inefficiency (-0.00652*0.804/0.122) = -0.043.

estimate our baseline regression model and we find the results are similar to the main results in column 1. Finally, in column 5, we restrict our sample to firms with positive (*EMP_TREAT>0*) or negative (*EMP_TREAT<0*), but not neutral (*EMP_TREAT=0*), employee treatment. The results are consistent with those reported in column 1. Hence, the results in Table 4 support the Hypothesis 1.

[Insert Table 4 near here]

4.3 The impact of employee treatment and abnormal net hiring on firm performance

To demonstrate the economic implication of employee treatment (*EMP_TREAT*) and abnormal net hiring (*AB_NETHIRE)*, we further investigate the impact of employee treatment and abnormal net hiring on three measures of labor productivity: sales, gross profit and net profit per employee (*SALES*, *GPROFIT* and *NETINCOME)* and on profitability (*ROA*). Given previous literature (Zingales 2000; Filbeck and Preece 2003; Edmans 2011) suggesting that employee-friendly policies can positively influence value creation, we expect that firms treating their employees well enjoy higher labor productivity and profitability. In contrast, given abnormal net hiring captures the deviation of labor investment from the employment level justified by a firm's underlying economics, we predict that abnormal net hiring has negative impact on labor productivity and profitability.

The results in Table 5 confirm our predictions in Hypothesis 2. Specifically, we find the estimated coefficients on employee treatment are positive and significant when gross profit per employee (*GPROFIT*), income per employee (*NETINCOME*) and return on assets (*ROA*) are the dependent variables, indicating that employee-friendly treatment positively enhances labor productivity and firms' profitability. However, we do not find significant results for sales per employee (*SALES*). On the other hand, we find the lagged abnormal net hiring is negatively associated with labor productivity and profitability for all four dependent variables. To be precise, we find that the coefficients of abnormal net hiring (*AB_NETHIRE)* are all negative and statistically significant at the 1% level, suggesting that abnormal net hiring adversely affect labor productivity and firms' profitability. Moreover, we also find *EMP TREAT* and *AB NETHIRE* is also economically highly significant. Our results shows that a one standard deviation increase in employee treatment and abnormal net hiring is associated with a 9.2% increase and 1.2% decrease in ROA

respectively. Overall, our tests for the impact of employee treatment and abnormal net hiring on labor productivity suggest that employee-friendly treatment policies enhance labor productivity and profitability whereas sub-optimal net hiring is costly in terms of labor productivity and profitability.

[Insert Table 5 near here]

4.4 Endogeneity concerns

4.4.1 Omitted variable and reverse causality concern: non-labor dimensions of CSR

Bouslah et al. (2013) argue that the aggregate CSR measure may confound the influence of individual CSR dimensions and therefore each individual CSR dimension should be considered separately. However, the main reason for us to investigate the impact of dimensions of CSR other than employee treatment on abnormal net hiring is to help rule out reverse causality and omitted correlated variables as explanations for the statistically significant association we report in the previous section. If a firm characteristic, such as managerial competence, strategic advantage or corporate culture, affect both labor investment efficiency and employee treatment, we might expect that characteristic to similarly affect other dimensions of CSR or be reflected on a firm's social capital. If we find no effect, it is conceivable that the omitted firm characteristic only impacts on employee treatment. However, if we find an effect on other elements of CSR, where we have no clear hypothesis for an impact, it is strongly suggestive that the result for employee treatment may be driven by endogeneity.

To rule out this possibility, we test the impact of each dimension of CSR on abnormal net hiring, which potentially serves as a placebo test to indicate whether the abnormal net hiring is negatively associated with a firm's social performance or only with employee treatment[2]. Five social dimensions are very different from employee treatment: environment; community; diversity; product; and human rights. For the other dimensions if it is reverse causality or omitted variables that drive the relationship, we should observe

[2] Here, we use the 'employee relations' from the KLD to proxy for a firm's employee treatment in the CSR dimensions tests. Given the two variables, employee treatment and employee relations share most of the employee treatment components, an overlap between the results for employee treatment and employee-relations is to be expected. In untabulated results, we find our results are consistent if we use the employee treatment variable.

significant results between abnormal net hiring and social dimensions other than employee dimensions. If it is employee treatment policies that drive more efficient labor investment, we should only observe significant results between employee dimensions and labor investment efficiency.

[Insert Table 6 near here]

In Table 6, our results show that only employee relations is significantly associated with abnormal net hiring. These results are therefore consistent with the contention that it is relevant employee treatment elements of CSR that impact on abnormal net hiring and not CSR in general. They are also inconsistent with the contention that abnormal net hiring impacts on CSR, or that abnormal net hiring and CSR are both caused by an omitted correlated variable such as management competence or competitive advantage.

4.4.2 Reverse causality: 2SLS estimation using instrumental variables

While using an extensive list of control variables that reduce the potential omitted variable bias in estimating the association between a firm's employee treatment and labor investment efficiency, we still cannot rule out the possibility that the results generated from the baseline model suffer from endogeneity bias. For instance, it could be argued that firms with high labor investment efficiency provides the resources for management to treat their employees well, rather than employee treatment generating efficient labor investment decisions. In order to address this concern, we use an instrumental variable estimation. First, as an instrument for employee treatment of firm *i* in year *t*, we use the average employee treatment scores of firms with headquarters located in the same state. Prior research shows that physical proximity can be an important factor for corporate policies (Pirinsky and Wang 2010; Jiraporn et al. 2014). Thus, as an integral part of a firm's social performance, employee welfare and treatment practices are also likely to be affected by firms' geographic proximity. We require each state to contain at least ten firms for each year. In addition, in the spirit of Lin et al. (2011) and Laeven and Levine (2009), we also follow prior studies (El Ghoul et al. 2011; Ferrell et al. 2016) and use the mean of the employee treatment score in year t of all firms belonging to firm i 's 2-digit SIC code as an instrument for employee treatment of firm i in year t. The underlying motivation for using these instrumental variables is that a firm's employee treatment policies tend to

correlated in given industries or states, but arguably the industry-level and state-level employee treatment is not related to the labor investment efficiency of a single firm.

In the Table 7, we report results for Model 2 and 3 using instrumental variables vis 2SLS estimation. The first column of each set of test reports the first-stage results, indicating a strong correlation between firm and both state and industry employee treatment levels. The second column of each set of test presents the results from the second stage regression estimated using 2SLS. In untabulated results, we also generate similar results using GMM and LIML. Our 2SLS results generally confirm the negative and significant association between employee treatment and abnormal net hiring, which is consistent with the results generated from our baseline OLS regressions. Moreover, the results also suggest the favorable impact of employee-friendly treatment, but detrimental impact of abnormal net hiring, on labor productivity and profitability. Across all models, the two instrumental variables pass both the Cragg and Donald (1993) instrument relevance test and the Sargan (1958) over-identification test.

[Insert Table 7 near here]

4.4.3 Fortune's Best 100 List and PSM approach

Our results so far suggest that employee-friendly treatment policies, as indicated by KLD, are consistent with lower levels of abnormal net hiring (i.e., higher labor investment efficiency), higher productivity and higher profitability. The KLD database is widely available and has considerable credibility from its widespread use in prior research. However, some previous studies have also used *Fortune* magazine's list of the *'100 Best Companies to Work For'* (*Fortune List* hereafter) as an alternative indicator of employee treatment (Bae et al. 2011; Edmans 2011; Faleye and Trahan 2011; Ghaly et al. 2015; Guo et al. 2015; Chen et al. 2016). If effective, this would be a valuable alternative indicator which would provide a useful robustness test. First, we re-estimate the influence of employee treatment on labor investment efficiency by using a dummy variable for *Fortune List*. Specifically, we construct a dummy variable (*BEST100*) that is equal to 1 if a firm was in the *Fortune List* in our sample period. Overall, this produces statistically significant results which are consistent with our results based on the KLD.

[Insert Table 8 near here]

One potential concern is that Fortune List might be biased towards large and successful firms. Given this reservation, a better contrast between the performance of the Fortune List firms and others firm might be achieved using the PSM approach. We use PSM approach by matching control firms with firms listed in the *Fortune List* based on a certain number of influential firm characteristics. Specifically, we use firms once listed in the Fortune List as treated firms and select the control firms as the nearest neighbor (without replacement) and alternatively the nearest three neighbors (with replacement). Both methods produce treatment and control samples which are spread throughout the sample period and for which the control variables are balanced. In short, we find that the *Fortune List* produces results which are compatible with those based on the KLD employee treatment score. To be precise, our PSM results suggest that employee-friendly firm generally enjoy higher labor investment efficiency, labor productivity and profitability.

[Insert Table 9 near here]

4.5 Robustness tests: alternative employee treatment and labor investment efficiency

To examine the robustness of our results, we consider alternative measures for both the dependent variable and the variable of interest. For the variable of interest, we use the variable from KLD as our primary measure for employee treatment and we further use the Fortune magazine's list of the '*100 Best Companies to Work For*' as the alternative measure of employee treatment to re-estimate our results via OLS regression and the PSM approach. In addition, we further use an alternative employee treatment proxy from ASSET4 database. The employee-relevant variables in ASSET4 are under the *Social* category and we construct the employee treatment proxy from four employee-relevant variables: *Health & Safety, Employment Quality, Training and Development, and Diversity and Opportunities*. In the column 1 of Table 10, we find the relationship between abnormal net hiring and employee treatment is still negative and statistically significant at 1% level.

Prior research has also tested the sensitivity of the estimation process to alternative definitions of labor investment efficiency. Firstly, following Cella (2009), we use a firm's industry median level of net

hiring as a proxy for the optimal level. Secondly, we follow Biddle et al. (2009) and estimate a firm-specific model of labor investment as a function of sales growth and use the absolute value of the residuals as the proxy for deviations from expected investment in labor. Thirdly, we use the augmented version of Pinnuck and Lillis (2007)model and re-estimate model 1 with additional variables, including capital expenditure, research and development expenses, acquisition expenses, lagged value of observed labor investment, unionization rate and logarithm of GDP per capita. In Table 10, our robustness tests using the alternative labor investment efficiency measures yield similar results to our main results.

[Insert Table 10 near here]

We further include various additional control variables that are not included in our baseline model because the data requirements lead to additional sample loss. We include governance proxies, corporate governance and institutional ownership, respectively, in our baseline regression because corporate governance and the influence of institutional investor may potentially affect investment policies and employee treatment. Moreover, Jung et al. (2014) find that high-quality financial reporting facilitates more efficient investments in labor and show that financial reporting quality is also one of the factors that significantly influence labor investment efficiency. Therefore, we also use financial reporting quality as a control variable in our regression to test the robustness of our results. We use discretionary accruals as the proxy for financial reporting quality and estimate discretionary accruals by using the performance-adjusted modified Jones model suggested in Kothari et al. (2005) given the less restrictive data requirements of cross-sectional version of the modified Jones (1991) model. The model for estimating discretionary accruals includes lagged return on assets (ROA_{it-1}) as a regressor to control for the effect of performance on measured discretionary accruals. We estimate the model for every industry classified by the two-digit SIC code for each year. Following previous studies, we use the absolute value of discretionary accruals as the proxy for financial reporting quality. The larger the value of the absolute value of discretionary accruals, the lower the level of financial reporting quality. In addition to the earnings quality as measured in Kothari et al. (2005), we also use earnings quality following Dechow and Dichev (2002). In Appendix 3, we find our results are still consistent with the main results after considering additional control variables. Overall,

the models including additional control variables yield results that are entirely consistent with those reported.

5 CONCLUSION

In this paper, we examine employee-relevant CSR, employee treatment, and assess whether employee-friendly treatment affect a firm's investment efficiency in labor. We follow prior literature and the measure of labor investment efficiency assumes that competitive markets drive firms towards optimal recruitment policies and that divergence from that norm will tend to signal inefficiency. In our sample, total wages and salaries are approximately 1/3 the value of firms' revenues and this suggests that the efficiency with which labor is managed is crucial to a firm's prospects. We further examine whether labor investment efficiency links to productivity, and hence firm performance, and whether employee treatment directly impacts on firm performance.

Our results show that employee treatment is negatively associated with the absolute levels of abnormal net hiring and firms therefore with employee-friendly policies tend to enjoy higher labor investment efficiency. Our results suggest that the economic impact of employee treatment for labor investment efficiency is considerable. Specifically, our results shows that a one standard deviation increase in employee treatment is associated with a 4.3% decrease in labor investment inefficiency. Regarding productivity and performance, we find that labor investment inefficiency, as measured by absolute abnormal hiring, is negatively related to sales, gross profit and net profit, all scaled by number of employees, and also to return on assets. Employee treatment is also generally positively related to the labor productivity and financial performance. Apart from the favorable impact of employee-friendly policies on firm performance that has been documented in prior studies, we also find a one standard deviation increase in abnormal net hiring is associated with a 1.2% decrease in ROA. Whilst this may not be crucial to a firm's survival, it could be argued that human resource practices would still make a profound impact and have significant implication for a firm's performance.

Our results are robust to a variety of sensitivity tests and continue to hold when we adopt instrumental variables under 2SLS estimation, PSM, alternative measures for both employee treatment and labor investment efficiency as well as additional control variables. However, in a panel data setting, typical

for archival research of this type, it is difficult to demonstrate causality without the benefit of an exogenous shock. We have followed previous research in the selection of sensitivity tests and we additionally decided to use firm-fixed effects, rather than the more usual industry fixed effects, as being less susceptible to endogeneity. We also find that the test of using non-labor CSR dimensions for labor investment efficiency that serves as a placebo test is helpful in minimize endogeneity in terms of omitted variables and reverse causality. By replicating our analysis with a variety of non-labor CSR categories, our results demonstrate that non-labor CSR dimensions do not repeat the significant results of the employee treatment variable. Our underlying assumption is that if good employee treatment is merely a reflection of a firm's social performance, or omitted variables such as performance, management competence and/or strategic advantage, are driving our results, they are also expected to have significant and positive influence on other dimensions of CSR. Our results mitigate this concern since we do not find significant results on other CSR dimensions and leave employee treatment as the best indicator of labor investment efficiency, productivity and profitability.

Our results generally suggest that firm-level employee treatment policies have important implication for firm-level employment decisions and the allocation of resource to investment of labor. In light of the prior research investigating the relation between employee treatment and financial performance, our research emphasizes more on the relation between employee treatment and labor investment efficiency. Taken together, our findings highlight the important role of employee treatment in contributing to firms' investment behavior, efficiency and value creation. Hence, from a broad sense, our study also speaks to the literature about stakeholder relationship, employee welfare and corporate investment policies, and relevant legislation regarding employment policies.

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Table 1: Sample Selection

Criteria	Firm-Year Observations
All COMPUSTAT firms for fiscal years 1991-2016 (exclude firms with negative assets, negative sales and stockholders equity and missing historical SIC codes)	290,288
Less:	
Observations in financial industries (SIC 60-69)	(70,299)
Merged with total stock returns data from CRSP	(84,907)
Missing observations to estimate abnormal net hiring in Model 1	(24,257)
Sample for estimating Model 1 (Pinnuck and Lillies, 2007)	96,221
KLD firms with non-missing value in COMPUSTAT for estimating Model 2	23,742
Less:	
Merged with dataset in Model 1 and unmatched observations	(3,159)
Sample for estimating Model 2 (Primary baseline regression)	**20,583**
Less:	
Missing observations in Model 3	(6,902)
Sample for estimating Model 3 (Productivity and Profitability regression)	13,681

Table 2, Panel A: Descriptive Statistics of Selected Variables in Model 2 and Model 3

	N	Mean	Median	Std.Dev	25th Percentile	75th Percentile
AB_NETHIREit	20,583	0.122	0.075	0.181	0.037	0.137
OVER_LABORit	6,527	0.162	0.072	0.273	0.028	0.169
UNDER_LABORit	14,056	-0.103	-0.076	0.110	-0.130	-0.040
EMP_TREATit	20,583	-0.077	0.000	0.804	0.000	0.000
MTBit-1	20,583	3.206	2.263	3.930	1.479	3.725
SIZEit-1	20,583	7.253	7.117	1.558	6.100	8.275
LIQit-1	20,583	1.870	1.240	2.063	0.770	2.136
LEVit-1	20,583	0.243	0.206	0.247	0.032	0.356
DIVDit-1	20,583	0.469	0.000	0.499	0.000	1.000
TANGIBLESit-1	20,583	0.289	0.213	0.237	0.099	0.428
LOSSit-1	20,583	0.209	0.000	0.406	0.000	0.000
LABINTit-1	20,583	0.006	0.003	0.011	0.002	0.006
SD_CFOit-1	20,583	0.108	0.084	0.171	0.046	0.120
SD_SALESit-1	20,583	0.053	0.037	0.058	0.022	0.062
SD_NETHIREit-1	20,583	0.144	0.103	0.135	0.060	0.180
UNIONit-1	20,583	0.177	0.111	0.237	0.061	0.201
INVESTit	20,583	0.104	0.074	0.089	0.040	0.143
NETINCOMEit	13,681	5.682	5.640	0.880	5.190	6.130
SALESit	13,374	4.637	4.673	1.030	4.047	5.248
GPROFITit	11,149	2.902	2.930	1.374	2.080	3.762
ROAit-1	13,681	0.044	0.054	0.127	0.017	0.097
GOVERNit-1	13,681	-0.274	0.000	0.687	-1.000	0.000
CAPXit-1	13,681	0.055	0.038	0.058	0.020	0.068

A description of the variables is provided in the appendix.

Table 2, Panel B: Mean Abnormal Net Hiring and Employee Treatment Scores by Year

Year	*N*	*AB_NETHIRE*	*EMP_TREAT*
1995	299	0.111	0.264
1996	303	0.102	0.261
1997	313	0.098	0.304
1998	323	0.120	0.368
1999	324	0.120	0.352
2000	326	0.125	0.322
2001	494	0.149	0.180
2002	642	0.103	0.040
2003	1,375	0.137	-0.183
2004	1,432	0.141	-0.271
2005	1,285	0.129	-0.310
2006	1,276	0.126	-0.365
2007	1,218	0.123	-0.352
2008	1,348	0.119	-0.346
2009	1,409	0.128	-0.302
2010	1,471	0.127	-0.094
2011	1,429	0.117	-0.052
2012	1,424	0.112	0.060
2013	1,437	0.110	0.174
2014	1,333	0.112	0.140
2015	1,122	0.113	0.199

Table 2, Panel C: Descriptive Statistics by Employee-Friendly versus Non-Employee-Friendly Firms											
	Employee-Friendly Firms			Neutral Firms			Non-Employee-Friendly Firms			p-value	
	N	Mean	Median	N	Mean	Median	N	Mean	Median	t-test	W-Test
Dependent Variables											
AB_NETHIREit	3,030	0.106	0.070	13,079	0.124	0.075	4,474	0.128	0.082	< 0.001	< 0.001
OVER_LABORit	886	0.133	0.061	4,402	0.166	0.075	1,239	0.171	0.071	< 0.001	0.010
UNDER_LABORit	2,144	-0.095	-0.073	8,677	-0.102	-0.075	3,235	-0.111	-0.084	< 0.001	< 0.001
Test Variable											
EMP_TREATit	3,030	1.271	1.000	13,079	0.000	0.000	4,474	-1.215	-1.000	< 0.001	< 0.001
Control Variables											
MTBit-1	3,030	3.814	2.640	13,079	3.154	2.219	4,474	2.948	2.179	< 0.001	< 0.001
SIZEit-1	3,030	8.260	8.330	13,079	7.032	6.900	4,474	7.220	7.102	< 0.001	< 0.001
LIQit-1	3,030	1.692	1.153	13,079	1.974	1.323	4,474	1.687	1.090	0.905	0.001
LEVit-1	3,030	0.240	0.211	13,079	0.238	0.194	4,474	0.260	0.231	< 0.001	0.006
DIVDit-1	3,030	0.603	1.000	13,079	0.430	0.000	4,474	0.494	0.000	< 0.001	< 0.001
TANGIBLESit-1	3,030	0.314	0.251	13,079	0.275	0.195	4,474	0.313	0.249	0.944	0.688
LOSSit-1	3,030	0.134	0.000	13,079	0.213	0.000	4,474	0.248	0.000	< 0.001	< 0.001
LABINTit-1	3,030	0.004	0.002	13,079	0.006	0.003	4,474	0.007	0.004	< 0.001	< 0.001
INVESTit	3,030	0.095	0.072	13,079	0.113	0.085	4,474	0.104	0.086	0.003	< 0.001
SD_CFOit-1	3,030	0.046	0.034	13,079	0.055	0.038	4,474	0.055	0.037	< 0.001	< 0.001
SD_SALESit-1	3,030	0.120	0.090	13,079	0.146	0.105	4,474	0.152	0.109	< 0.001	< 0.001
SD_NETHIREit-1	3,030	0.152	0.092	13,079	0.179	0.113	4,474	0.189	0.115	< 0.001	< 0.001
UNIONit-1	3,030	0.127	0.093	13,079	0.099	0.074	4,474	0.104	0.078	< 0.001	< 0.001
SALESit	2,165	5.830	5.771	8,569	5.693	5.656	2,947	5.542	5.504	< 0.001	< 0.001
GPROFITit	2,124	4.932	4.934	8,365	4.666	4.710	2,885	4.337	4.352	< 0.001	< 0.001
NETINCOMEit	1,868	3.323	3.387	6,941	2.900	2.925	2,340	2.571	2.598	< 0.001	< 0.001
ROAit	2,165	0.063	0.066	8,569	0.042	0.053	2,947	0.038	0.048	< 0.001	< 0.001
GOVERNANCEit-1	2,165	-0.291	0.000	8,569	-0.247	0.000	2,947	-0.342	0.000	0.017	0.010
CAPXit-1	2,165	0.057	0.042	8,569	0.054	0.035	2,947	0.057	0.042	0.665	0.904

Table 3: Correlation Matrix.

	1	2	3	4	5	6	7	8	9	10	11
1. AB_NETHIREit-1	1										
2. EMP_TREATit	-0.030***	1									
3. MTBit-1	0.023***	0.070***	1								
4. SIZEit-1	-0.108***	0.153***	0.192***	1							
5. LIQit-1	0.146***	0.024***	0.051***	-0.198***	1						
6. LEVit-1	0.036***	-0.037***	-0.018***	0.108***	-0.224***	1					
7. DIVDit-1	-0.123***	0.042***	-0.013*	0.369***	-0.268***	0.046***	1				
8. TANGIBLESit-1	-0.072***	-0.021***	-0.114***	0.147***	-0.327***	0.255***	0.251***	1			
9. LOSSit-1	0.102***	-0.074***	-0.017**	-0.300***	0.161***	0.057***	-0.272***	-0.079***	1		
10. LABINTit-1	-0.038***	-0.081***	0.004	-0.100***	-0.105***	-0.087***	0.019***	0.026***	-0.067***	1	
11. INVESTit	0.332***	-0.009	0.064***	-0.093***	0.074***	0.040***	-0.096***	-0.041***	0.088***	-0.027***	1
12. SD_CFOit-1	0.170***	-0.029***	0.159***	-0.289***	0.253***	-0.075***	-0.275***	-0.227***	0.266***	-0.036***	0.200***
13. SD_SALESit-1	0.097***	-0.061***	0.029***	-0.199***	0.002	0.001	-0.147***	-0.184***	0.087***	0.091***	0.081***
14 SD_NETHIREit-1	0.141***	-0.044***	0.000	-0.109***	0.069***	0.108***	-0.184***	-0.083***	0.133***	-0.053***	0.070***
15. UNIONit-1	-0.020***	0.061***	-0.067***	0.095***	-0.026***	0.061***	0.136***	0.205***	-0.031***	-0.155***	-0.047***
16. SALESit	-0.040***	0.094***	-0.024***	0.200***	-0.100***	0.097***	0.086***	0.134***	-0.074***	-0.498***	-0.00900
17. GPROFITit	-0.002	0.162***	0.110***	0.191***	0.132***	0.043***	-0.040***	-0.020***	-0.010	-0.528***	0.043***
18. NETINCOMEit	0.001	0.156***	0.138***	0.281***	0.161***	0.023***	0.045***	0.075***	-0.100***	-0.460***	0.029***
19. ROAit-1	-0.149***	0.068***	0.053***	0.234***	-0.154***	-0.077***	0.189***	0.045***	-0.430***	0.086***	-0.223***
20. GOVERNANCEit-1	-0.002	0.026***	-0.037***	-0.199***	0.038***	-0.027***	0.028***	0.061***	0.007	0.027***	0.011
21. CAPXit-1	-0.040***	0.037***	-0.019***	0.387***	-0.112***	0.051***	0.179***	0.233***	-0.077***	-0.064***	-0.034***

	12	13	14	15	16	17	18	19	20	21
12. SD_CFOit-1	1									
13. SD_SALESit-1	0.335***	1								
14 SD_NETHIREit-1	0.161***	0.205***	1							
15. UNIONit-1	-0.095***	-0.076***	-0.001	1						
16. SALESit	-0.019***	0.083***	-0.005	0.101***	1					
17. GPROFITit	0.104***	-0.069***	0.013*	-0.007	0.811***	1				
18. NETINCOMEit	0.103***	-0.095***	0.002	0.098***	0.708***	0.794***	1			
19. ROAit-1	-0.316***	-0.032***	-0.133***	0.013*	0.150***	0.123***	0.447***	1		
20. GOVERNANCEit-1	0.032***	-0.001	-0.016**	0.042***	-0.030***	-0.036***	-0.041***	-0.013*	1	
21. CAPXit-1	-0.099***	-0.067***	-0.042***	0.085***	0.209***	0.161***	0.175***	0.041***	-0.054***	1

This table presents the Pearson pair-wise correlation between all variables included in Equation 2 and Equation 3.
*, **, ***indicate statistical significance at the 0.10, 0.05 and 0.001 levels.

Table 4: The Effect of Employee Treatment on Abnormal Net Hiring

	OLS			*Fama-MacBeth*	*+/- SCORE*
	(1) AB_ NETHIRE	***(2) OVER_ LABOR***	***(3) UNDER_ LABOR***	***(4) AB_ NETHIRE***	***(5) AB_ NETHIRE***
EMP_TREATit	-0.00652***	-0.0134**	0.00429***	-0.00426***	-0.00764**
	(-3.19)	(-2.01)	(2.77)	(-4.03)	(-2.48)
MTBit-1	0.000290	0.00305**	0.000651	-0.000486	-0.000834
	(0.52)	(2.58)	(1.40)	(-1.35)	(-1.11)
SIZEit-1	-0.0891***	-0.134*	0.0535**	-0.0184	-0.0941*
	(-3.27)	(-1.75)	(2.48)	(-1.72)	(-1.87)
LIQit-1	0.00900***	0.0123***	-0.00218	0.0114***	0.00577*
	(4.65)	(2.94)	(-1.22)	(4.15)	(1.70)
LEVit-1	0.0351***	0.0551*	-0.0561***	0.0361***	0.0269
	(3.27)	(1.77)	(-6.96)	(5.54)	(1.61)
DIVDit-1	0.00726	0.00775	-0.00684*	-0.0147***	-0.00136
	(1.20)	(0.39)	(-1.84)	(-3.61)	(-0.14)
TANGIBLESit-1	-0.0606**	-0.0791	0.0518**	-0.00871	-0.0610
	(-2.15)	(-1.19)	(1.98)	(-1.26)	(-1.36)
LOSSit-1	-0.00366	-0.00347	-0.00704**	0.0151**	-0.000300
	(-0.86)	(-0.28)	(-2.05)	(2.09)	(-0.04)
LABINTit-1	-1.914**	-11.10***	-2.240***	-0.409***	-1.277
	(-2.09)	(-3.78)	(-4.40)	(-3.03)	(-1.15)
INVESTit	0.325***	0.425***	-0.234***	0.368***	0.429***
	(5.49)	(10.43)	(-5.16)	(8.63)	(9.67)
SD_CFOit-1	0.0194	0.0276	-0.0243	0.0882*	0.0583
	(0.30)	(0.21)	(-0.45)	(1.95)	(0.58)
SD_SALESit-1	0.0135	0.0378	0.0238*	0.0702**	0.0294
	(0.70)	(0.66)	(1.67)	(2.70)	(0.84)
SD_NETHIREit-1	-0.154***	-0.302***	0.00949	0.0607***	-0.236***
	(-8.47)	(-6.86)	(1.25)	(4.67)	(-4.81)
UNIONit-1	0.0352	0.0587	0.0182	-0.000739	0.130**
	(0.90)	(0.46)	(0.62)	(-0.05)	(2.13)
Firm Fixed Effect	Yes	Yes	Yes	No	Yes
Year Fixed Effect	Yes	Yes	Yes	No	Yes
N	20,583	6,527	14,056	20,583	7,210
Adjusted R2	25.4%	31.4%	28.3%	18.0%	31.7%

*, **, *** indicate statistical significance at the 0.10, 0.05 and 0.001 levels. All test statistics and significance level are calculated based on the standard error adjusted by a one-dimensional cluster at the firm level.

Table 5: The Effect of Employee Treatment and Abnormal Net Hiring on Labor Productivity

	(1) *Net income per employee*	*(2)* *Sales per employee*	*(3)* *Gross profit per employee*	*(4)* *Return on Assets*
EMP_TREATit-1	-0.000231	0.0182**	0.0330**	0.00501***
	(-0.04)	(2.50)	(2.50)	(3.65)
AB_NETHIREit-1	-0.116***	-0.0912***	-0.192***	-0.0340***
	(-3.87)	(-2.73)	(-3.13)	(-3.54)
SIZEit-1	0.500***	0.811***	2.624***	0.129***
	(4.67)	(7.08)	(10.95)	(5.32)
LIQit-1	-0.0316***	-0.00894	0.00908	-0.000979
	(-3.72)	(-1.42)	(0.74)	(-0.64)
LEVit-1	-0.0657**	-0.0229	-0.359***	-0.0335***
	(-2.19)	(-0.59)	(-4.39)	(-2.85)
MTBit-1	-0.000714	0.00180	0.0146***	0.00306***
	(-0.38)	(0.84)	(3.83)	(4.87)
PPEit-1	0.0395	0.140	-0.567**	-0.0237
	(0.30)	(1.01)	(-2.23)	(-1.01)
INVESTit-1	-0.269***	-0.210***	-0.382***	-0.0338*
	(-7.47)	(-6.33)	(-3.97)	(-1.89)
LOSSit-1	-0.0262**	-0.0418***	-0.318***	-0.0163***
	(-2.30)	(-2.76)	(-7.59)	(-4.28)
SALESGROWTH1it	0.309***	0.207***	0.435***	0.0577***
	(10.41)	(5.56)	(7.33)	(7.62)
SALESGROWTH2it-1	0.170***	0.128***	0.218***	0.0314***
	(5.42)	(4.51)	(4.29)	(5.58)
GOVERNANCEit-1	0.00545	0.0135**	-0.00767	0.00312**
	(1.07)	(2.03)	(-0.54)	(2.07)
CAPXit-1	-0.276*	-0.335	0.595	0.118***
	(-1.67)	(-1.50)	(1.50)	(2.72)
Firm Fixed Effect	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes
N	13,681	13,374	11,149	13,681
Adjusted R2	92.9%	92.2%	77.5%	57.8%

*, **, *** indicate statistical significance at the 0.10, 0.05 and 0.001 levels.

All test statistics and significance level are calculated based on the standard error adjusted by a one-dimensional cluster at the firm level.

Table 6: The Effect of CSR Dimensions on Abnormal Net Hiring

	(1) *AB_ NETHIRE*	*(2)* *AB_ NETHIRE*	*(3)* *AB_ NETHIRE*	*(4)* *AB_ NETHIRE*	*(5)* *AB_ NETHIRE*	*(6)* *AB_ NETHIRE*
ENVIRONit	0.00123					
	(0.68)					
COMMUNit		-0.0000272				
		(-0.01)				
EMP_RELit			-0.00482***			
			(-3.18)			
DIVERSITYit				-0.00221		
				(-1.48)		
PRODUCTit					0.000668	
					(0.25)	
RIGHTSit						0.00124
						(0.25)
MTBit-1	0.000300	0.000297	0.000275	0.000281	0.000296	0.000298
	(0.53)	(0.53)	(0.49)	(0.50)	(0.53)	(0.53)
SIZEit-1	-0.0888***	-0.0882***	-0.0872***	-0.0860***	-0.0883***	-0.0883***
	(-3.25)	(-3.23)	(-3.20)	(-3.14)	(-3.23)	(-3.24)
LIQit-1	0.00897***	0.00899***	0.00902***	0.00897***	0.00898***	0.00898***
	(4.62)	(4.64)	(4.67)	(4.63)	(4.64)	(4.64)
LEVit-1	0.0350***	0.0351***	0.0351***	0.0352***	0.0350***	0.0351***
	(3.26)	(3.27)	(3.28)	(3.28)	(3.27)	(3.27)
DIVDit-1	0.00729	0.00727	0.00747	0.00729	0.00727	0.00730
	(1.21)	(1.20)	(1.24)	(1.21)	(1.20)	(1.21)
TANGIBLESit-1	-0.0617**	-0.0618**	-0.0603**	-0.0612**	-0.0619**	-0.0621**
	(-2.19)	(-2.18)	(-2.14)	(-2.17)	(-2.20)	(-2.21)
LOSSit-1	-0.00308	-0.00308	-0.00349	-0.00296	-0.00307	-0.00308
	(-0.72)	(-0.72)	(-0.81)	(-0.69)	(-0.72)	(-0.72)
LABINTit-1	-1.962**	-1.954**	-1.894**	-1.940**	-1.955**	-1.956**
	(-2.14)	(-2.14)	(-2.07)	(-2.12)	(-2.14)	(-2.14)
INVESTit	0.325***	0.325***	0.325***	0.325***	0.325***	0.325***
	(5.49)	(5.49)	(5.49)	(5.49)	(5.49)	(5.49)
SD_CFOit-1	0.0227	0.0228	0.0205	0.0217	0.0228	0.0227
	(0.35)	(0.35)	(0.32)	(0.33)	(0.35)	(0.35)
SD_SALESit-1	0.0138	0.0136	0.0131	0.0136	0.0136	0.0136
	(0.71)	(0.70)	(0.68)	(0.70)	(0.71)	(0.70)
SD_NETHIREit-1	-0.154***	-0.154***	-0.154***	-0.154***	-0.154***	-0.154***
	(-8.50)	(-8.51)	(-8.49)	(-8.54)	(-8.51)	(-8.51)
UNIONit-1	0.0297	0.0304	0.0330	0.0308	0.0304	0.0304
	(0.77)	(0.78)	(0.85)	(0.79)	(0.78)	(0.78)
Firm Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
N	20,583	20,583	20,583	20,583	20,583	20,583
Adjusted R2	25.4%	25.4%	25.4%	25.4%	25.4%	25.4%

*, **, *** indicate statistical significance at the 0.10, 0.05 and 0.001 levels.

Table 7: Instrumental Variables Tests via 2SLS Estimation of Model 2 and 3

	First Stage	***Second Stage***	***First Stage***	***Second Stage***	***First Stage***	***Second Stage***	***First Stage***	***Second Stage***	***First Stage***	***Second Stage***
	(1) EMP_ TREAT	***(1) |AB_ NETHIR|***	***(2) EMP_ TREAT***	***(2) SALES***	***(3) EMP_ TREAT***	***(3) NET INCOME***	***(4) EMP_ TREAT***	***(4) GPROFIT***	***(4) EMP_ TREAT***	***(4) ROA***
EMP_TREATit-1		-0.0306***		-0.0156		0.0905***		0.0355*		0.0005
		(-3.18)		(-0.91)		(2.28)		(1.66)		(0.14)
AB_NETHIREit-1				-0.1070***		-0.1499***		-0.0797**_		-0.0391***
				(-3.08)		(-2.07)		(-1.96)		(-3.21)
EMP_TREAT_ STATEit	0.8119***		0.6860***		0.6794***		0.6857***		0.6860***	
	(10.50)		(12.83)		(14.87)		(12.73)		(12.83)	
EMP_TREAT_ NDUSTRYit	0.8351***		0.8158***		0.8452***		0.8207***		0.8158***	
	(12.35)		(15.48)		(14.87)		(15.51)		(15.48)	
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	15,520	15,520	11,292	11,292	9272	9272	11,063	11,063	11,292	11,292
Adjusted R2	50.6%	34.8%	56.4%	94.5%	57.2%	81.7%	56.5%	94.0%	56.4%	62.6%
First-stage Cragg and Donald Test p-value	< 0.001		< 0.001		<0.001		< 0.001		< 0.001	
Overidentification Test p-value		0.764		0.810		0.156		0.720		0.477

This table presents the results from instrumental variable regressions that control for the the endogeneity of employee treatment. We employ two instruments: (1) the mean of the employee treatment score of firms having headquarters located in the same state (*EMP_TREAT_STATE*) and (2) the mean of the employee treatment score in year t of all firms belonging to firm i's 2-digit SIC code (*EMP_TREAT_INDUSTRY*). Section (1) presents the 2SLS estimation results for Model 2 of the study to test the relationship between employee treatment (*EMP_TREAT*) and abnormal net hiring (*AB_NETHIRE*). Section (2) to Section (5) present the 2SLS estimation results for Model 3 of the study to test the impact of employee treatment (*EMP_TREAT*) and abnormal net hiring (*AB_NETHIRE*) on various employee productivity and profitability measures (*SALES, NETINCOME, GPROFIT and ROA*).

*, **, *** indicate statistical significance at the 0.10, 0.05 and 0.001 levels. All test statistics and significance level are calculated based on the standard error adjusted by a one-dimensional cluster at the firm level.

Table 8: Alternative Indicators of Employee Treatment: Fortune's Best 100 List

	(1) *AB_NETHIRE* *|AB_NETHIRE|* *Coefficient* *(t-stat)*	*(2)* *OVER_LABOR* *(POSITIVE)* *Coefficient* *(t-stat)*	*(3)* *UNDER_LABOR* *(NEGATIVE)* *Coefficient* *(t-stat)*
BEST100$_{it}$	-0.142**	-0.220***	0.0787***
	(-2.46)	(-5.15)	-8.73
MTB$_{it-1}$	0.00009	0.00166	0.000924
	-0.14	-1.06	-1.58
SIZE$_{it-1}$	-0.0944***	-0.0337	0.0640**
	(-2.99)	(-0.38)	-2.45
LIQ$_{it-1}$	0.00848***	0.0108**	-0.00231
	-4.07	-2.22	(-1.11)
LEV$_{it-1}$	0.0444***	0.0359	-0.0656***
	-3.63	-0.99	(-7.20)
DIVD$_{it-1}$	0.00335	0.00135	-0.00719
	-0.42	-0.05	(-1.49)
TANGIBLES$_{it-1}$	-0.0727**	-0.0509	0.0737**
	(-2.14)	(-0.62)	-2.28
LOSS$_{it-1}$	-0.00473	-0.00791	-0.00777*
	(-0.98)	(-0.52)	(-1.94)
LABINT$_{it-1}$	-2.219*	-14.07***	-2.510***
	(-1.88)	(-3.86)	(-3.71)
INVEST$_{it}$	0.391***	0.420***	-0.237***
	-11.63	-8.95	(-5.02)
SD_CFO$_{it-1}$	0.0332	0.055	-0.012
	-0.45	-0.35	(-0.20)
SD_SALES$_{it-1}$	0.0178	0.104	0.0305*
	-0.87	-1.59	-1.93
SD_NETHIRE$_{it-1}$	-0.191***	-0.372***	0.0178*
	(-9.00)	(-6.59)	-1.92
UNION$_{it-1}$	0.0191	0.166	0.0361
	-0.45	-1.1	-1.13
Firm Fixed Effect	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes
N	15,776	4,989	10,787
Adjusted R2	26.7%	33.5%	29.5%

This table presents the results from regressing abnormal net hiring on alternative employee treatment measured as *Fortune's Best 100 List* and other control variables over the period between 1998 and 2012.

*, **, *** indicate statistical significance at the 0.10, 0.05 and 0.001 levels.
All test statistics and significance level are calculated based on the standard error adjusted by a one-dimensional cluster at the firm level.

Table 9: Propensity score matching test of Fortune Best100 versus Control Firms

Variable	Sample	Treated	Controls	Difference	T-stat	N
EMP_TREAT	Unmatched	0.933	-0.053	0.986	26.84	
	ATT	0.933	0.207	0.726	10.55***	435
ET_STRENGTH	Unmatched	1.260	0.243	1.016	36.94	
	ATT	1.260	0.579	0.680	11.10***	435
ET_CONCERN	Unmatched	0.326	0.296	0.030	1.13	
	ATT	0.326	0.372	-0.046	-1.11	435
AB_NETHIRE	Unmatched	0.088	0.123	-0.034	-3.82	
	ATT	0.088	0.105	-0.017	-1.91*	435
SALES	Unmatched	5.673	5.743	-0.070	-1.59	
	ATT	5.673	5.515	0.157	2.55***	414
GROSS PROFIT	Unmatched	3.208	2.918	0.290	4.13	
	ATT	3.208	2.962	0.246	2.63***	414
NET INCOME	Unmatched	4.862	4.708	0.154	3.01	
	ATT	4.862	4.591	0.271	3.46***	414
ROA	Unmatched	0.118	0.084	0.034	9.70	
	ATT	0.118	0.107	0.011	2.28**	414

Cases are matched using a probit regression of inclusion in of the Fortune 100 Best Firms to Work For with size, industry, leverage, market-to-book, loss dummy, and 5-year standard deviation of sales as the statistically significant variables. Treated and Controls reports the mean values for the unmatched and matched samples (designated ATT which identifies the average treatment effect on the treated). Here firms are matched by the nearest neighbor without replacement.
*, **, *** indicate statistical significance at the 0.10, 0.05 and 0.001 levels.

Table 10: Alternative Employee Treatment and Labor Investment Efficiency Proxies

	ASSET4	*Cella (2010)*	*Biddle (2009)*	*Augmented Pinnuck and Lillis (2007)*
	(1) *AB_NETHIRE* */AB_NETHIRE/* *Coefficient* *(t-stat)*	*(1)* *AB_NETHIRE* */AB_NETHIRE/* *Coefficient* *(t-stat)*	*(2)* *AB_NETHIRE* */AB_NETHIRE/* *Coefficient* *(t-stat)*	*(3)* *AB_NETHIRE* */AB_NETHIRE/* *Coefficient* *(t-stat)*
EMP_TREATit	-0.000117***	-0.00570***	-0.00604***	-0.00508**
	(-2.68)	(-2.94)	(-2.85)	(-2.40)
MTBit-1	0.00143**	0.00112**	0.000640	0.000817
	(2.24)	(2.05)	(1.05)	(1.42)
SIZEit-1	-0.333***	-0.0671**	-0.0673**	-0.0828***
	(-3.63)	(-2.48)	(-2.36)	(-2.69)
LIQit-1	0.0179*	0.00924***	0.00802***	0.00807***
	(1.66)	(4.43)	(3.95)	(4.15)
LEVit-1	0.0569**	-0.00704	0.0289***	0.0240**
	(2.31)	(-0.52)	(2.60)	(2.08)
DIVDit-1	0.0106	0.00286	0.00785	0.00628
	(0.86)	(0.46)	(1.25)	(0.98)
TANGIBLESit-1	-0.0328	-0.0676**	-0.0617**	-0.0761***
	(-0.55)	(-2.56)	(-2.11)	(-2.64)
LOSSit-1	-0.0174**	-0.00137	0.00681	-0.00262
	(-2.21)	(-0.32)	(1.55)	(-0.58)
LABINTit-1	-0.569	-2.555***	-2.801***	-1.850**
	(-0.27)	(-2.73)	(-2.78)	(-1.98)
INVESTit	0.345***	0.272***	0.350***	0.301***
	(6.14)	(6.52)	(5.53)	(5.46)
SD_CFOit-1	-0.135	-0.0331	0.0414	-0.0305
	(-1.29)	(-0.49)	(0.60)	(-0.46)
SD_SALESit-1	0.0127	0.0361*	0.00337	0.00619
	(0.42)	(1.86)	(0.16)	(0.33)
SD_NETHIREit-1	-0.0805***	-0.159***	-0.160***	-0.175***
	(-3.55)	(-8.51)	(-8.49)	(-8.99)
UNIONit-1	0.0430	0.0312	0.0129	0.0875**
	(0.91)	(0.72)	(0.32)	(2.19)
Firm Fixed Effect	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes
N	4,814	20,583	20,583	19,994
Adjusted R2	20.3%	23.8%	26.1%	24.0%

Appendix 1: Description (COMPUSTAT data items in parentheses)

Model 1 Variables:	
NET_HIREit	Percentage change in the number of employees (EMP) from year t-1 to year t for firm i.
SALES_Git	Percentage change in sales (REVT) in year t for firm i.
ROAit	Return on assets (NI / lag(AT)) in year t for firm i.
⊿ROAit	Change in return on assets in year t for firm.
RETURNit	Total stock return during fiscal year t for firm i.
SIZEit-1	Natural log of market value (CSHO* PRCC_F) at the end of fiscal year t-1 for firm i.
SIZE_Pit-1	Percentile rank of *SIZEit-1*
LIQit-1	Quick ratio ((CHE + RECT) / LCT) at the end of year t -1 for firm i.
⊿LIQit-1	Percentage change in the quick ratio in year t for firm i.
LEVit-1	Leverage for firm I, measured as the sum of debt in current liabilities and total long-term debt (DLC + DLTT) at the end of year t-1, divided by year t-1 total assets.
LOSSBINit-1	There are five separate loss bins to indicate each 0.005 interval of ROA from 0 to -0.025 in period t-1 for firm i. LOSSBIN1 is equal to 1 if ROA ranges from -0.005 to 0.
Model 2 Variables:	
EMP_TREATit	Employee treatment score from KLD database.
DIVDit-1	Indicator variable coded as 1 if the firm paid dividends (DVPSPS_F) in year t-1.
TANGIBLESit-1	Property, plant and equipment (PPENT) at the end of year t-1, divided by total assets at year t-1, for firm i.
LOSSit-1	Indicator variable coded as 1 if firm I had negative ROA for year t-1.
LABINTit-1	Labor intensity, measured as the number of employees divided by total assets at the end of year t-1 for firm i.
INVESTit	Abnormal other (non-labor) investments, defined as the absolute magnitude of the residual from the following model: INVESTit = β0 + β1SALES_Git-1 + εit, where INVEST is the sum of capital expenditure (CAPX), acquisition expenditure (AQC), and research and development expenditure (XRD), less cash receipts from the sale of property, plant, and equipment (SPPE), all scaled by lagged total assets.
SD_CFOit-1	Standard deviation of firm i's cash flows from operation (OANCF) from year t-5 to t-1.
SD_SALESit-1	Standard deviation of firm i's sales from year t-5 to t-1.
SD_NETHIREit-1	Standard deviation of firm i's change in the number of employees from year t-5 to t-1.
UNIONit-1	Industry-level rate of labor unionization for year t-1.
Model 3 Variables:	
NETINCOMEit	Employee productivity, measured as the natural logarithm of net income (NI) divided by the number of employee (EMP).
SALESit	Employee productivity, measured as the natural logarithm of sales (REVT) divided by the number of employee (EMP).
GPROFITit	Employee productivity, measured as the natural logarithm of sales (REVT) minus cost of goods sold (COGS) divided by the number of employee (EMP).
HERFDit-1	Herfindahl-Hirschman Index (3-digit SIC) based on firm's sales.
GOVERNit-1	Corporate governance score from KLD database.
CAPXit-1	The ratio of capital expenditures (CAPX) to total assets (AT).
Other Variables:	
BEST100it	Indicator variable coded as 1 if the firm is listed in Fortune magazine's list of the "100 best companies to work for" in year t.
ENVIRONit-1	Environment score from KLD database.
COMMUNit-1	Community score from KLD database.
EMP_RELit-1	Employee relation score from KLD database.
DIVERSITYit-1	Diversity score from KLD database.

PRODUCTit-1	Product score from KLD database.
RIGHTSit-1	Human rights score from KLD database.
AB_DISCit-1	Discretionary accrual is estimated by using the performance-adjusted modified Jones model suggested in Kothari et al. (2005). We estimate the model for every industry classified by two-digit SIC code for each year and capture the residuals. The absolute value of discretionary accrual, *AB_DISC*, is used as the proxy for financial reporting quality. The large value of the absolute value of discretionary accrual, the lower level of financial reporting quality. We further multiply *AB_DISC* by -1 so that large value of *AB_DISC* indicates higher-quality of financial reporting.
DD_DISCit-1	Discretionary accrual is estimated by using the Dechow and Dichiev (2002) model as modified by McNichols (2002) and Francis et al (2005). We estimate the model for every industry classified by two-digit SIC code for each year and capture the residuals. We then compute the standard deviation of firm i's residuals over the years t-5 to t-1. We further multiply that standard deviation by -1 so that large value indicates higher-quality of financial reporting.(see references?)
INST_INVESTORit-1	Institutional shareholders at the end of year t-1 for firm i.

Appendix 2a: Descriptive Statistics of Selected Variables in Model 1

Variable	N	Mean	Median	Std.Dev	25th Percentile	75th Percentile
NET_HIREit	96,221	0.091	0.028	0.349	-0.050	0.149
SALES_GRit	96,221	0.187	0.078	0.634	-0.032	0.233
SALES_Git-1	96,221	0.256	0.092	0.812	-0.019	0.266
⊿ROAit	96,221	0.004	0.006	0.190	-0.038	0.044
⊿ROAit-1	96,221	-0.000	0.006	0.212	-0.038	0.045
ROAit	96,221	-0.032	0.032	0.258	-0.054	0.083
RETURNit	96,221	0.146	0.002	0.801	-0.294	0.328
SIZEit-1	96,221	5.615	5.524	2.222	3.971	7.138
LIQit-1	96,221	2.121	1.265	2.584	0.770	2.343
⊿LIQit-1	96,221	0.243	-0.000	1.182	-0.208	0.256
⊿LIQit	96,221	0.106	-0.021	0.823	-0.229	0.202
LEVit-1	96,221	0.256	0.195	0.282	0.025	0.378

This table presents the descriptive statistics for the 96,221 firm-year observations over the period between 1991 and 2016. This table presents the number of observations, the mean, the median, the standard deviation, the values for the first and the third quartile for all the variables in Equation 1. The primary estimate of expected net hiring is based on the model of Pinnuck and Lillies (2007). *NET_HIRE* is the percentage change in employee. *SALE_GROWTH* is the percentage change in sale revenue. *ROA* is net income scaled by beginning of the year total asset. *RETURN* is the annual stock return for year t. *SIZE_R* is the log of market value of equity at the beginning of the year, ranked into percentiles. *LIQ* is the ratio of cash and short-term investments plus receivables to current liabilities. *LEV* is the ratio of long term debt to total assets at the beginning of the year.

Appendix 2b. Regression Results (Dependent Variable = *NET_HIRE*)

	Expected Sign	*Coefficient (t-stat)*
SALESGROWTHit	+	0.2157***
		(46.87)
SALESGROWTHit-1	+	0.0255***
		(10.66)
ROAit	+	0.1474***
		(17.68)
⊿ROAit	-	-0.2384***
		(-23.52)
⊿ROAit-1	+	0.0407***
		(4.95)
RETURNit	+	0.0414***
		(22.94)
SIZE_Pit-1	+	0.0478***
		(10.85)
LIQit-1	+	0.0069***
		(10.76)
⊿LIQit	+/-	-0.0089***
		(-4.33)
⊿LIQit-1	+	0.0225***
		(14.63)
LEVit-1	+/-	-0.0101*
		(-1.91)
LOSSBIN1it-1	-	-0.0230***
		(-2.96)
LOSSBIN2it-1	-	-0.0386***
		(-5.37)
LOSSBIN3it-1	-	-0.0312***
		(-3.75)
LOSSBIN4it-1	-	-0.0262***
		(-3.16)
LOSSBIN5it-1	-	-0.0365***
		(-4.34)
Industry Fixed Effect		Yes
N		96,211
Adjusted R2		21.4%

This table presents the results from regressing the percentage change in employees on variables capturing underlying economic fundamentals over the period between 1991 and 2016. t-statistics are calculated using Newey-West corrected standard errors. *, **, *** indicate statistical significance at the 0.10, 0.05 and 0.001 levels.

Appendix 3: The Effect of Employee Treatment on Abnormal Net Hiring for Considering Governance Proxies and Earnings Quality

	(1) *AB_NETHIRE* *|AB_NETHIRE|* *Coefficient* *(t-stat)*	*(2)* *AB_NETHIRE* *|AB_NETHIRE|* *Coefficient* *(t-stat)*	*(3)* *AB_NETHIRE* *|AB_NETHIRE|* *Coefficient* *(t-stat)*
EMP_TREAT$_{it}$	-0.00658***	-0.00660***	-0.00665***
	(-3.22)	(-3.16)	(-3.17)
MTB$_{it-1}$	0.000291	0.000287	0.000282
	(0.51)	(0.50)	(0.49)
SIZE$_{it-1}$	-0.0961***	-0.0867***	-0.0931***
	(-3.44)	(-3.12)	(-3.28)
LIQ$_{it-1}$	0.00915***	0.00914***	0.00931***
	(4.69)	(4.67)	(4.71)
LEV$_{it-1}$	0.0340***	0.0351***	0.0341***
	(3.14)	(3.26)	(3.14)
DIVD$_{it-1}$	0.00656	0.00762	0.00682
	(1.08)	(1.24)	(1.11)
TANGIBLES$_{it-1}$	-0.0604**	-0.0670**	-0.0671**
	(-2.13)	(-2.31)	(-2.30)
LOSS$_{it-1}$	-0.00319	-0.00388	-0.00333
	(-0.74)	(-0.90)	(-0.76)
LABINT$_{it-1}$	-1.928**	-1.872**	-1.906**
	(-2.09)	(-2.03)	(-2.04)
INVEST$_{it}$	0.325***	0.317***	0.318***
	(5.45)	(5.31)	(5.26)
SD_CFO$_{it-1}$	0.0226	0.00781	0.00939
	(0.35)	(0.12)	(0.14)
SD_SALES$_{it-1}$	0.0118	0.0155	0.0139
	(0.61)	(0.79)	(0.71)
SD_NETHIRE$_{it-1}$	-0.151***	-0.155***	-0.152***
	(-8.28)	(-8.20)	(-8.06)
UNION$_{it-1}$	0.0373	0.0427	0.0447
	(0.96)	(1.09)	(1.15)
GOVERNANCE$_{it-1}$	-0.00108		-0.0004
	(-0.50)		(-0.18)
INST_INVESTOR$_{it-1}$	0.0464***		0.0446**
	(2.68)		(2.52)
AB_DISC$_{it-1}$		-0.107***	-0.112***
		(-3.80)	(-3.98)
Firm Fixed Effect	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes
N	20,345	20,227	19,942
Adjusted R2	25.7%	25.5%	25.8%

Appendix 4: The Effect of CSR Dimensions and Abnormal Net Hiring on Labor Productivity and Profitability

	(1) ***SALES*** ***Sales per employee***	*(2)* ***GPROFIT*** ***Gross profit per employee***	*(3)* ***NETINCOME*** ***Net income per employee***	*(4)* ***ROA*** ***Return on Assets***
ENVIRONit-1	-0.0119**	-0.00329	-0.000619	-0.00136
	(-2.44)	(-0.50)	(-0.05)	(-1.29)
AB_NETHIREit-1	-0.116***	-0.0919***	-0.192***	-0.0342***
	(-3.90)	(-2.76)	(-3.14)	(-3.55)
COMMUNit-1	-0.0150*	0.00252	0.0192	-0.00326*
	(-1.77)	(0.24)	(0.98)	(-1.71)
AB_NETHIREit-1	-0.116***	-0.0918***	-0.192***	-0.0342***
	(-3.89)	(-2.75)	(-3.12)	(-3.56)
EMP_RELit-1	-0.00386	0.00764	0.0181*	0.00386***
	(-0.91)	(1.38)	(1.86)	(3.81)
AB_NETHIREit-1	-0.116***	-0.0913***	-0.191***	-0.0339***
	(-3.88)	(-2.74)	(-3.12)	(-3.53)
DIVERSITYit-1	0.00645*	-0.0001	0.00543	-0.00167*
	(1.79)	(-0.02)	(0.59)	(-1.69)
AB_NETHIREit-1	-0.115***	-0.0918***	-0.192***	-0.0343***
	(-3.86)	(-2.76)	(-3.13)	(-3.57)
PRODUCTit-1	0.0009	0.0188**	0.0382**	0.00240
	(0.06)	(2.05)	(2.14)	(1.33)
AB_NETHIREit-1	-0.116***	-0.0912***	-0.191***	-0.0341***
	(-3.87)	(-2.73)	(-3.12)	(-3.54)
RIGHTSit-1	-0.0001	0.0162	-0.0169	-0.00969***
	(-0.01)	(0.75)	(-0.51)	(-3.67)
AB_NETHIREit-1	-0.116***	-0.0921***	-0.192***	-0.0341***
	(-3.87)	(-2.77)	(-3.13)	(-3.54)
Control Variables	Yes	Yes	Yes	Yes
Firm Fixed Effect	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes
N	13,681	13,374	11,149	13,681
Adjusted R2	92.9%	92.2%	77.5%	57.8%

*, **, *** indicate statistical significance at the 0.10, 0.05 and 0.001 levels. All test statistics and significance level are calculated based on the standard error adjusted by a one-dimensional cluster at the firm level.

Appendix 5: The Effect of Employee Treatment Strengths and Concerns on Abnormal Net Hiring, Overinvestment and Underinvestment

	(1) AB_ NET HIRE	*(2) OVER_ LABOR (+ve)*	*(3) UNDER_ LABOR (-ve)*	*(4) AB_ NET HIRE*	*(5) OVER_ LABOR (+ve)*	*(6) UNDER_ LABOR (-ve)*
EMP_STRit	-0.00553*	-0.0147*	0.00168			
	(-1.80)	(-1.75)	(0.74)			
EMP_CONit				0.00606***	0.0119	-0.00610***
				(2.90)	(1.31)	(-3.17)
MTBit-1	0.000289	0.00306***	0.000656	0.000431	0.00308***	0.000645
	(0.51)	(2.59)	(1.41)	(0.99)	(2.60)	(1.39)
SIZEit-1	-0.0871***	-0.131*	0.0524**	-0.0690***	-0.137*	0.0548**
	(-3.20)	(-1.70)	(2.43)	(-3.33)	(-1.79)	(2.54)
LIQit-1	0.00898***	0.0123***	-0.00219	0.00775***	0.0124***	-0.00218
	(4.64)	(2.92)	(-1.22)	(5.76)	(2.96)	(-1.22)
LEVit-1	0.0350***	0.0549*	-0.0562***	0.0304***	0.0548*	-0.0561***
	(3.27)	(1.76)	(-6.97)	(3.70)	(1.76)	(-6.97)
DIVDit-1	0.00756	0.00812	-0.00699*	0.00720*	0.00710	-0.00654*
	(1.25)	(0.40)	(-1.88)	(1.65)	(0.35)	(-1.76)
TANGIBLESit-1	-0.0607**	-0.0781	0.0523**	-0.0509**	-0.0805	0.0532**
	(-2.15)	(-1.17)	(2.00)	(-2.29)	(-1.21)	(2.04)
LOSSit-1	-0.00314	-0.00262	-0.00751**	-0.00163	-0.00342	-0.00692**
	(-0.73)	(-0.21)	(-2.20)	(-0.49)	(-0.27)	(-2.01)
LABINTit-1	-1.949**	-11.12***	-2.212***	-0.640	-11.12***	-2.251***
	(-2.13)	(-3.78)	(-4.36)	(-1.01)	(-3.79)	(-4.42)
INVESTit	0.325***	0.425***	-0.234***	0.244***	0.424***	-0.234***
	(5.49)	(10.42)	(-5.16)	(5.92)	(10.43)	(-5.17)
SD_CFOit-1	0.0232	0.0347	-0.0262	0.00277	0.0301	-0.0226
	(0.36)	(0.27)	(-0.49)	(0.06)	(0.23)	(-0.42)
SD_SALESit-1	0.0133	0.0386	0.0241*	0.000849	0.0394	0.0238*
	(0.69)	(0.68)	(1.69)	(0.06)	(0.69)	(1.67)
SD_NETHIREit-1	-0.154***	-0.302***	0.00927	-0.0918***	-0.303***	0.00956
	(-8.49)	(-6.88)	(1.22)	(-7.92)	(-6.88)	(1.27)
UNIONit-1	0.0308	0.0514	0.0213	0.0235	0.0580	0.0177
	(0.79)	(0.40)	(0.73)	(0.75)	(0.45)	(0.61)
Firm Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
N	20,583	6,527	14,056	20,583	6,527	14,056
Adjusted R2	25.4%	31.4%	28.2%	25.2%	31.4%	28.3%

*, **, *** indicate statistical significance at the 0.10, 0.05 and 0.001 levels. All test statistics and significance level are calculated based on the standard error adjusted by a one-dimensional cluster at the firm level.

Appendix 6: The Effect of Employee Treatment Strengths, Concerns and Abnormal Net Hiring on Employee Productivity and Profitability

	(1) ***SALES*** *Sales per employee*	*(2)* ***GPROFIT*** *Gross profit per employee*	*(3)* ***NETINCOME*** *Net income per employee*	*(4)* ***ROA*** *Return on Assets*	*(5)* ***SALES*** *Sales per employee*	*(6)* ***GPROFIT*** *Gross profit per employee*	*(7)* ***NETINCOME*** *Net income per employee*	*(8)* ***ROA*** *Return on Assets*
EMP_STRit-1	0.0100	0.0120	0.0326*	0.00206				
	(1.17)	(1.09)	(1.77)	(0.98)				
EMP_CONit-1					0.00835	-0.0224**	-0.0318*	-0.00716***
					(1.24)	(-2.48)	(-1.84)	(-4.16)
AB_NETHIREit-1	-0.116***	-0.0917***	-0.192***	-0.0342***	-0.116***	-0.0913***	-0.192***	-0.0340***
	(-3.87)	(-2.75)	(-3.13)	(-3.55)	(-3.88)	(-2.74)	(-3.13)	(-3.54)
SIZEit-1	0.498***	0.803***	2.609***	0.128***	0.497***	0.817***	2.632***	0.131***
	(4.64)	(7.02)	(10.87)	(5.27)	(4.66)	(7.13)	(11.00)	(5.40)
LIQit-1	-0.0317***	-0.00878	0.00935	-0.000947	-0.0316***	-0.00888	0.00933	-0.000983
	(-3.73)	(-1.39)	(0.76)	(-0.62)	(-3.71)	(-1.41)	(0.76)	(-0.64)
LEVit-1	-0.0657**	-0.0233	-0.360***	-0.0335***	-0.0657**	-0.0227	-0.358***	-0.0335***
	(-2.19)	(-0.60)	(-4.39)	(-2.85)	(-2.19)	(-0.58)	(-4.38)	(-2.85)
MTBit-1	-0.000706	0.00185	0.0147***	0.00307***	-0.000691	0.00177	0.0146***	0.00305***
	(-0.38)	(0.87)	(3.87)	(4.88)	(-0.37)	(0.83)	(3.84)	(4.84)
PPEit-1	0.0357	0.143	-0.567**	-0.0222	0.0401	0.147	-0.546**	-0.0220
	(0.27)	(1.04)	(-2.23)	(-0.95)	(0.31)	(1.06)	(-2.14)	(-0.94)
INVESTit-1	-0.269***	-0.209***	-0.381***	-0.0335*	-0.269***	-0.209***	-0.381***	-0.0338*
	(-7.47)	(-6.30)	(-3.97)	(-1.87)	(-7.46)	(-6.33)	(-3.98)	(-1.89)
LOSSit-1	-0.0261**	-0.0434***	-0.321***	-0.0167***	-0.0268**	-0.0415***	-0.319***	-0.0161***
	(-2.28)	(-2.87)	(-7.65)	(-4.37)	(-2.35)	(-2.75)	(-7.60)	(-4.23)
SALES_G1it	0.309***	0.208***	0.436***	0.0578***	0.309***	0.207***	0.435***	0.0577***
	(10.41)	(5.58)	(7.31)	(7.61)	(10.42)	(5.55)	(7.33)	(7.64)
SALES_G2it-1	0.170***	0.128***	0.219***	0.0314***	0.170***	0.127***	0.217***	0.0314***
	(5.43)	(4.50)	(4.30)	(5.58)	(5.42)	(4.46)	(4.28)	(5.57)
GOVERNit-1	0.00515	0.0134**	-0.00831	0.00314**	0.00533	0.0141**	-0.00625	0.00330**
	(1.01)	(2.02)	(-0.58)	(2.07)	(1.05)	(2.13)	(-0.44)	(2.18)
CAPXit-1	-0.275*	-0.335	0.600	0.118***	-0.276*	-0.338	0.590	0.117***

	(-1.66)	(-1.50)	(1.52)	(2.71)	(-1.67)	(-1.51)	(1.49)	(2.69)
Firm Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	13,681	13,374	11,149	13,681	13,681	13,374	11,149	13,681
Adjusted R2	92.9%	92.2%	77.5%	57.8%	92.9%	92.2%	77.5%	57.9%

This table presents the results from regressing employee treatment strengths (*EMP_STR*), concerns (*EMP_CON*) and abnormal net hiring (*AB_NETHIRE*) on various per employee productivity measures (*SALES, GPROFIT and NETINCOME*) and profitability (*ROA*).

*, **, *** indicate statistical significance at the 0.10, 0.05 and 0.001 levels. All test statistics and significance level are calculated based on the standard error adjusted by a one-dimensional cluster at the firm level.