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The Interplay between Stakeholder Relationship, Accounting Choices and Labor Investment

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ABSTRACT

This thesis examines the interplay between corporate social responsibility (CSR), financial reporting and corporate labor investment. In the first study, I examine the relationship between CSR and earnings quality in the context of changing regulatory regimes. For accrual-based earnings management, I find firms with higher CSR engagement are more likely to conduct aggressive accrual-based earnings management prior to the passage of Sarbanes Oxley Act of 2002 (SOX) whereas this aggressiveness of accrual-based earnings management has been significantly lowered by the passage of SOX. I further find the relationship between CSR and accrual-based earnings management is moderated by the manager-shareholder incentive alignment. Firms practicing CSR with low alignment are more likely to engage in accrual-based earnings management and therefore receive more constraining effect by regulatory scrutiny imposed by the passage of SOX. In terms of real earnings management, I consistently find that firms with higher CSR engagement are less likely to engage in costly real earnings management strategy in both pre- and post-SOX period. The results indicate that when facing the trade-off between accrual-based earnings management and real earnings management, firms with higher CSR engagement are more likely to engage in the earnings management that is less costly. Overall, the results suggest socially responsible firms present more transparent financial reporting practices in the post-SOX period.

In the second study, I investigate the impact of employee treatment on labor investment efficiency and its implications for firm performance. Using a large sample of U.S. firms over the period of 1995 to 2015, I 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. I find employee-friendly treatment reduces both overinvestment and underinvestment, primarily via effective hiring. Moreover, labor investment efficiency is associated with improved labor productivity, return on assets and production efficiency, and employee-friendly policies contribute to both return on assets and production efficiency. Using the 2008-2009 financial crisis as an external shock and applying difference-in-difference method, I also show that employee-friendly firms have higher labor investment efficiency in the post-financial crisis period, but experience more inefficient labor investment during the crisis. The results are robust to placebo tests, alternative proxies for both employee treatment and labor investment efficiency, when I control for additional control variables, and when I address endogeneity issues.

The third study investigates the impact of real earnings management and real earnings smoothing on corporate employment decisions. Using a large sample of U.S. firms from 1995 to 2016, I find that real earnings management is significantly associated with lower labor investment efficiency (i.e., higher deviations of labor investment from the level justified by economic fundamentals) whereas real earnings smoothing significantly improves labor investment efficiency. The findings are consistent with the notion that real earnings smoothing alleviates market frictions stemming from information asymmetry between managers and outside capital suppliers while real earnings management has the opposite effect. Consistently, I also find that the positive impact of real earnings smoothing on labor investment efficiency is mainly driven by the informational component rather than the garbling component of real earnings smoothing. In addition, I find that financially constrained firms with equity-based financing incentives are more likely to engage real earnings smoothing

to lower the information asymmetry to obtain financing benefits whereas debt-focused constrained firms potentially adopt real earnings smoothing as an earnings manipulation tool. Overall, the sign reversal between real earnings management and real earnings smoothing for labor investment efficiency indicates distinctive implications of these two real earnings adjustments to capital market participants.

These studies shed light on the understanding regarding the implications of stakeholder relationship for financial reporting practices and how stakeholder relationship, as well as financial reporting practices, can interact in the decision-making of corporate labor investment. The findings as to the relationship between CSR and financial reporting quality, the influence of employee-friendly policies and real earnings adjustments on labor investment efficiency contribute to the literature over the role of CSR and accounting information in capital market and also speak to the relevant literature on stakeholder relation, accounting quality, corporate governance and relevant legislation.

CONTENTS

LIST OF ABBREVIATION

AAER	Accounting and Auditing Enforcement Releases
ASSET4	Thomson Reuters ASSET4
BEST100	Fortune's 100 Best Companies to Work For list
CEO	Chief Executive Officer
CFO	Chief Financial Officer
CFP	Corporate Financial Performance
CSR	Corporate Social Responsibility
DEA	Data Envelope Analysis
DID	Difference-in-Difference
ESG	Environmental, Social and Governance
GDP	Gross Domestic Product
GMM	Generalized Method of Moments
KLD	Kinder, Lydenberg & Domini Social Performance Ratings Data
LIML	Limited Information Maximum Likelihood
OES	Occupational Employment Statistics
OLS	Ordinary Least Squares
PSM	Propensity Score Matching
R&D	Research and Development
ROA	Return on Assets
SEC	Securities and Exchange Commission
SEO	Seasoned Equity Offering
SG&A	Selling, General and Administrative Expenses
SIC	Standard Industrial Classification
S&P	Standard & Poor’s
SOX	Sarbanes-Oxley Act of 2002
2SLS	Two-Stage Least Squares

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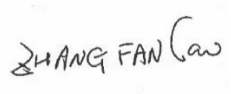
DECLARATION

This thesis has been composed by myself and contains no material that has been accepted for the award of any other degree at any university.

The work in this thesis is the original contribution of the author. The work presented here has not been submitted for any other degree or professional qualification.

Zhangfan Cao



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CHAPTER 1

INTRODUCTION

This thesis investigates the interplay between corporate social responsibility (hereafter CSR), financial reporting and corporate labor investment. In recent years, CSR has become an important integral part of business practice. In fact, many companies nowadays dedicate a certain part of their financial reports to their CSR performance. For example, a recent survey by KPMG (2017) suggests that 93% of the world's largest 250 companies report CSR performance either in standalone CSR reports or as part of their annual reports. Moreover, another report by the Forum for Sustainable and Responsible Investment (USSIF) (2018) shows that the U.S. sustainable, responsible and impact investment (SRI) has increased more than 18-fold from 1995 to 2018 with a compound annual growth rate of 13.6 percent over the period, demonstrating the importance that market participants attach to CSR activities. CSR is usually defined as the corporate behavior that goes beyond the legal or regulatory requirements faced by the company (Kitzmueller and Shimshack, 2012). Several prior studies suggest that CSR should be a multi-dimensional concept and include several key factors (i.e., environment, social, employee relations, etc) (Griffin and Mahon, 1997; Ullmann, 1985; Waddock and Graves, 1997). Atkins (2006) suggests that investing public also consider a firm as socially responsible when the firm is transparent in its financial reporting. On the one hand, a firm practicing CSR is expected to be socially responsible by providing investors with more transparent and reliable financial information. On the other hand, CSR engagement can also be associated with the pursuit of a manger's self-interest and opportunistic incentives (Hemingway and Maclagan, 2004; Jensen and Meckling, 1976; McWilliams et al., 2006). Hence, if managers opportunistically engage in CSR activities, CSR can be a

manifestation of the agency problem and firms practicing CSR are likely to provide financial information that is less reliable or misleading. Therefore, more granular research is needed to understand how socially responsible (or not) firms make investment decisions and their financial reporting practices.

My first Ph.D. study aims to address the ongoing debate about the association between CSR and earnings quality. Specifically, I investigate the relationship between CSR and earnings quality in the context of the Sarbanes Oxley Act of 2002 (hereafter SOX). In addition to the ongoing debate on the relationship between CSR and earnings quality, my research question is important for several reasons.

First, capital market participants consider accounting information and its value relevance as one of the most important factors in their decision-making. Accounting information provides capital market participants with the means to assess a firm's fundamental financial position to assess potential investment opportunities. The underlying accounting information also contains a monitoring function that enables capital providers to monitor their invested capital allocation (Beyer et al., 2010). Among various types of accounting information, earnings quality has been seen as one of the key indicators of a firm's performance. According to the Statement of Financial Accounting Concepts No. 1 (SFAC No.1), higher quality earnings provide more information about the features of a firm's financial performance that are relevant to a specific decision made by specific decision-makers. Given the importance of accounting information, investigating the financial reporting quality of firms practicing CSR also provide another dimension to assess whether firms practicing CSR are truly socially responsible from the financial reporting behavior perspective.

Second, SOX introduced a host of reforms with the objective of improving corporate transparency and investor confidence. Investigating the implications of SOX is also important. Given prior studies have found that firms practicing CSR behave

differently from their peers in earnings management and financial reporting, the aim of my first study is to investigate the association between CSR and earnings quality in the context of SOX passage. The results of the study show that firms with higher CSR engagement are more likely to conduct aggressive accrual-based earnings management prior to the passage of SOX whereas the aggressiveness of accrual-based earnings management has been significantly lowered by the regulatory scrutiny after the passage of SOX. While prior studies identify a general increase in real earnings management in the post-SOX period (Cohen et al., 2008; Lobo and Zhou, 2006), I find that firms practicing CSR are less likely to engage in real earnings management before SOX and there is no significant evidence showing that firms practicing CSR switch from accrual-based to real earnings management after the passage of SOX. Given prior studies suggest that real earnings management generally has more severe consequences than accrual-based earnings management (Cohen and Zarowin, 2008; Graham et al., 2005; Gunny, 2010; Zang, 2012), the results suggest that when facing the trade-off between accrual-based earnings management and real earnings management, firms with higher CSR engagement are more likely to engage in the earnings management that is less costly. From the regulatory perspective, the results also suggest that SOX as an accounting-related reform is effective in curbing firms' opportunistic financial reporting behavior. Hence, from a broad sense, the results speak to the literature on CSR, accounting quality, and relevant legislation for corporate governance.

As mentioned earlier, previous studies suggest that CSR should be a multi-dimensional concept and includes several key factors. Prior studies on CSR usually include (not limited to) community, diversity, employee relations, environment, human rights as the constituent parts of a firm's overall CSR performance (e.g., Borisov et al., 2015; Deng et al., 2013; Hong and Kostovetsky, 2012; Krüger, 2015; Lins et al.,

2017; Servaes and Tamayo, 2013). One of the important dimensions of CSR is employee welfare and it has been found that a large number of CSR programs are employee-related (Flammer and Luo, 2017). Employees are the most important value relevant stakeholders and a key source of competitive advantages (e.g., Coff, 1997; Faleye and Trahan, 2011). Aoki (1984) suggests that shareholders and employees are the two main stakeholders and how to align the interests between shareholder and employees is an important question. Some firms in the high-tech industry (e.g. Google, Apple, Microsoft) are well known for providing their employees with welfare in addition to traditional pecuniary incentives. Flammer and Luo (2017) argue that the role of relationship-based incentives such as CSR for the interest-alignment between shareholders and employees has been largely ignored by prior studies and there is a clear and significant void in the extant literature.

In today's knowledge economy, media and government agencies have been paying closer attention to the employee welfare and many firms also proactively deal with the challenges of recruiting and retaining talents by improving employee welfare and treatment. One natural question regarding this increase in employee treatment will be whether these firms follow value-maximizing objectives when they offer generous employee treatment and welfare. While some prior studies find that these employee-friendly practices have a favorable impact on firms' operational, financial, and stock price performances (Edmans, 2011; Edmans et al., 2016; Ertugrul, 2013; Faleye and Trahan, 2011; Fauver et al., 2018), some studies also find employee-friendly treatment can be a manifestation of agency problems and therefore hampers firms' performance (Atanassov and Kim, 2009; Ben-Nasr and Ghouma, 2018; Cronqvist et al., 2009; Landier et al., 2007; Pagano and Volpin, 2005).

In the second study of my thesis, I investigate the implications of employee-friendly treatment and policies for firms' labor investment, which also further speaks

to the importance of human resource investment for firms' overall performance. In particular, I investigate the impact of employee treatment on labor investment efficiency and its implications for firm performance. Examples of employee-related CSR programs can include but not limited to investments in work-life balance (e.g., childcare, flexitime), training and development, and employee involvement and so on. In my study, I follow previous studies on employee treatment and welfare to construct the employee-friendly treatment measure (Bae et al., 2011; Cronqvist et al., 2009; Ertugrul, 2013; Faleye and Trahan, 2011; Ghaly et al., 2015; Verwijmeren and Derwall, 2010). The primary employee-friendly treatment measure includes several labor-related dimensions, including union relations, cash profit sharing, employee involvement, and retirement benefits. In order to ensure the validity of the measure, I also adopt two alternative employee treatment measures, Fortune magazine's list of the '100 Best Companies to Work For In America' (Edmans, 2012) and the employee-relevant components available from the ASSET4 database, including health & safety, employment quality, training and development, and diversity and opportunities. The results of my study show that employee-friendly treatment is significantly associated with higher labor investment efficiency (i.e., lower deviations of labor investment from the level justified by economic fundamentals). I also find that higher labor investment efficiency is associated with improved labor productivity, return on assets and production efficiency, and employee-friendly policies contribute to both return on assets and production efficiency. Moreover, I also use the 2008-2009 financial crisis as an external shock and applying difference-in-difference method, and the results show that employee-friendly firms have higher labor investment efficiency in the post-financial crisis period, but experience more inefficient labor investment during the crisis.

Following the second study of my thesis, my third study examines the impact of real earnings adjustment, namely real earnings management and real earnings smoothing, on labor investment decisions. Prior accounting research shows that accounting quality improves capital investment efficiency by mitigating the market frictions stemming from information asymmetry between managers and outside capital suppliers (Baker et al., 2003; Bertrand and Mullainathan, 2003; Blanchard et al., 1994; Jensen, 1986; Lambert et al., 2007; Myers and Majluf, 1984; Richardson, 2006; Stiglitz and Weiss, 1981)[1]. However, prior studies overwhelmingly focus on capital investment rather than labor. This is because the classic view considers labor as a variable factor of production that is free of adjustment costs as the timing of labor costs is perfectly matched with the cash flow they generate and the adjustment costs associated with labor tend to be relatively low compared to capital expenditure (Dixit et al., 1994). However, previous studies in labor economics have already shown that labor has fixed, or quasi-fixed cost components, such as search and matching, training and development, hiring and firing (Anderson et al., 2003; Danthine and Donaldson, 2002; Diamond, 1982; Mortensen and Pissarides, 1994; Oi, 1962; Yashiv, 2007) and these labor costs can be substantial (Bhattacharjee et al., 2015; Farmer et al., 1985; Hamermesh, 1995; Hamermesh and Pfann, 1996). Therefore, firms need external capital to finance their labor payments and the frictions in the capital market can be influential for firms' ability to recruit, train, and retain an effective workforce (Benmelech et al., 2011; Campello et al., 2010; Jung et al., 2014; Matsa, 2018). As a result, financial reporting is expected to play a role in facilitating firms to efficiently

[1] In the frictionless capital market of Modigliani and Miller (1958) firms invest until the marginal benefit of capital investment equals the marginal cost, investing in all projects with positive net present value and none with negative net present value. In practice, due to the capital market imperfections stemming from information asymmetry and firms may depart from this optimal level and may either over- or under-invest (Hubbard, 1998; Stein, 2003).

invest in labor by mitigating market frictions stemming from information asymmetry between managers and outside capital suppliers.

Recent research highlights that firms use real activities earnings management as an alternative tool for accrual-based earnings management to manipulate earnings (Cohen et al., 2008; Dechow and Skinner, 2000; Graham et al., 2005; Healy and Wahlen, 1999). Even though severe real earnings management is likely to have long-term adverse economic consequences than accruals management (Cohen and Zarowin, 2010; Gunny, 2010), the real earnings management becomes prevalent as it is less likely to attract auditor scrutiny and managers' ability to engage in accrual-based earnings management is curbed after SOX (e.g., Cohen et al., 2008; Dechow and Skinner, 2000; Graham et al., 2005; Khurana et al., 2017; Lambert, 1984). However, extant accounting literature relatively overlooks another type of real earnings adjustment, real earnings smoothing. To lower the fluctuations of earnings realizations, managers can use their discretion and engage in two potential earnings smoothing, accrual-based earnings smoothing, and real earnings smoothing. Khurana et al (2017) argue that previous accounting literature predominantly focuses on accrual-based earnings smoothing and largely neglects real earnings smoothing. In fact, it is prevalent that managers engage in real economic actions to reduce earnings volatility by changing the timing or structuring of an operating, investment or financing transaction (Khurana et al., 2017). The survey of Graham et al (2005) finds that 96.9% of the respondents show their preference for achieving a smoother earnings path and 78% of the respondents admit to taking value-destroying real economic activities to achieve smoother earnings. Does real earnings smoothing have the same implications as real earnings management? Is real earnings smoothing harmful? To date, the evidence on this issue is limited. Prior studies show mixed evidence regarding the role of earnings smoothing. Some studies suggest that

earnings smoothing plays relatively positive information role in conveying information with capital market participants (Demski, 2010; Erickson et al., 2016; Gassen and Fülbier, 2015; Goel and Thakor, 2003; Kirschenheiter and Melumad, 2002; Tucker and Zarowin, 2006) whereas some studies find that earnings smoothing reduces earnings informativeness and managers have motivations to smooth earnings for private gains (Bhattacharya et al., 2003; Fudenberg and Tirole, 1995; Healy, 1985; Jayaraman, 2008; Khurana et al., 2017). One recent and notable study that specifically investigates real earnings smoothing is the study of Khurana et al (2017). The study investigates the influence of real earnings smoothing on stock price crash risk and find that firms with higher levels of real earnings smoothing experience a higher stock price crash risk.

Given the void in the literature, the third study of my thesis examines the influence of real earnings management and real earnings smoothing on labor investment decisions. The results show that real earnings management is significantly associated with lower labor investment efficiency (i.e., higher deviations of labor investment from the level justified by economic fundamentals) whereas real earnings smoothing significantly improves labor investment efficiency. The findings are consistent with the notion that real earnings smoothing alleviates market frictions that stem from information asymmetry between managers and outside capital suppliers while real earnings management reduces the earnings informativeness. Moreover, I also find that the positive impact of real earnings smoothing on labor investment efficiency is mainly driven by the informational component rather than the garbling component of real earnings smoothing. In addition, I find that financially constrained firms with equity-based financing incentives are more likely to engage real earnings smoothing to lower the information asymmetry to obtain financing benefits whereas

debt-focused constrained firms potentially adopt real earnings smoothing as an earnings manipulation tool.

Overall, this thesis contributes to the literature on CSR, financial reporting and corporate labor investment along several dimensions. First, this thesis connects the literature on CSR with that on financial reporting (Choi and Pae, 2011; Hong and Andersen, 2011; Kim et al., 2012; Prior et al., 2008). The thesis is related to the literature on the influence of CSR on earnings quality and highlights the impact of regulatory scrutiny on the association between the two. Second, to the best of my knowledge, the second study of my thesis is the first attempt to explore the influence of labor treatment policies on corporate labor investment and efficiency. Many studies show that employee-friendly treatment policies have favorable impact on firms' operation and performance (Edmans, 2011; Edmans et al., 2016; Ertugrul, 2013; Faleye and Trahan, 2011; Fauver et al., 2018). My study connects this stream of literature but distinct from prior studies because my study focuses on labor investment efficiency. I find that employee-friendly policies significantly influence a firm's labor investment by improving corporate labor investment efficiency, which further exerts a positive influence on firm performance. Third, this thesis adds to the literature on corporate human capital investment. Prior studies (Matsa, 2018; Rajan and Zingales, 2000) argue that human capital, unlike physical capital, cannot be owned and can act strategically by choosing where to work and whether to quit their employment, forcing their employers to be more sensitive to their needs. Therefore, my thesis also adds to the burgeoning literature on the factors that align the interests between shareholders and employees. Finally, my thesis contributes to the literature investigating the determinants of corporate labor investment by investigating employee treatment and real earnings adjustments. Earlier studies have identified a number of factors affecting labor investment efficiency, such as financial reporting quality, stock price

informativeness, institutional investors' horizons (Ben-Nasr and Alshwer, 2016; Ghaly et al., 2017; Jung et al., 2014). My studies identify the other two important factors that potentially affect corporate labor investment efficiency, employee treatment, and real earnings adjustments. In addition, this thesis also contributes to the under-explored stream of literature on the effects of real earnings smoothing. To the best of my knowledge, the only prior literature regarding real earnings smoothing is Khurana et al. (2017) which finds that real earnings smoothing helps managers withhold bad news which results in an increase of firm-specific stock price crash risk. In contrast to their findings, my study sheds lights on the positive side of real earnings smoothing and shows that real earnings smoothing improves firms' labor investment efficiency. Taken together, this thesis sheds light on the understanding regarding the implications of stakeholder relationship for financial reporting and how stakeholder relationship, as well as financial reporting practices, can interact in the corporate employment decisions.

Overall, the empirical chapters of this thesis focus on three different components: stakeholder relations, financial reporting and labor investment. The rest of the thesis is constructed as follows: In Chapter 2, I review the related literature regarding the three main projects of my Ph.D. Chapter 3 is the first project of my Ph.D.: Corporate Social Responsibility and Earnings Quality in the Context of Changing Regulatory Regimes. Chapter 4 is the second project of my Ph.D.: Do Employee-Friendly Firms Invest More Efficiently? Evidence from Employment Decisions. Chapter 5 is the third project of my Ph.D.: The Effect of Real Earnings Adjustments on Corporate Labor Investment. A summary of the findings and the suggestions for future research appear in Chapter 6.

CHAPTER 2

LITERATURE REVIEW

1.1 Introduction

In this chapter, I review existing empirical evidence with regards to the relationship between stakeholder relationship and financial reporting behavior, and the implications of employee treatment and real earnings adjustment. I firstly review the prior evidence regarding the relationship between CSR and earnings management. Previous studies provide mixed evidence on the relationship between CSR and earnings management with one stream of literature suggesting that CSR engagement represents sincerely consideration for the interest of various stakeholders (Arora and Dharwadkar, 2011; Borghesi et al., 2014; Choi and Pae, 2011; Eccles et al., 2014; Gao and Zhang, 2015; Healy and Palepu, 2001; Hong and Andersen, 2011; Kim et al., 2012; Lins et al., 2017; Linthicum et al., 2010; Prado-Lorenzo and Garcia-Sanchez, 2010) and another stream of literature suggesting CSR representing a manifestation of agency problems (Krüger, 2015; McWilliams et al., 2006; Pagano and Volpin, 2005; Petrovits, 2006; Prior et al., 2008; Surroca and Tribó, 2008). This tension provides me with an interesting ground to test the relationship between CSR and earnings management in the context of the changing regulatory regime by investigating whether firms practicing more CSR response to Sarbanes-Oxley Act of 2002 (hereafter SOX) differently in their financial reporting practices.

I then review the implication of employee treatment and welfare, one of the most important dimensions of CSR, for firm performance (Edmans, 2011; Edmans et al., 2016; Ertugrul, 2013; Faleye and Trahan, 2011; Fauver et al., 2018); innovation performance (Chen et al., 2016; Mao and Weathers, 2015); capital structure decisions

and financial policies (Bae et al., 2011; Chemmanur et al., 2013; Ghaly et al., 2015; Simintzi et al., 2015). Since the second Ph.D. study investigates the impact of employee treatment on labor investment efficiency, I also review the relevant prior literature supporting employee-friendly treatment could potentially contribute to higher labor investment efficiency from the high talents attractiveness, stakeholder theory and human capital theory of corporate governance perspectives. In contrast to the favourable view regarding employee-friendliness, literature review also suggest that employee-friendly treatment can be a manifestation of agency problems and therefore hampers firms' performance (Atanassov and Kim, 2009; Ben-Nasr and Ghouma, 2018; Cronqvist et al., 2009; Landier et al., 2007; Pagano and Volpin, 2005). Hence, given the mixed evidence on employee treatment and welfare, it is also an interesting empirical question regarding whether employee-friendly treatment can increase labor investment efficiency or not. My second Ph.D. study particularly seeks to answer this research question.

Finally, I review the relevant literature on real earnings adjustments (i.e., real earnings management and real earnings smoothing). On the one hand, previous research suggests that firms use real activities earnings management as an alternative tool for accrual-based earnings management to manipulate earnings and real earnings management become more common after the passage of SOX (Cohen et al., 2008; Dechow and Skinner, 2000; Healy and Wahlen, 1999). Moreover, Graham et al. (2005) suggest that managers use real activities management as a substitute for accruals management and even prefer to manage real activities over accruals. On the other hand, previous accounting literature has largely focused on accrual-based earnings smoothing with little attention paid to real earnings smoothing, even though real earnings smoothing potentially can be more pervasive in practice in comparison with accrual-based earnings smoothing (Khurana et al., 2017; Lambert,

1984). Given real earnings management and real earnings smoothing are both real earnings adjustments made by managers, the impact of these two types of real earnings adjustment is under-explored and the paper fills this void by highlighting the distinctive implications of the two types of real earnings adjustment for firms' employment decisions.

1.2 The Relationship between CSR and Earnings Management

A large number of recent studies have established the prominence of CSR. In practice, more firms nowadays have incorporated CSR as part of their corporate strategies and voluntarily dedicated certain sections of their annual reports or issue stand-alone reports to their CSR performance. Previous studies have investigated whether CSR engagement represents a firm's sincere consideration for the interests of a wide variety of stakeholders or just a manifestation of the agency problem. From earnings quality perspective, CSR can be either a signal of a firm's sincere care about various stakeholders' interests by reporting more transparent and reliable financial information or a manifestation of agency problem that leads to higher levels of misreporting behaviors.

From the opportunistic CSR perspective, CSR engagement can exacerbate the agency problem for several reasons. Numerous previous studies have identified the opportunistic use of CSR and corporate philanthropy from agency theory and optimal contracting theory perspective. For instance, McWilliams et al. (2006) find that managers choose to engage in CSR activities in order to pave their personal career path and seek self-serving interests. Petrovits (2006) finds that managers strategically contribute to philanthropy in order to meet financial reporting targets. In fact, several previous studies suggest that the principal-agent conflict can be magnified if

managers act on behalf of non-shareholder stakeholders because stakeholder-orientation usually involves the participation of different groups of stakeholders in the decision-making process, thus resulting in a multiplicity of objectives in corporate decisions. Departing from the clear and single objective of value maximization, managers attempt to take a variety of stakeholders' interests into consideration instead of only being responsible for shareholders. This makes it difficult to evaluate managers' performance in a principled way and enables managers to pursue their own self-interest benefits at the expense of the interests of shareholders and other financial claimants. Hence, managers' attempt to serve various stakeholders instead of only shareholders can exacerbate agency costs. In this sense, CSR engagement can be considered as a manifestation of agency problems and managers may attempt to please stakeholders in order to pursue their own benefits through CSR engagement. For instance, managers may engage in CSR activities to entrench themselves in order to achieve greater career development and job security. Managers who manipulate earnings may engage in stakeholder-orientated activities as a self-entrenchment strategy and intend to gain support from stakeholders (Prior et al., 2008). Pagano and Volpin (2005) argue that managers can adopt an employment policy that offers generous long-term contracts with suppliers and long-term commitments to support environmental or philanthropic institutions as an antitakeover device to create stakeholder constituencies supporting the incumbent management. By forming an alliance with certain stakeholders, managers employ stakeholder-oriented initiatives as a self-defense mechanism to reduce a firm's attractiveness by impairing the raider's ability to generate a profit from the hostile takeover. In addition, Krüger (2015) finds that managers gain a good reputation among key stakeholders at expense of shareholders' interest, reflecting that agency problem between principals and agents is aggravated when managers tend to serve stakeholders rather than shareholders. Therefore, managers can use CSR to satisfy stakeholders and self-entrenched

managers may seek the connivance from stakeholders to validate their opportunistic behavior like earnings manipulation. Prior et al. (2008) find that opportunistic managers who manage earnings to pursue self-serving goals have incentives to involve in CSR engagements and find a positive association between CSR and earnings management.

On the contrary, some prior studies suggest that socially responsible firms provide more transparent financial information. Few potential reasons can explain why firms with greater CSR commitment tend to provide higher earnings quality. First, firms that choose to voluntarily dedicate certain sections of their annual reports to CSR disclosure or issue standalone CSR report may attempt to use CSR disclosure to signal their social efforts. From voluntary disclosure theory, firms voluntarily disclosure CSR information and issue standalone CSR reports as a signal of their commitment to social responsibilities to distinguish themselves from their peers (Healy and Palepu, 2001). According to Prado-Lorenzo and Garcia-Sanchez (2010), firms with the superior CSR performance will attempt to obtain a competitive advantage by voluntarily disclosing CSR information while firms with inferior CSR performance will avoid CSR disclosure that will adversely influence their reputation. Thus, CSR engagement can be considered as a proxy for a firm's reputation or a signal of management ethics (Linthicum et al., 2010). From this perspective, firms that value their reputation tend to protect their corporate image and reputation by preventing managers from opportunistic behaviors that may potentially damage their reputation. Consistently, some studies also suggest that CSR can be considered as social capital/trust (Eccles et al., 2014; Lins et al., 2017). Lins et al. (2017) find that firms with a greater commitment to CSR have higher stock returns than firms with less CSR commitment during the 2008-2009 financial crisis. They argue that the trust between firms and its stakeholders is built through CSR investment and it pays off

during the low-trust period. Hence, firms with high CSR commitment are expected to prevent their social capital from being squandered and inhibit the trust from being sabotaged by opportunistic actions that are contradictory to their shared values and cooperative norms. Second, many prior studies also find that CSR performance is positively associated with corporate financial performance, which may also lower the propensity of firms for engaging earnings management. Hong and Andersen (2011) argue that firms commit to CSR only when they have strong financial positions as financial slack that allows them to spend more on CSR. Arora and Dharwadkar (2011) also find that high slack corporate resources and positive attainment discrepancy as a result of a firm's actual performance exceeding aspirations can lead to proactive CSR activities. Thus, high CSR engagement tends to be positively associated with strong financial position and abundant slack resources, therefore providing high-CSR firms with less incentives to engage in earnings management.

Several studies find that there is a negative relationship between CSR and earnings management. For instance, Choi and Pae (2011) examine the relationship between corporate commitment to business ethics and earnings quality. They find firms with higher levels of ethical commitment exhibit lower levels of earnings management and higher levels of conservatism in financial reporting and accuracy in predicting future cash flows. Consistently, Hong and Andersen (2011) use a sample of non-financial U.S. firms from 1995 to 2005 and they find socially responsible firms have higher quality accruals and lower levels of real earnings management. Another notable study is conducted by Kim et al. (2012). They find that socially responsible firm are less likely to manage earnings through discretionary accruals, to manage earnings via real activities manipulation and to be the subject of SEC investigation as evidenced by Accounting and Auditing Enforcement Releases (AAER) against top executives. Gao and Zhang (2015) also find the reported earnings of high-CSR firms

are more related to their permanent earnings and are more value relevant. Moreover, Ferrell et al. (2016) find well-governed firms with fewer agency problems actually engage more in CSR. They argue that CSR may not be a manifestation of agency problem as articulated in agency theory but exercises a complementary function to agency problems mitigation. Apart from the two opposite views towards CSR, some scholars also find mixed results regarding the association between CSR and earnings quality. For instance, Yip et al. (2011) find a negative association between CSR and earnings management in the oil and gas industry but a positive association in the food industry. Therefore, they argue that the relationship between CSR and earnings management is context-specific and driven by political costs instead of sincere devotion to the society. Chih et al. (2008) also find that firms with better CSR performance have lower levels of earnings smoothing and earnings loss avoidance, but higher levels of earnings aggressiveness. Finally, Choi et al. (2013) find that CSR is negatively related to earnings management but the relationship is weaker for firms with high business group affiliation and concentrated ownership.

1.3 Employee Treatment and Welfare and Labor Investment Efficiency

One of the important dimensions of CSR is employee treatment and welfare. Recent studies have addressed firms' employee treatment schemes and their relevance to firm performance. Many studies show that employee-friendly treatment schemes have favorable impact on firms' operation and performance (Edmans, 2011; Edmans et al., 2016; Ertugrul, 2013; Faleye and Trahan, 2011; Fauver et al., 2018). For example, Edmans (2011) finds that employee satisfaction is positively associated with long-term shareholder returns. Fauver et al. (2018) use a sample from 43 countries over the period 2013 to 2014 and find that firms with employee-friendly

culture are valued higher and perform better. Mao and Weathers (2015) and Chen et al. (2016) also find that firms treating their employees well produce more and better patents. The empirical evidence above suggests that employee-friendly treatment schemes are in line with the benefits to shareholders. Another stream of literature examines 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., 2015). For instance, Bae et al. (2011) show that firms treating their employees well maintain low debt ratios and suggest that treating employees well is an important element of their financing policies. Ghaly et al. (2015) also find that firms that are strongly committed to employee well-being tend to hold more cash.

My second Ph.D. study investigates the influence of employee treatment/welfare on labor investment efficiency. Previous literature shows that firms in practice face capital market imperfections stemming from information asymmetry and may either over- or under-invest (e.g., Stein 2003). Moral hazard and adverse selection are the two primary imperfections in the market that make firms depart from the optimal investment level. On the one hand, 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 maximization (Jensen and Meckling, 1976), which can cause either over- or underinvestment depending on the availability of capital (Bertrand and Mullainathan, 2003; Blanchard et al., 1994; Jensen, 1986; Lambert et al., 2007; Richardson, 2006; Stiglitz and Weiss, 1981). On the other hand, adverse selection costs could induce investment inefficiency if managers are better informed than outside capital suppliers and try to time capital issuances to sell overprice equities. Investors may respond to this information disadvantage by increasing the cost of capital, which consequently lowers the firm's flexibility in obtaining external financing (Baker et al., 2003; Myers and Majluf, 1984).

Several prior studies suggest that the capital market imperfection for capital investment also applies to labor investment. For instance, Ben-Nasr and Alshwer (2016) document that stock price informativeness positively affects labor investment efficiency as managers could use the information incorporated in stock prices in making human capital investment. Their results suggest that better-informed stock prices could lead to better monitoring of managers which in turn reduces managerial moral hazard behavior in inefficient labor investment. Consistent with the role of monitoring, Ghaly et al. (2017) find that monitoring by long-term investors could reduce agency conflicts in firms' labor investment decisions, leading to higher labor investment efficiency. Jung et al. (2016) document that laborism which captures the presence of left-leaning government, the rigidity of employee protection laws, and collectivist culture, is negatively related to labor investment efficiency. They posit that a strong laborism will pressure firms to retain existing employees and to continue to hire labor even if unnecessary, resulting in deviations of firms' labor investment from the optimal level. Finally, Jung et al. (2014) emphasize the role of accrual-based financial reporting quality in improving labor investment efficiency and find that higher financial reporting quality is associated with higher labor investment efficiency.

Based on prior literature, in my second Ph.D. study, I argue that employee-friendly treatment could potentially contribute to higher labor investment efficiency in three ways. First, one potential channel through which employee-friendly treatment can affect labor investment efficiency is where a firm's reputation for employee friendliness is known by both current and potential employees in the labor market. Employees of firms that devote material corporate resources to employee-friendly treatment perceive their current jobs as superior to alternatives and are likely to be collaborative (Flammer and Luo, 2017). The gift exchange model of efficiency wage theory (Akerlof, 1982) also suggests that employees consider employee-friendly benefits as a gift and reciprocate by exerting greater efforts in their work. Thus, for

employees, employee-friendly treatment encourages nurturing and constraining mechanisms that facilitate alignment of interests between employees and their firms, and the benefits of the current position lead to lower employee turnover (Salop, 1979; Zingales, 2000). As a result, firms can better anticipate their employment needs, which may lower the risk of over-investing or under-investing in labor. Equally, employee-friendly treatment helps firms to attract applicants from the labor market (Chow, 1983; Stigler, 1962; Turban and Greening, 1997; Weiss, 1980). Prior research suggests that application decisions are related to corporate reputation, and that job seekers' perception of employers is related to the information available about the firm (Gatewood et al., 1993). Hence, the impact of employee-friendly treatment on reputation can be influential for both firms' retention and recruitment. Edmans et al. (2016) also suggest that the retention and recruitment benefits of satisfied employees are particularly important in flexible labor markets such as the U.S. Firms with a good reputation for employee treatment will find it relatively easy to attract employees and are less likely to suffer labor under-investment.

Second, stakeholder theory 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; Donaldson and Preston, 1995; Maksimovic and Titman, 1991). A firm's failure to achieve good employee relations can lead to low employee morale and high employee turnover, which can ultimately erode the firm's reputation in the labor market. This may cause parties to implicit contracts to doubt a firm's ability to honor its implicit claims and ultimately transform those agreements into costly explicit contracts (Cornell and Shapiro, 1987). For example, external capital suppliers may increase the cost of capital in order to compensate for the potential risk to future cash flows and value being adversely affected by unsatisfied non-financial stakeholders (e.g., strike, boycott). Several recent studies also highlight the influence of external financing costs

in constraining firms' employment decisions (Benmelech et al., 2011; Campello et al., 2010; Matsa, 2018). In contrast, prior studies find that firms having harmonious relations with their stakeholders enjoy better access to finance and lower financing costs (Cheng et al., 2014; Dhaliwal et al., 2011; El Ghoul et al., 2011). As a result, profitable investments are less likely to be missed and firms face lower risks of labor under-investment owing to financial pressure.

Third, Rajan and Zingales (2000, 1998) and Zingales (2000) formalize the human capital theory of corporate governance suggesting that the focus of corporate governance for the modern firms will shift from addressing agency problems between managers and shareholders to exploring the treatment of general labor force. In this model employee treatment is a crucial component of the governance structure (Guo et al., 2016). Consistent with the human capital theory of corporate governance, several studies highlight the positive effect of employee-friendly treatment on corporate governance (Ferrell et al., 2016; Guo et al., 2016). For instance, Guo et al., (2016) find that employee treatment policies are an important predictor of internal control weaknesses and firms with employee-friendly treatment have a significantly lower propensity for employee-related material weaknesses and financial restatements. Moreover, Ferrell et al., (2016) also find that firms with fewer agency problems tend to engage more in CSR activities and suggest that such activities reduce the adverse impact of managerial entrenchment on firm value.

In contrast to the positive view regarding employee-friendliness, some studies also find that employee-friendly treatment can be a manifestation of agency problems and therefore hampers firms' performance (Atanassov and Kim, 2009; Ben-Nasr and Ghouma, 2018; Cronqvist et al., 2009; Landier et al., 2007; Pagano and Volpin, 2005). A firm's investment in employee benefits can exacerbate its agency problems as managers may seek a good relationship with subordinates by overpaying them (Jensen and Meckling, 1976). For instance, earlier research finds that employee-

friendly treatment can aggravate agency costs by serving as an antitakeover device and a tool to help underperforming managers avoid dismissal (Atanassov and Kim, 2009; Pagano and Volpin, 2005). Similarly, Cronqvist et al. (2009) show that entrenched CEOs are more likely to adopt employee-friendly practices and Landier et al. (2007) shows that managers adopt employee-friendly treatment to improve their social interactions with the labor force to gain private benefits. In these cases, employee-friendly treatment can exacerbate agency problems and is expected to have a detrimental effect on labor investment efficiency. Entrenched CEOs are likely to adopt employee-friendly practices and engage in empire building by over-investing in labor force. Also, underperforming CEOs may use employee-friendly treatment as a tool to avoid dismissal or prefer to enjoy a peaceful life by giving up profitable labor investment projects and under-invest in labor.

1.4 Role of Real Earnings Adjustments

Real earnings management is defined as “management actions that deviate from normal business practices, undertaken with the primary objective of meeting certain earnings thresholds” (Roychowdhury, 2006, p. 337). Even though severe management of real activities is likely to have potential long-term economic consequences than accruals management (Cohen and Zarowin, 2010; Gunny, 2010), previous research indicates that firms use real activities earnings management as an alternative tool for accrual-based earnings management to manipulate earnings (Cohen et al., 2008; Dechow and Skinner, 2000; Healy and Wahlen, 1999). A survey reported by Graham et al. (2005) suggests that managers use real activities management as a substitute for accruals management and even prefer to manage real activities over accruals.

The popularity of real earnings management might be due to two reasons. First, managing accruals might be risky for the firms as the year-end shortfall between actual earnings and targets might exceed the extent of accruals manipulation. In such cases, real activities based earnings management that occurs during the year provides a more timely and flexible alternative. Second, comparing to accrual manipulation, real activities management in pricing and production is less likely to attract auditor or regulatory scrutiny. Dechow et al. (1996) show SEC enforcement actions with regards to earnings overstatements but not relate to decisions on pricing, production, and discretionary expenses. Moreover, Cohen et al. (2008) document that firms switched from accrual-based to real earnings management after the passage of the Sarbanes-Oxley Act (SOX) in 2002 with stricter scrutiny in curbing accrual-based earnings management.

Linking to the research question, prior literature suggests corporate disclosures and the quality of financial reporting can facilitate firms to lower the information asymmetries between managers and outside capital suppliers and therefore market frictions (Bushman and Smith, 2001; Lambert et al., 2007; Leuz and Verrecchia, 2000; Verrecchia, 2001). On the one hand, lower quality of financial reporting can induce increase the moral hazard costs and investment inefficiency through the monitoring functions of corporate disclosures and financial reporting for managerial investment activities (Biddle et al., 2009). For instance, Bushman and Smith (2001) highlight the governance role of financial accounting information and show that high financial reporting quality can help promote the effective governance and monitoring of firms. As real earnings management captures the abnormal components of operational costs due to managerial discretionary behavior, it represents a distortion to the accounting measurement system and therefore indicates lower quality of financial reporting (Dechow et al., 2010; Roychowdhury, 2006). Kothari et al. (2015) also find that firms engage in real earnings management to induce overvaluation at the time of

a seasoned equity offering (SEO) and such manipulation also likely to cause post-SEO stock market underperformance. Consistently, Francis et al. (2016) find that firms' real earnings management levels are positively associated with future stock price crash risk.

On the other hand, costs associated with adverse selection could also induce investment inefficiency through higher cost of capital and the decrease in firms' flexibility in obtaining external financing (Biddle et al., 2009). From equity providers' perspective, Kim and Sohn (2013) document a positive relationship between the extent of real earnings management activities and a firm's cost of equity capital, indicating that capital market demands a higher risk premium for these activities as they exacerbate the information quality of earnings. From debt holders' perspective, Ge and Kim (2014) find a positive association between real earnings management and the cost of new bond issues, suggesting that credit rating agencies and bondholders also require high-risk premiums for the increased credit risk due to real earnings management. However, real earnings management also might be used by firms in a way to reduce adverse selections costs. For example, Alissa (2013) finds that firms successfully achieve better credit ratings by managing their earnings via real activities. Kim et al. (2010) find that firms use real earnings management to avoid violations of debt covenants which consequently reduces the cost of debt.

Another property of real earnings adjustments can be real earnings smoothing. Earnings smoothing can be defined as managerial discretionary behavior in the purpose of decreasing the reported earnings fluctuations (Gao and Zhang, 2015). Previous accounting literature has largely focused on accrual-based earnings smoothing with little attention paid to real earnings smoothing, even though real earnings smoothing potentially can be more pervasive in practice in comparison with accrual-based earnings smoothing (Khurana et al., 2017; Lambert, 1984).

Different from real earnings management, prior literature posits a relative positive information role of earnings smoothing (Demski, 2010; Erickson et al., 2016; Gassen and Fülbier, 2015; Goel and Thakor, 2003; Kirschenheiter and Melumad, 2002; Tucker and Zarowin, 2006). In particular, investors perceive firms with smoother earnings to be less risky and therefore require a lower expected return or cost of equity capital (Erickson et al., 2016; Graham et al., 2005). Also, creditors prefer firms with smoother earnings and require a lower cost of debt (Gassen and Fülbier, 2015). The ease of external financing helps firms in coping labor adjustment costs and therefore increases labor investment efficiency. Moreover, prior literature also finds that managers engage in earnings smoothing to provide private information about future earnings to the market. For example, Goel and Thakor (2003) state that earnings smoothing could reduce information asymmetries between managers and external funding providers. Also, Dichev and Tang (2009) show that smoother earnings are more persistent and could to be predicted better up to five years ahead.

CHAPTER 3

Corporate Social Responsibility and Earnings Quality in the Context of Changing Regulatory Regimes

1 INTRODUCTION

The concept of corporate social responsibility (hereafter CSR) has continued a trajectory of evolutionary growth in the past decades. Previous CSR research has paid much attention to the relationship between CSR and corporate financial performance (CFP) (e.g., Flammer, 2015; Lins et al., 2017; McWilliams and Siegel, 2001; Surroca et al., 2010). In contrast to a large number of studies focusing on CSR-CFP relation, only a few prior studies investigate the relationship between CSR and earnings quality. Earnings are the key metric considered by outsiders and are one of the most important measures that are at the forefront of executives' thinking. Previous research finds that earnings can be managed either through discretionary accruals (Dechow et al., 1995; Dechow and Dichev, 2002; Jones, 1991; Kothari et al., 2005) or by altering the timing of real transactions activities (Cohen and Zarowin, 2008; Cohen et al., 2008; Roychowdhury, 2006). In Graham et al. (2005) survey and interview of more than 400 executives, several CFOs argue that "you have to start with the premise that every company manages earnings" (p.29). Previous research attributes earnings management to economic incentives for capital market and contractual motivations. I extend the literature by investigating the relation between CSR and earnings management and whether firms practicing more CSR response to the Sarbanes-Oxley Act of 2002 (hereafter SOX) differently in their financial reporting practice.

Recent studies have found that firms practicing CSR behave differently from other firms in financial reporting. There are several extant studies that have examined the relationship between CSR and firms' earnings quality and the empirical evidence is mixed. Prior et al. (2008) find there is a positive relation between CSR and earnings management, indicating that firms with better CSR performance are more likely to engage in earnings manipulation. However, Hong and Andersen (2011) find that more socially responsible firms provide higher quality accruals and less activity-based earnings management. Another notable study is conducted by Kim et al. (2012) who find that socially responsible firms are less likely to engage in accrual-based earnings management and real earnings management as well as be the subject of SEC investigations.

Whether firms exhibit CSR tend to engage in more or fewer earnings manipulations is ultimately an empirical question, and it depends on whether CSR engagement represents a sincere consideration of fostering long-term relationships with stakeholders or a manifestation of the agency problem. On the one hand, prior literature shows that agency problem between principals and agents is aggravated when managers attempt to serve stakeholders instead of pursuing the single objective of value maximization (Jensen, 2002). In the absence of clear performance criteria, managers may engage in CSR to entrench themselves in order to pursue self-serving goals and there may be a positive relationship between CSR and earnings management. On the other hand, if managers engage in CSR in the context of a moral imperative, then high-CSR firms are expected to have more responsible operating decisions including transparent and reliable financial reporting. In this case, high CSR engagement is expected to constrain earnings management and provides a negative relation between CSR and earnings management.

Using a sample of 15,844 firm-year observations over the period of 1993 to 2015, I find that firms with higher CSR engagement are more likely to engage in accrual-based earnings management prior to the passage of SOX. I find that the relationship between CSR and accrual-based earnings management is moderated by the effect of manager-shareholder incentive alignment. Specifically, I find that firms practicing CSR with low manager-shareholder incentive alignment present more opportunistic financial reporting behavior before the passage of SOX. Accordingly, the effect of SOX in curbing accrual-based earnings management is more significant for low-alignment firms, which suggests that the regulatory scrutiny imposed by SOX have been effective in reducing the accrual-based earnings management of firms practicing CSR. On the other hand, I find that firms practicing CSR are less likely to engage in real earnings management prior to the passage of SOX. While there is a general increase in real earnings management in the post-SOX period identified by prior studies (Cohen et al., 2008; Lobo and Zhou, 2006), I find no significant evidence showing that firms practicing CSR switch from accrual-based to real earnings management after the passage of SOX. Given real earnings management departures from normal operational practices and therefore generally have more severe consequences than accrual-based earnings management (Cohen and Zarowin, 2008; Graham et al., 2005; Gunny, 2010; Zang, 2012), I interpret my results that when facing the trade-off between accrual-based earnings management and real earnings management, socially responsible firms are more likely to engage in the earnings management that is less costly. Hence, my results indicate that firms with higher CSR engagement are generally more transparent in their financial reporting in the post-SOX period.

My primary discretionary accrual proxy is estimated by using the performance-adjusted modified Jones model suggested by Kothari et al. (2005). I estimate the

discretionary accruals for each year using all firm-year observations and use the absolute value of discretionary accrual to capture the magnitude of earnings management for my main analyses. My results are robust after adopting an alternative earnings management measure as in Dechow et al. (1995) and alternative CSR measure used in Deng et al. (2013) and Lins et al (2017). In order to ensure that the CSR measure that I use in my study does not proxy for other known factors that affect earnings quality, I follow Kim et al (2012) and control for a number of firm characteristics variables that are influential and pronounced for firms' earnings quality and social performance, which helps us to mitigate the potential correlated omitted variable problem. When investigating the relationship between CSR and earnings management, I address the potential endogeneity problems using two-stage least squares (2SLS) regressions. I adopt the mean of CSR in year t of all firms belonging to firm i's 2-digit SIC code as an instrument for the CSR performance of firm i in year t to capture CSR in the first stage, and I use earnings quality proxies on the predicted CSR in the second stage. Overall, my 2SLS estimation supports my results generated from OLS regressions and shows that firms with high CSR engagement are more likely to engage in accrual-based earnings management but less likely to engage in real activities manipulation in the pre-SOX period and become more transparent in the post-SOX period in terms of overall financial reporting quality.

My study contributes to the ongoing debate about the impact of CSR on corporate financial reporting in several ways. First, this paper extends the literature on the impact of CSR in either obscuring or increasing transparency in financial reporting by reinvestigating the relationship between CSR and earnings quality estimated by accrual-based and real earnings management. Second, I also identify the moderating effect of manager-shareholder incentive alignment on the relation between CSR engagement and accrual-based earnings management. Third, this

paper contributes to the literature regarding the impact of the regulatory framework as a determinant of accounting quality by investigating the relationship between CSR and earnings quality in the context of SOX. From the regulatory perspective, my results also imply that SOX as an accounting-related reform is effective in curbing CSR firms' opportunistic financial reporting. Hence, from a broad sense, my results speak to the literature on CSR, accounting quality, corporate governance, and relevant legislation.

2 LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1 Research hypothesis

Notwithstanding the various prior studies that investigate the relationship between CSR and earnings quality, the empirical evidence on the relationship between the two is still mixed. On the one hand, various theories and prior empirical evidence suggest that firms with high CSR tend to be transparent financial reporting reporters. First, ethical theories suggest that firms have to accept social responsibility as an ethical obligation (Carroll, 1979; Donaldson and Preston, 1995; Jones, 1995; Phillips et al., 2003). Specifically, ethical theories likely to emphasize principles such as 'the right thing to do' and hence requires firms practising CSR to pay simultaneous attention to the legitimate interests of various stakeholders. Second, political theories focus on the relationship between firms and society and highlight firms' corporate citizenship that requires firms to take care of the interest of the community where they operate in their decision-making (Donaldson and Dunfee, 1994; Matten and Crane, 2005). Third, studies anchored on integrative theory suggest that firms practicing CSR need to integrate social demand into their decision-making (Agle et al., 1999; Carroll,

1979; Swanson, 1995). In addition, several previous studies also highlight the ethical view of CSR and suggest that there is a moral imperative for managers to 'do the right thing' (Carroll, 1979; Donaldson and Preston, 1995; Jones, 1995; Phillips et al., 2003). Hence, from the theories of CSR above, it is shown that firms have incentives to be socially responsible in their business processes by providing honest, transparent, reliable information as an ethical obligation or their way to address the community interest and social demand. Moreover, if managers engage in CSR practices owing to their moral imperative of 'do the right thing', it is also possible for management to engage less in earnings management and be ethical in business process by providing transparent financial reporting information.

Apart from the reasons above, firms choose to engage in CSR as a signal of their commitment to stakeholders to distinguish themselves from their peers (Healy and Palepu, 2001). According to Prado-Lorenzo and Garcia-Sanchez (2010), firms with the superior CSR performance will attempt to obtain a competitive advantage by voluntarily disclosing CSR information as a positive signal for corporate reputation while firms with inferior CSR performance will avoid CSR disclosure that will adversely influence their reputation. Thus, CSR engagement can be considered as a proxy for a firm's reputation or a signal of management ethics (Linthicum et al., 2010). Numerous prior studies show that firms' CSR engagement can be considered as a form of reputation-building or maintenance (Fombrun and Shanley, 1990; Linthicum et al., 2010). From this perspective, firms that value their reputation tend to protect their corporate image and reputation by preventing managers from opportunistic behaviours that may potentially damage their reputation. Consistently, Eccles et al (2014) and Lins et al (2017) consider CSR as social capital/trust. For instance, Lins et al. (2017) find that firms with high CSR engagement enjoy higher stock returns than firms with less CSR commitment during the recent financial crisis. They argue that the

trust between firms and its stakeholders is built through CSR investment and it pays off during the low-trust period. Hence, firms with high CSR engagement likely to prevent their social capital from being squandered and inhibit the trust from being sabotaged by opportunistic actions, for instance, opportunistic financial reporting. Therefore, the motivations from the ethical obligation, moral imperative reputation and social capital perspectives suggest a negative relation between CSR and earning management.

Even though numerous theories and empirical evidence predict that firms with high CSR engagement are likely to maintain transparency in their financial reporting, some empirical studies anchored on agency theory and optimal contracting theory also suggest that CSR engagement can exacerbate a firm's agency problem. For instance, McWilliams et al. (2006) find that managers choose to engage in CSR activities in order to pave their personal career path and seek self-serving interests. Petrovits (2006) finds that managers strategically engage in philanthropy in order to meet financial reporting targets. Departing from the clear and primary objective of value maximization, managers acting on behalf of non-shareholder stakeholders may pursue their own personal benefit instead of shareholders. Particularly, this makes the evaluation of managerial performance difficult in a principled way and enables managers to pursue their own self-interest benefits at the expense of the interests of shareholders and other financial claimants. Hence, managers' attempt to serve various stakeholders instead of only shareholders can exacerbate agency costs. In this sense, CSR engagement can be considered as a manifestation of agency problems and managers may attempt to please stakeholders in order to pursue their own benefits through CSR engagement. For instance, managers may engage in CSR activities to entrench themselves in order to achieve greater career development and job security. Managers who manipulate earnings may engage in stakeholder-

orientated activities as a self-entrenchment strategy and intend to gain support from stakeholders (Prior et al., 2008). Managers can adopt an employment policy that offers generous long-term contracts with suppliers and long-term commitments to support environmental or philanthropic institutions as an antitakeover device to create stakeholder constituencies supporting the incumbent management (Pagano and Volpin, 2005). In addition, Krüger (2015) finds that managers gain a good reputation among key stakeholders at expense of shareholders' interest, reflecting that agency problem between principals and agents is aggravated when managers tend to serve stakeholders rather than shareholders. Hence, managers can opportunistically engage in CSR or use CSR as window-dressing for self-interest. From this perspective, if managers' self-serving incentives and opportunism prevail, it is likely that there is a positive relationship between CSR and earnings management.

Given the different view on the relationship between CSR and earnings management, I investigate the effect of SOX on the relation between the two. The motivation for investigating the effect of SOX on the relationship between CSR and earnings management is because it introduces a series of accounting-related reforms that aim to improve corporate transparency, which can be highly relevant and have directly impact on firms' financial reporting behaviour. Specifically, in response to the wave of accounting scandals at the beginning of this century, Congress passed the SOX with President George W. Bush commenting that this Act is 'the most far-reaching reforms of American business practices since the time of Franklin Delano Roosevelt'[2]. Collectively, the various accounting-related reforms were introduced with the objective of SOX of restoring investor confidence and corporate transparency. Owing to the series of corporate scandals and corporate governance failures at the

[2] "Year of Reform Puts Corporations on Notice; from Courts to the Boardroom, Conduct of CEOs Faces New Scrutiny since Enron," *The Christian Science Monitor,* August 13, 2003.

beginning of this century, the passage of the SOX was to restore the integrity of financial statements by curbing earnings management and accounting fraud (Cohen et al., 2008).

One strand of prior research finds that the levels of accrual-based earnings management increased steadily until the passage of SOX in 2002 whereas there is a general increase in real earnings management after SOX (Cohen and Zarowin, 2008, 2010; Lobo and Zhou, 2006; Zang, 2012). On the one hand, accrual-based earnings management can be curbed by scrutiny from outsiders and the available accounting flexibility. For instance, it can be difficult for a manager to convince a high-quality auditor of aggressive accounting estimate than a low-quality auditor and a manager's accrual-based earnings management is also more likely to be detected when regulators heighten scrutiny of firms' accounting practices. Moreover, accrual-based earnings management can be also constrained by the flexibility within a firm's accounting systems when a firm are running out of flexibility owing to aggressive accounting assumption made in the previous periods. In that case, the firm faces a high risk of being detected by auditors and violation of GAAP if it continues accrual-based earnings management. Given the objective of SOX, it significantly heightens the scrutiny from outsiders on accrual-based earnings management which is highly subject to examination by outsiders (e.g., auditors, regulators) in the context of SOX. The proposed accounting-related reforms of SOX makes firms more incrementally likely to be detected by auditors or/and violate GAAP when engage in high accrual-based earnings management, thus increasing the costs of engaging accrual-based earnings management. Moreover, one primary penalty for earnings manipulation is litigation. If accrual-based earnings management is more likely to be detected than real earnings management, engaging in accrual-based earnings management can expose a firm to high litigation risk.

On the other hand, firms can manipulate their operating activities through temporarily boosting their sales volumes, overproduction and deliberately reducing their discretionary expenses in addition to accrual-based earnings management. The survey of Graham et al (2005) shows that the aftermath of accounting scandals at Enron and WorldCom and the certification requirements imposed by the SOX have changed managers' preferences for the mix between taking accounting versus real actions to management earnings. Consistently, the rational expectations equilibrium model in Ewert and Wagenhofer (2005) also shows that firms engage less in accrual-based earnings management but increases real earnings management when accounting standards become tighter because the marginal benefit of real earnings management increases. Prior studies also find there is a trade-off between accrual-based earnings management and real earnings management and firms generally shift from accrual-based earnings management to real earnings management after SOX (Cohen and Zarowin, 2008, 2010; Lobo and Zhou, 2006; Zang, 2012). Apart from heightened scrutiny imposed by SOX on accrual-based earnings management, managers are more willing to engage in real earnings management in the post-SOX because such manipulation is harder to detect. With the uncertainty inherent in business environments, there is no benchmark to decide what a manager should have been done in operation decision-making under any particular situation and managers are generally protected by the ''business judgment rule'' which make it harder to hold them accountable for suboptimal operation decisions (Lo, 2008). In contrast, accrual-based earnings management is subject to examination by auditors and regulators, who have accounting standards as the benchmark.

In light of the empirical evidence discussed above, I study the relationship between CSR and earnings management in the context of the passage of SOX to test whether high-CSR firms response differently to regulatory scrutiny in their financial

reporting. Given the different predictions from various theories and mixed empirical evidence regarding the association between CSR and earnings management, the relationship between CSR and earnings management as well as the influence of the passage of SOX on the relation between the two can be empirical questions. Even though SOX proposed a wide range of reforms of corporate governance and financial reporting, the consequences of the regulatory changes for the financial reporting of firms practicing CSR have not yet been studied. Particularly, it is unclear whether high-CSR firms engage in more accrual-based earnings management prior to the passage of SOX and how the passage of SOX changes managers' preference for the mix between accrual based versus real earnings management for firms practicing CSR. It is also not clear whether the general shift from accrual-based earnings management to real earnings management also apply to firms practicing CSR in the context of increased regulatory scrutiny. On the one hand, if high-CSR firms are opportunistic financial reporters, then high-CSR firms are more likely to be wary after the passage of SOX and will lower their accrual-based earnings management owing to increased regulatory scrutiny (*H1a*). On the contrary, if high-CSR firms are transparent financial reporters and CSR engagement is negatively related to accrual-based earnings management in the pre-SOX period, the financial reporting behavior of CSR firms will not be considerably influenced by the passage of SOX (*H1b*).

In terms of real earnings management, in light of Cohen et al (2008) showing that there is a general shift from accrual-based earnings management to real earnings management in the post-SOX period, if high-CSR firms are opportunistic financial reporters and more wary after the SOX, then high-CSR firms are likely to substitute real earnings management for accrual-based earnings management in the post-SOX period (*H2a*). However, if high-CSR firms are transparent reporters, there is no

significant shift from accrual-based earnings management to real activities manipulation in the post-SOX period (*H2b*).

I follow Kim et al. (2012) and develop two sets of competing hypothesis: *Opportunistic Financial Reporting Hypothesis and Transparent Financial Reporting Hypothesis.*

Opportunistic financial reporting hypothesis (Accrual-based earnings management):

H1a. If high-CSR firms are opportunistic financial reporters, the passage of SOX will lower the levels of accrual-based earnings management in the post-SOX period.

Transparent financial reporting hypothesis (Accrual-based earnings management):

H1b. If high-CSR firms are transparent financial reporters, the passage of SOX has no effect on firms' financial reporting.

Opportunistic financial reporting hypothesis (Real earnings management):

H2a. If high-CSR firms are opportunistic financial reporters, there is a shift from accrual-based earnings management to real earnings management in the post-SOX periods.

Transparent financial reporting hypothesis (Real earnings management):

***H2b*.** If high-CSR firms are transparent financial reporters, there is no shift from accrual-based earnings management to real earnings management in the post-SOX periods.

Prior literature also investigates the relationship between managerial equity incentives and financial reporting behaviors. A number of studies suggest that managers whose wealth is more sensitive to changes in stock price benefit more from opportunistic financial reporting behaviors (Bergstresser and Philippon, 2006; Burns and Kedia, 2006; Cheng and Warfield, 2005). However, the sensitivity of the managers' wealth to changes in stock price also represents the extent to which shareholder-manager interest is aligned (Bhandari and Javakhadze, 2017). A high interest-alignment between shareholders and managers can alleviate the agency problem, and managers may less likely to engage in opportunistic financial reporting. Armstrong et al (2013) suggest that the sensitivity of the managers' wealth to changes in stock price (delta) may have two opposite effects on opportunistic financial reporting. On the one hand, delta captures the increase in the value of a manager's equity portfolio from an increase in stock price, thus encouraging managers to engage in opportunistic financial reporting behaviors. On the other hand, delta also amplified the effect of equity risk on the total riskiness of a manager's equity portfolio, hence discouraging risk-averse managers from engaging risky opportunistic financial reporting. Hence, given the opposite effects of managerial equity incentives on opportunistic financial reporting, the influence of managerial equity incentives on the relationship between CSR and earnings quality is another interesting scope to investigate. If opportunistic financial reporting facilitates an increase in stock price which benefits both shareholders and managers, firms with high manager-shareholder incentives alignment (i.e., high delta) are more likely to engage in

earnings management. In contrast, if opportunistic financial reporting increases risk and alleviate the agency problem, I expect that firms with high manager-shareholder incentives alignment (i.e., high delta) are less likely to engage in earnings management whereas low-alignment firms tend to engage in more earnings management. Accordingly, I expect that the effect of SOX in curbing accrual-based earnings management will be stronger for firms with low manager-shareholder alignment than the effect on high-alignment firms. To measure the manager-shareholder incentive alignment, I use *DELTA* calculated as dollar change in wealth associated with a 1% change the firm's stock price. In line with these arguments I postulate the following hypothesis:

H3: The relationship between CSR and earnings management is more pronounced for firms with low manager-shareholder incentives alignment.

3 RESEARCH DESIGN

3.1 Data and sample selection

My sample consists of an unbalanced panel of 15,844 firm-year observations over the period of 1993 to 2015. My final sample includes all firms that meet the following criteria: The firm is in the MSCI ESG Research database, the firm is publicly traded and has financial data available from the COMPUSTAT. I further exclude firms in the financial industry (firms with primary two-digit SIC codes between 60-69) and utility industry (firms with primary two-digit SIC codes 49). I also exclude firms with negative values of sales, assets, common value of equity or market capitalization.

When testing the role of manager-shareholder incentive alignment, I merge my final data with the compensation data from Execucomp and Lalitha Naveen's website, which lowers my sample to 11,255 observations.

3.2 Measures of CSR

To measure a firm's CSR performance, I use data from MSCI ESG Research, which is the successor of Kinder, Lydenberg, Domini & Co. (KLD). For simplicity, I refer to this database as KLD. KLD is an independent investment research firm specializing in compiling rating of firms' CSR performance and it started to track firms' social performance since 1991. Over time, KLD 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 until 2000. In 2001, it further extended its coverage to firms in the Russell 1,000 Index. In terms of the validity of the database, the KLD database has been extensively employed in a large number of previous studies. The KLD database compiles CSR scores of firms based on a wide variety of sources, including company filings, government data, nongovernmental organization data, and more than 14 thousand global media sources. It contains firms' social ratings along seven dimensions, including community, employee relations, diversity, environment, human rights, product quality, and corporate governance. The database also includes five exclusionary screen categories by identifying whether a firm's operation involves in alcohol, firearms, gambling, tobacco, nuclear power, and military contracting industries that are usually considered as the 'sin' industries. For each dimension, there are positive indicators representing a firm's strength and negative indicators representing a firm's weaknesses in certain social areas.

I construct my CSR scores by using CSR strengths and weaknesses in six dimensions: community, employee relations, diversity, environment, product quality, and human rights, with a higher net CSR scores demonstrating better social performance[3]. I exclude the exclusionary categories because these dimensions do not pertain to firms' discretionary activities. I follow previous studies (Kim et al., 2012; Lins et al., 2017; Servaes and Tamayo, 2013) and exclude corporate governance dimension because it is controversial to consider corporate governance as part of CSR. My primary measure of CSR, *RAW_CSR*, is estimated as total strengths minus total concerns from the six aforementioned CSR dimensions.

Despite the simple summation method to calculate a firm's overall CSR score enjoys prevalence in extant studies, Manescu (2009) finds that the comparison between scores across years and dimensions can be spurious as the number of strengths and concern indicators for most dimensions varies as the KLD database develops over time. Deng et al. (2013) tackle this issue by constructing the adjusted KLD CSR score which is calculated by dividing the strengths and weaknesses for each dimension by the number of strength and weakness scores for the specific dimension and summing up the adjusted total strength score and adjusted total weaknesses score. By employing the adjusted CSR score, each included dimension shares equal weight, thus mitigating any bias caused by any indicators on the social performance of firms in the relatively irrelevant industry[4]. Similarly, Lins et al. (2017) also use this adjusted KLD CSR measure to overcome the variation in the maximum number of strengths and concerns across time. I, therefore, employ this adjusted CSR

[3] As a robustness check, I also follow Kim et al (2012) and use CSR scores that exclude human rights category. These results (untabulated) continue to hold when I move the human rights category from the CSR measure.

[4] As mentioned earlier, the KLD database also includes five exclusionary screen categories by identifying whether a firm's operation involves in alcohol, firearms, gambling, tobacco, nuclear power, and military contracting industries that are usually considered as the 'sin' industries. I follow previous Kim et al (2012) and exclude the exclusionary categories because these dimensions do not pertain to firms' discretionary activities.

score (*AD_CSR*) adopted in Deng et al. (2013) and Lins et al. (2017) as the alternative measure of a firm's CSR performance in the robustness tests.

3.3 Measures of earnings management

Accrual-based accounting provides managers with discretion in financial reporting and managers can report their preferred levels of earnings by circumventing accounting rules in various approaches, such as accelerating the recognition of revenues, deferring the recognition of costs or shifting income from future periods to the present. While managers can manipulate earnings without break any accounting rules, earnings manipulation distorts the true financial position of a firm, and the managed earnings are less informative, therefore making it more difficult for investors to evaluate a firm (Marquardt and Wiedman, 2004). In addition to accrual-based earnings management, recent research also finds a general shift away from accrual-based earnings management to real activities manipulation (Cohen et al., 2008; Lobo and Zhou, 2006). Therefore, I also investigate real earnings management measures, including abnormal cash from operation, abnormal production costs, and abnormal discretionary expenses.

3.3.1 Accrual-based earnings management measures

A large number of previous studies on earnings management (Dechow et al., 1995; DeFond and Subramanyam, 1998; Jones, 1991; Kothari et al., 2005; Minutti-Meza, 2013) adopt discretionary accruals as the measure for earnings management. Given the less restrictive data requirements of a cross-sectional version of the modified Jones model, I estimate discretionary accrual by using the performance-

adjusted modified Jones model suggested in Kothari et al. (2005)[5]. I include lagged return on assets (ROA_{t-1}) as a regressor in the regression model to control for the effect of performance on measured discretionary accruals and I estimate the discretionary accruals for each year using all firm-year observations. For each year i estimate the model for every industry classified by two-digit SIC code. Given firms may have different incentives for earnings manipulation that involves either income-increasing or income-decreasing accruals, I follow previous studies and use the absolute value of discretionary accrual to capture the magnitude of earnings management for my main analyses (Kim et al., 2012; Klein, 2002; Minutti-Meza, 2013). My primary expectations model for estimating non-discretionary accruals is as follows:

$$\frac{TAAC_{it}}{Asset_{i,t-1}} = k_1 \frac{1}{Asset_{i,t-1}} + k_2 \frac{\Delta Sales_{it} - \Delta Receivable_{it}}{Asset_{i,t-1}} + k_3 \frac{PPE_{it}}{Asset_{i,t-1}} + k_4 ROA_{i,t-1} + \mathcal{E}_{it}$$

where, for fiscal year *t* and firm *i*, *TAAC* stands for the total accruals defined as $TAAC_{it} = EBXI_{it} - OCF_{it}$, the difference between earnings before extraordinary items (*EBXI*) and cash flow from operations (*OCF*). The cash-flow statement approach advocated in Hribar and Collins (2002) is deemed to be superior to the balance-sheet approach to estimate total accruals because the error in the latter approach is correlated with a firm's economic characteristics, which lowers the discretionary accrual model's power to detect earnings management (Kothari et al., 2005). $\Delta Sales$ and $\Delta Receivable$ stand for changes in sales and receivables, respectively. PPE_{it} is the gross property, plant and equipment, and $Asset_{it}$ represents the total book value

[5] As a robustness check, instead of using performance-adjusted modified Jones model as suggested in Kothari et al. (Kothari et al., 2005), I also use modified Jones model in Dechow et al. (1995) to estimate earnings management. In the robustness section, my robustness test using modified Jones model yields similar results and the results are still qualitatively consistent with those reported results.

of assets. All variables are scaled by lagged total assets to mitigate heteroscedasticity in residuals.

3.3.2 Real earnings management measures

Recent research increasingly pays attention to the prominence of how earnings being management through real activities manipulation in addition to accrual-based earnings management (Gunny, 2010; Roychowdhury, 2006; Zang, 2012). For instance, Gunny (2010) investigates the consequences of real earnings manipulation and finds that real activities manipulation has a significant negative impact on future operating performance. Moreover, firms manipulate various real activities in order to meet certain financial reporting benchmarks to avoid reporting annual losses (Roychowdhury, 2006). Specifically, Roychowdhury (2006) finds that managers 1) use price discount to temporarily boost firms' sales; 2) overproduce to lower the cost of goods, and 3) lower discretionary expenditure to improve reported margins. All these actions deviate from normal business practices and the primary purpose is to make certain stakeholders believe that certain financial reporting benchmarks have been met and reporting annual losses can be avoided (Roychowdhury, 2006). I specifically explore three metrics of real earnings management identified in Roychowdhury (2006).

1. ***Abnormal cash from operation (AB_CFO)***. Firms can temporarily boost sales volumes by offering more lenient credit terms and price discounts. However, they are likely to disappear once the credit terms and price are reverted. While the current period earnings are boosted via the acceleration of the timing of sales, both price discounts, and more lenient credit terms are offered at the

expense of lower cash flows in the current period.

2. ***Abnormal production costs (AB_PROD)***. Firms can reduce the cost of goods sold by overproducing in order to increase earnings. Firms then can spread their fixed overhead costs over more units and therefore reduce fixed costs per unit. As long as the decrease in fixed costs per unit is not offset by any increases in marginal cost per unit, the total cost per unit decreases. As a result, the reported cost of goods sold (*COGS*) is reduced, which leads to higher operating margins. However, overproduction also incurs high production costs, which will further contribute to higher annual production costs relative to sales, and lower cash flows from operation.

3. ***Abnormal discretionary expenses (AB_EXP)***. Firms can also reduce their discretionary expenses, such as R&D expenditure, advertising expenditure, and SG&A expenses. Reduction in these expenses will boost current period earnings. It could also lead to higher current period cash flows (at the risk of lower future cash flows) if the firm generally paid for such expenses in cash.

In the survey of top executives, Graham et al. (2005) show that managers are more willing to use real activities manipulation in comparison with accrual-based earnings management. This is because accrual-based earnings management is more likely to be scrutinized by auditors and regulators given accounting manipulation can have negative economic substances as shown in the notorious accounting scandals and frauds at the beginning of this century. Moreover, as the response to accounting scandals, more rigorous accounting rules and regulations are set up, which increases the litigation risks and makes managers prefer to shift from accrual-based earnings management to real earnings management. Cohen et al. (2008) find that managers

have shifted away from accrual-based earnings management to real activities manipulation after SOX. In addition, several previous studies (Cohen et al., 2008; Graham et al., 2005; Zang, 2012) also suggest that real earnings management is positively associated with the cost of accrual-based earnings management, and accrual and real earnings management are negatively associated, indicating that there is a tradeoff between these two types of earnings management.

I follow previous studies (Cohen and Zarowin, 2008; Cohen et al., 2008; Roychowdhury, 2006) to develop my proxies for real earnings management and adopt three metrics to estimate the levels of real earnings management: the abnormal levels of cash flow from operations (*AB_CFO*), production costs *(AB_PROD)* and discretionary expenses (*AB_EXP*).

I first generate the normal levels of *CFO*, production costs and discretionary expenses using the models in Roychowdhury (2006). I calculate normal *CFO* as a linear function of sales and a change in sales. To adopt this model, I run the following cross-sectional regression for each industry and year:

$$\frac{CFO_{it}}{Asset_{i,t-1}} = k_1 \frac{1}{Asset_{i,t-1}} + k_2 \frac{Sales_{it}}{Asset_{i,t-1}} + k_3 \frac{\Delta Sales_{it}}{Asset_{i,t-1}} + \mathcal{E}_{it}$$

For every firm-year, abnormal cash flow from operations is the residual from the corresponding industry-year model and the firm-year's sales and lagged assets.

The second measure of real earnings management is abnormal production costs. Prior studies (Badertscher, 2011; Cohen et al., 2008; Roychowdhury, 2006; Zang, 2012) define production costs as the sum of *COGS* and change in inventory during the year and they express expenses as a linear function of contemporary sales. I estimate normal production costs from the following equation and the abnormal production cost is the residual from the model.

$$\frac{PROD_{it}}{Asset_{i,t-1}} = k_1 \frac{1}{Asset_{i,t-1}} + k_2 \frac{Sales_{it}}{Asset_{i,t-1}} + k_3 \frac{\Delta Sales_{it}}{Asset_{i,t-1}} + k_4 \frac{\Delta Sales_{i,t-1}}{Asset_{i,t-1}} + \mathcal{E}_{it}$$

The third measure of real activities manipulation is abnormal discretionary expenses. Following Roychowdhury (2006) and Cohen et al. (2008), I estimate the normal levels of discretionary expenses using the following equations;

$$\frac{DISX_{it}}{ASSET_{i,t-1}} = k_1 \frac{1}{Asset_{i,t-1}} + k_2 \frac{Sales_{it}}{Asset_{i,t-1}} + \mathcal{E}_{it}$$

I also follow previous studies (Cohen and Zarowin, 2008; Irani and Oesch, 2016; Kim et al., 2012; Zang, 2012) and construct the combined measures of real activities manipulation. The abnormal levels of cash flow from operations (*AB_CFO*) and discretionary expenses (*AB_EXP*) are multiplied by -1 so that higher values of *AB_CFO* and *AB_EXP* imply that the firm is more likely to engage in real activities manipulation. I do not use the *AB_PROD* multiplied -1 is because higher production costs suggest excess production and lower COGS. The combined measure of real earnings manipulation (*COMBINED*) is calculated as *AB_CFO* + *AB_PROD* + *AB_EXP* and higher values of *COMBINED* imply that the firm is more likely to have used real activities manipulation[6]. I recognize that the combined measure may have different implications for earnings, I, therefore, report results corresponding to both the combined measures as well as the three individual real earnings management

[6] As a robustness check, instead of using *COMBINED* calculated as *AB_CFO* + *AB_PROD* + *AB_EXP*, I also follow Cohen and Zarowin (2008) and use *COMBINED* calculated as *AB_PROD* + *AB_EXP* or *AB_CFO* + *AB_EXP* as the alternative combined proxies for aggregated real earnings management and the combined real activities manipulation proxies decrease as firms engage in more aggressive real earnings management. I do not combine *AB_PROD* and *AB_CFO*, because previous studies Roychowdhury (2006) and Cohen and Zarowin (2010) suggest that the same activities can lead to abnormally low CFO and abnormally high production costs, which leads to double counting if I add these two variables.

proxies.

3.4 Empirical models

In order to test the relation between CSR and financial reporting behaviors, I rely on the following regressions:

$$\textbf{ABS\_DA}_{it} \textbf{ (or REAL\_EM}_{it}\textbf{)} = \beta_0 + \beta_1 RAW\_CSR_{it} + \beta_2 RAW\_CSR_{it} * SOX_{it} + \beta_3 SOX_{it} + \beta_4 REAL\_EM_{it} \text{ (or } ABS\_DA_{it}) + \beta_5 MB_{it-1} + \beta_6 SIZE_{it-1} + \beta_7 LEV_{it-1} + \beta_8 ROA_{it-1} + \beta_9 LOSS_{it} + \beta_{10} RAW\_GOV_{it-1} + \beta_{11} FirmAge_{it} + \beta_{12} BIG4_{it} + \beta_{13} ADINT_{it} + \beta_{14} RDINT_{it} + Industry\ Fixed\ Effect + Year\ Fixed\ Effect + \varepsilon_{it} \quad (1)$$

where:

ABS_DA = Absolute value of discretionary accruals, where discretionary accruals are computed through the cross-sectional modified Jones model adjusted for performance as in Kothari et al. (2005);

REAL_EM = *AB_CFO, AB_PROD, AB_EXP, or COMBINED:*

1) *AB_CFO* = The levels of abnormal cash flows from operation multiplied by -1 ;

2) *AB_PROD* = The levels of abnormal production costs, where production costs are defined as the sum of the cost of goods sold and the change in inventories;

3) *AB_EXP* = The levels of abnormal discretionary expenses, where discretionary expenses are the sum of R&D expenses, advertising expenses and SG&A expenses multiplied by -1;

4) *COMBINED = AB_CFO + AB_PROD + AB_EXP;*

RAW_CSR = Raw KLD CSR scores, calculated by total strengths minus total concerns;

SOX = Indicator variable equal to 1 if in the post-SOX as defined after 2003, and 0 otherwise;

MB = Market-to-book ratio, measured by market value of equity scaled by book value of equity;

SIZE = Firm size, measured by a natural logarithm of the total assets;

LEV = Leverage ratio, measured as the book value of debt over the book value of total assets;

ROA = Return on assets, measured as income before extraordinary items scaled by lagged total assets;

LOSS = Indicator variable equal to 1 if the firm has a loss for the year, and 0 otherwise;

FIRMAGE = Firm age is the number of years since the firm first appears in the COMPUSTAT database;

RAW_GOV = Raw KLD corporate governance scores, calculated by total governance strengths minus total governance concerns;

BIG4 = Indicator variable equal to 1 if the firm is audited by one of the BIG4 auditors, and 0 otherwise;

ADINT = Advertising intensity (Advertising expense/sales) for the year;

RDINT = R&D intensity (R&D expense/sales) for the year;

To test the impact of the passage of SOX on the relationship between CSR and earnings quality, I follow Zang (2011) and generate an indicator variable that equals 1 if the fiscal year is after 2003, and 0 otherwise. I use an interaction term *RAW_CSR * SOX* to test the impact of SOX on the relationship CSR and earnings management. In order to mitigate the issue relating to correlated omitted variables, I employ a variety of control variables that may potentially affect a firm's financial

reporting behavior and social performance. I control for the effect of growth opportunities and firm size (*SIZE*) by including market-to-book (*MB*) ratio and a natural logarithm of a firm's total assets as prior studies show that these two variables are correlated with CSR and earnings management (Kim et al., 2012; Klein, 2002; Prior et al., 2008; Waddock and Graves, 1997). I also control for the effect of a firm's financial performance and by incorporating return on assets (*ROA*) in the regression. Klein (2002) suggests that firms have incentives to manipulate accounting figures when they are about to violate financial covenants. Therefore, I incorporate leverage (*LEV*) to capture the effect of this issue. Consistent with Kim et al. (2012), I also control for the effect of firm age (*FIRMAGE*) in case my results are potentially driven by characteristics caused by firms' different developmental stages. I control for the effect of corporate governance in the regression by calculating corporate governance (*RAW_GOV*) in KLD database. Previous studies find there is a nexus between CSR and corporate governance (Arora and Dharwadkar, 2011; Jo and Harjoto, 2011) and therefore corporate governance can affect both CSR and financial reporting behavior. In addition to corporate governance, I also add a dummy variable, *BIG4* that equals 1 if a firm's auditor is one of the Big4 auditors. Following previous studies (Kim et al., 2012; McWilliams and Siegel, 2001; Prior et al., 2008), I also control for the effect of research and development and advertising in my regression. I compute R&D intensity (*RDINT*) and advertising intensity (*ADINT*) as R&D expenditure divided by sales and advertising expenditures divided by sales respectively. Given previous studies suggest that there is a trade-off between accrual-based earnings management and real earnings management (Cohen et al., 2008; Graham et al., 2005; Zang, 2012), I control for the effect of real activities manipulation (*COMBINED*) in the *ABS_DA* regressions and control for the effect of accrual-based earnings management (*ABS_DA*) in the real earnings management regressions. In order to examine the role of manager-shareholder incentive alignment on the relationship between CSR and

earnings quality during the SOX, I measure the manager-shareholder alignment by *DELTA* (dollar change in wealth associated with a 1% change the firm's stock price) (Bhandari and Javakhadze, 2017; Coles et al., 2006; Core and Guay, 2002).

4 RESULTS

4.1 Descriptive statistics

In Table 1, I present the descriptive statistics and it shows a mean value of 0.06 for the absolute value of discretionary accruals (*ABS_DA*). The mean value of signed discretionary accrual (*DA*) is -0.03 and is consistent with the level reported by Cohen et al. (2008). The mean values of *AB_CFO, AB_PRO,* and *AB_EXP* as well as *COMBINED* are -0.04, -0.07, -0.05 and -0.17 respective.

.

TABLE 1
Descriptive Statistics of Selected Variables

	N	Mean	Median	Std.Dev	25th Percentile	75th Percentile
Dependent Variable						
ABS_DA	15,844	0.059	0.040	0.067	0.019	0.076
DA	15,844	-0.031	-0.024	0.084	-0.063	0.011
AB_CFO	15,844	-0.040	-0.040	0.095	-0.091	0.009
AB_PROD	15,844	-0.073	-0.068	0.193	-0.179	0.027
AB_EXP	15,844	-0.054	-0.021	0.224	-0.157	0.065
COMBINED	15,844	-0.168	-0.135	0.424	-0.392	0.065
Variable of Interest						
RAW_CSR	15,844	0.211	0.00	2.441	-1.00	1.00
ADJ_CSR	15,844	-0.052	-0.020	0.414	-0.309	0.111
Control Variables						
SOX	15,844	0.810	1.00	0.392	1.00	1.00
SIZE	15,844	7.405	7.281	1.518	6.308	8.368
MB	15,844	3.702	2.404	10.586	1.569	3.812
ROA	15,844	0.051	0.058	0.112	0.018	0.099
LOSS	15,844	0.179	0.000	0.383	0.000	0.000
LEV	15,844	0.201	0.186	0.171	0.039	0.309
ADINT	15,844	0.014	0.000	0.040	0.00	0.011
RDINT	15,844	0.058	0.007	0.285	0.000	0.061
RAW_GOV	15,844	-0.262	0.000	0.690	-1.00	0.00

FIRMAGE	15,844	3.156	3.135	0.635	2.708	3.761
BIG4	15,844	0.886	1.000	0.317	1.000	1.000
DELTA(in $000s)	11,255	723.540	197.820	1682.910	63.990	607.320

The Panel A of Table 1 presents the descriptive statistics for the 15,844 firm-year observations over the period between 1993 and 2015. This table presents the number of observations, the mean, the median, the standard deviation, and the values for the first and the third quartile for all the variables in Model 1.

ABS_DA is the absolute value of discretionary accruals, where discretionary accruals are computed through the cross-sectional modified Jones model adjusted for performance as in Kothari et al. (2005). *AB_CFO* is the levels of abnormal cash flows from operation multiplied by -1. *AB_PROD* is the levels of abnormal production costs, where production costs are defined as the sum of cost of goods sold and the change in inventories. *AB_EXP* is the levels of abnormal discretionary expenses, where discretionary expenses are the sum of R&D expenses, advertising expenses and SG&A expenses multiplied by -1. *COMBINED* is the combined real earnings management proxy calculated by *AB_CFO + AB_PROD + AB_EXP*. *RAW_CSR* is the raw KLD CSR scores, calculated by total strengths minus total concerns. *ADJ_CSR* is the adjusted KLD CSR scores followed by Deng et al (2013) and Lins et al (2017).

SOX is the indicator variable equal to 1 if in the post-SOX as defined after 2003, and 0 otherwise. *SIZE* is firm size measured by a natural logarithm of the total assets. *MB* is the market-to-book ratio, measured by market value of equity scaled by book value of equity. *ROA* is the return on assets, measured as income before extraordinary items scaled by lagged total assets. *LOSS* is an indicator variable equal to 1 if the firm reported a loss in the previous year, 0 otherwise. *LEV* is the leverage ratio, measured as the book value of debt over the book value of total assets. *ADINT* is the advertising intensity for the year. *RDINT* is the R&D intensity for the year. *RAW_GOV* is the corporate governance score from KLD database. *FIRMAGE* is firm age measured by the number of years since the firm first appears in COMPUSTAT database. *BIG4* is the indicator variable equal to 1 if the firm is audited by one of the BIG4 auditors, and 0 otherwise.

Delta is from compensation data from Execucomp and Lalitha Naveen's website for examining the influence of manager-shareholder incentives alignment on the relationship between CSR and earnings management. The data merge lowers the sample to 11,255 observations.

My primary variable of interest, *RAW_CSR*, is slightly positive with a mean value of 0.21 and median value of 0 and my alternative CSR measure, *AD_CSR,* is slightly negative with a mean value of -0.05, median value of -0.02 and standard deviation of 0.41. In terms of control variables, the mean value of *ROA* is 0.05, indicating that CSR firms in my sample are, on average, profitable firms. I also find the mean value of corporate governance (*RAW_GOV*) is negative, suggesting on average my sample firms have more corporate governance concerns than strengths. In addition, most of the sample firms are audited by one of the Big4 auditors. Regarding manager-shareholder incentives alignment proxy Delta (dollar change in wealth associated with a 1% change in the firm's stock price), I find Delta has a mean of 724 and a median of 198 with standard deviation of 1683. This is close to Coles et al. (2014) results with a mean of 789.00 and a median of 250.00 with a standard deviation of 1802 for Delta.

TABLE 2

Correlations among CSR Score, Earnings Management Proxies and Other Control Variables

	1	2	3	4	5	6	7	8
1. RAW_CSR	1							
2. ADJ_CSR	0.909***	1						
3. ABS_DA	-0.017**	-0.005	1					
4. AB_CFO	-0.123***	-0.101***	-0.081***	1				
5. AB_PROD	-0.147***	-0.130***	-0.084***	0.452***	1			
6. AB_EXP	-0.086***	-0.077***	-0.199***	0.088***	0.727***	1		
7. COMBINED	-0.140***	-0.123***	-0.162***	0.477***	0.941***	0.879***	1	
8. SOX	-0.116***	-0.119***	-0.038***	0.018**	0.078***	-0.024***	0.027***	1
9. SIZE	0.295***	0.220***	-0.149***	-0.089***	0.103***	0.211***	0.138***	-0.155***
10. MB	0.063***	0.050***	0.036***	-0.068***	-0.103***	-0.093***	-0.111***	-0.030***
11. ROA	0.094***	0.072***	-0.276***	-0.458***	-0.207***	0.132***	-0.128***	-0.057***
12. LOSS	-0.082***	-0.064***	0.300***	0.289***	0.073***	-0.162***	0.0130	0.062***
13. LEV	0.0004	0.001	-0.016**	0.100***	0.127***	0.147***	0.158***	-0.059***
14. ADINT	0.110***	0.100***	0.023***	-0.012	-0.184***	-0.281***	-0.235***	-0.021***
15. RDINT	0.017**	0.0100	0.085***	0.084***	-0.069***	-0.252***	-0.145***	0.028***
16. RAW_GOV	0.023***	0.053***	0.011	0.019**	-0.010	-0.008	-0.005	-0.007
17. FIRMAGE	0.143***	0.106***	-0.151***	0.040***	0.100***	0.208***	0.164***	-0.196***
18. BIG4	0.088***	0.078***	-0.051***	-0.011	0.029***	0.013	0.018**	0.096***

TABLE 2

Correlations among CSR Score, Earnings Management Proxies and Other Control Variables (continue)

	9	10	11	12	13	14	15	16	17	18
9. SIZE	1									
10. MB	0.009	1								
11. ROA	0.125***	0.041***	1							
12. LOSS	-0.177***	0.005	-0.642***	1						
13. LEV	0.346***	0.105***	-0.173***	0.095***	1					
14. ADINT	0.018**	0.053***	-0.005	0.006	-0.014*	1				
15. RDINT	-0.094***	0.032***	-0.264***	0.145***	-0.091***	0.252***	1			
16. RAW_GOV	-0.206***	-0.005	0.001	-0.007	-0.036***	-0.007	-0.011	1		
17. FIRMAGE	0.398***	-0.002	0.110***	-0.152***	0.085***	-0.017**	-0.067***	-0.037***	1	
18. BIG4	0.200***	0.017**	-0.019**	-0.018**	0.077***	-0.001	-0.036***	-0.093***	0.012	1

Table 2 presents the Pearson correlation coefficients for selected variables. I find a negative correlation between CSR and the levels of discretionary accrual (*ABS_DA*) as well as other real earnings management proxies (*AB_CFO, AB_PROD, AB_EXP,* and *COMBINED*) which suggests that my sample firms with higher CSR engagement are less likely to engage in both types of earnings management.

4.2 CSR and discretionary accruals in the pre- and post-SOX period

Table 3 shows the main results of the multivariate regression of accrual-based earnings management using the absolute value of discretionary accruals and real earnings management measures. My results show that the estimated coefficient on CSR is positive and statistically significant in the accrual-based earnings management model (column 1), suggesting that firms with higher CSR engagement tend to have larger magnitude of discretionary accruals and manage their earnings more aggressively prior to SOX. Specifically, increasing one point in CSR score increases absolute discretionary accruals by 0.16%. In contrast to the positive coefficient of *RAW_CSR*, the coefficient on *RAW_CSR * SOX* is significantly negative. My results show that the magnitude of earnings management of firms practicing CSR has been significantly curbed owing to the increased regulatory scrutiny imposed by the passage of SOX. Given the interaction term captures the marginal effect of CSR on accrual-based earning management for the post-SOX period relative to the pre-SOX period, my results suggest that firms with high CSR engagement tend to have more accrual-based earnings management but CSR engagement becomes less influential in affecting accrual-based earnings management for the post-SOX period. In particular, the increase in the absolute discretionary accruals by one point in CSR is mostly offset by the passage of SOX (=0.0016-0.0013) for the post-SOX period.

Overall, my results also suggest that the regulatory constraints imposed by SOX have been effective in reducing the opportunistic financial reporting and firms practicing CSR tend to engage less in accrual-based earnings management in the post-SOX period in comparison with the pre-SOX period. From a regulatory perspective, my results demonstrate that SOX as an accounting-related reform at least succeeds in constraining certain accrual-based earnings management behavior. Therefore, my hypothesis *H1a* is supported. For control variables, I find the estimated coefficient for the combined real earnings management (*COMEBINED*) is negative and significant, implying that firms choose to engage in more aggressive accrual-based earnings management are less likely to engage in real earnings management, and vice versa. This result is consistent with numerous extant studies which suggest that there is a trade-off between accrual-based earnings management and real activities manipulation (Graham et al. 2005; Cohen et al. 2008; Zang 2011). In addition, I find that larger and older firms tend to engage less in accrual-based earnings management. One potential interpretation is that larger and older firms treasure their reputation and corporate image more, and therefore tend to engage less in any opportunistic behaviors that may cause litigation risks and potentially damage their reputation. Moreover, I observe that firms with higher debt are less likely to engage in accrual-based earnings management, which potentially reflects these firms are more likely to be monitored by debt holders (Park and Shin, 2004). Finally, I find firms with better corporate governance structures are less likely to conduct earnings management whereas firms with high-growth opportunities and losses are more likely to engage in accrual-based earnings management.

TABLE 3

Accrual-Based Earnings Management/Real Earnings Management on CSR

	(1) ABS_DA	*(2) AB_CFO*	*(3) AB_PROD*	*(4) AB_EXP*	*(5) COMBINED*
RAW_CSR	0.0016**	-0.0026***	-0.0130***	-0.0112***	-0.0267***
	(2.48)	(-2.91)	(-5.55)	(-4.25)	(-5.17)
SOX	-0.0291***	0.0178***	0.0514***	-0.0060	0.0632**
	(-6.42)	(3.68)	(4.35)	(-0.49)	(2.57)
*RAW_CSR * SOX*	-0.0013**	-0.0006	0.0001	-0.0029	-0.0033
	(-2.01)	(-0.65)	(0.06)	(-1.12)	(-0.64)
COMBINED	-0.0195***				
	(-9.20)				
ABS_DA		-0.2268***	-0.1448***	-0.3650***	-0.7366***
		(-11.94)	(-4.25)	(-8.97)	(-9.58)
MB	0.0002**	-0.0004**	-0.0014**	-0.0018**	-0.0036**
	(2.02)	(-2.02)	(-2.08)	(-2.23)	(-2.16)
SIZE	-0.0032***	-0.0022*	0.0200***	0.0276***	0.0454***
	(-5.02)	(-1.93)	(5.73)	(7.66)	(6.07)
LEV	-0.0139***	-0.0040	0.0461**	0.1646***	0.2068***
	(-2.87)	(-0.51)	(2.05)	(6.67)	(4.19)
ROA	0.0210**	-0.2474***	-0.2356***	0.1752***	-0.3077***
	(2.45)	(-16.31)	(-7.96)	(4.58)	(-4.70)
LOSS	0.0487***	0.0588***	0.0243***	-0.0331***	0.0500***
	(21.47)	(20.48)	(4.44)	(-5.17)	(4.18)
FIRMAGE	-0.0083***	0.0113***	0.0172**	0.0373***	0.0657***
	(-7.22)	(4.85)	(2.40)	(5.03)	(4.23)
RAW_GOV	-0.0020**	0.0036**	0.0077*	0.0128***	0.0240***
	(-2.20)	(2.41)	(1.94)	(3.22)	(2.86)
ADINT	-0.0380**	-0.0228	-0.7569**	-1.3634**	-2.1430**
	(-2.13)	(-0.86)	(-2.40)	(-2.46)	(-2.45)
RDINT	0.0070	0.0103***	-0.0287	-0.0901	-0.1085
	(1.25)	(3.61)	(-1.00)	(-1.64)	(-1.29)
BIG4	-0.0012	-0.0015	-0.0065	-0.0221**	-0.0301
	(-0.47)	(-0.40)	(-0.62)	(-1.97)	(-1.33)
INDUSTRY DUMMIES	Yes	Yes	Yes	Yes	Yes
YEAR DUMMIES	Yes	Yes	Yes	Yes	Yes
N	15,844	15,844	15,844	15,844	15,844
ADJUSTED R2	0.172	0.264	0.181	0.277	0.218

*, **, *** 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.

4.3 CSR and real earnings management in the pre- and post-SOX period

Column 2 to 5 in Table 3 also report the results of multiple regressions using measures of real earnings management. In all the regressions of real earnings management, the estimated coefficients on CSR are all negative and significant. My evidence, therefore, suggests that firms with better CSR performance are less likely to involve in earnings management by practicing abnormal business practice in their operations. To control for the trade-off effect between accrual-based earnings management and real earnings management, I also control for accrual-based earnings management as a control variable in my real earnings management regressions. The coefficients on the absolute value of discretionary accruals, *ABS_DA*, are negative and significant, confirming the trade-off effect between the two types of earnings management. In terms of other control variables, the coefficients on *MB* is negative and significant for all real earnings management variables, suggesting that firms with high growth options are less likely to engage in real earnings management. I also find the coefficients on *ROA* for *AB_CFO, AB_PROD* and *COMBINED* are negative and significant, showing that firms with better profitability are generally less likely to engage in real earnings management. In contrast, the positive and significant estimated coefficient on *AB_EXP* suggests profitable firm are more likely to engage in real earnings manipulation via abnormal discretionary expenses. In addition, the coefficients on *FIRMAGE and RAW_GOV* are positive and significant for real earnings management variables, indicating that older firms and better-governed firms are more likely to engage in real activities manipulation.

Consistent with the accrual-based earnings management regressions, I interact CSR with the indicator variable *SOX* to observe the influence of SOX on the

relationship between CSR and real earnings management. Cohen et al. (2008) find that managers have shifted away from accrual-based earnings management to real activities manipulation after SOX. The coefficients of SOX indicator variables reflect the general shift from accrual-based earnings management to real earnings management from pre- to post-SOX period. The four interaction terms between CSR and SOX in all real earnings management models capture the marginal effects of CSR on real earnings management in the post-SOX period. The insignificant coefficients show that firms practicing CSR do not tend to shift from accrual-based earnings management to real activities manipulation from pre- to post-SOX periods. Hence, my hypothesis *H2b* is supported.

4.4 Managerial equity incentives

In this section, I investigate whether the manager-shareholder incentive alignment acts as a moderator for the relationship between CSR and earnings management. Specifically, I estimate my main models for the subsamples with high and low manager-shareholder incentive alignment by using respective median values of Delta (dollar change in wealth associated with a 1% change in the firm's stock price). I predict that firms practicing CSR with high manager-shareholder incentive alignment are less likely to engage in the earnings management whereas firms practicing CSR with low manager-shareholder incentive alignment tend to engage in more opportunistic financial reporting behaviors. However, it is also possible that firms with high manager-shareholder incentives alignment are more likely to engage in earnings management if earnings management facilitates an increase in stock price which benefits both shareholders and managers.

In the first column of Table 4, I find the estimated coefficients *RAW_CSR* and *RAW_CSR * SOX* are not significant for the high manager-shareholder incentive alignment subsamples. In contrast, I find the estimated coefficient on CSR is positive and significant at the 1% level for firms with low manager-shareholder incentive alignment in column 2 of Table 4, indicating that low-alignment firms practicing CSR are more likely to engage in accrual-based earnings management. Accordingly, I find the estimated coefficient on interaction term *RAW_CSR * SOX* is negative and statistically significant at the 5% level, showing that firms with low manager-shareholder incentive alignment receive more constraining effect by regulatory scrutiny imposed by the passage of SOX. My further analysis shows that the estimated coefficients on *RAW_CSR* and *RAW_CSR * SOX* in low-alignment subsamples are significantly different from the two groups. In terms of real earnings management, I find the coefficients on *RAW_CSR* are negative and indicate that firms practicing CSR engage less in real earnings management and I do not find any significant results on interaction term *RAW_CSR * SOX*. The insignificant coefficients on the interactions are consistent with the result in Table 3 for real earnings management and suggest that high-CSR firms are less likely to substitute real earnings management for accrual-based earnings management in the post-SOX period. In addition, I do not find the estimated coefficients on *RAW_CSR* and *RAW_CSR * SOX* are statistically different between the high- and low-incentive alignment subsamples.

TABLE 4

The Moderating Effect of Manager-Shareholder Incentive Alignment on the Relation between CSR and Earnings Management

	DELTA			
	(1) High	***(2) Low***	***(3) High***	***(4) Low***
	ABS_DA	***ABS_DA***	***COMBINED***	***COMBINED***
RAW_CSR	0.0005	0.0028***	-0.0185***	-0.0141**
	(0.94)	(2.97)	(-3.14)	(-2.04)
SOX	-0.0146**	0.0087	0.0376	-0.0587
	(-2.25)	(1.07)	(0.68)	(-0.94)
*RAW_CSR * SOX*	-0.0004	-0.0023**	-0.0024	-0.0090
	(-0.86)	(-2.40)	(-0.40)	(-1.16)
COMBINED	-0.0142***	-0.0169***		
	(-5.56)	(-5.71)		
ABS_DA			-0.7138***	-0.5058***
			(-4.05)	(-4.95)
MB	0.0003	0.0003**	-0.0141***	-0.0025
	(1.56)	(2.36)	(-4.51)	(-1.27)
SIZE	-0.0013**	-0.0049***	0.0411***	0.0714***
	(-2.12)	(-3.97)	(3.88)	(5.81)
LEV	-0.0155***	-0.0136*	0.0350	0.1520**
	(-2.82)	(-1.77)	(0.49)	(2.08)
ROA	0.0549***	0.0131	-1.0767***	-0.2762***
	(3.05)	(0.99)	(-7.16)	(-3.30)
LOSS	0.0477***	0.0513***	0.0802***	0.0574***
	(10.88)	(15.16)	(2.89)	(3.70)
FIRMAGE	-0.0087***	-0.0083***	0.0646***	0.0468**
	(-6.50)	(-4.75)	(2.75)	(2.09)
RAW_GOV	-0.0011	-0.0025	0.0018	0.0313**
	(-1.22)	(-1.61)	(0.17)	(2.53)
ADINT	-0.0011	-0.0409	-3.7033***	-4.4617***
	(-0.05)	(-0.99)	(-10.21)	(-8.29)
RDINT	0.0492*	0.0034	-0.9327***	-0.1212
	(1.71)	(1.00)	(-2.66)	(-1.58)
BIG4	-0.0003	-0.0013	-0.0242	-0.0369
	(-0.11)	(-0.39)	(-0.53)	(-1.26)
Difference Test (*RAW_CSR)*	0.0301***		0.6046	
Difference Test *(RAW_CSR * SOX)*	0.0779*		0.4775	
INDUSTRY DUMMIES	Yes	Yes	Yes	Yes
YEAR DUMMIES	Yes	Yes	Yes	Yes

N	5,632	5,623	5,632	5,623
ADJUSTED R2	0.200	0.165	0.389	0.233

*, **, *** 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.

4.5 Analysis of instrumental variable estimation

Despite employing an extensive list of control variables helps to reduce omitted variable bias in estimating the relationship between CSR and earnings quality, I cannot rule out the possibility that the results from regressions could still suffer from endogeneity bias caused by unobservable omitted variables. To address endogeneity concerns, I perform the 2SLS regression by taking the instrumental variable estimation approach, which seeks variables that are highly correlated with CSR but does not influence a firm's financial reporting except through CSR. Consistent with the spirit of Lin et al (2011) and Laeven and Levine (2009), I follow previous research (Bozzolan et al., 2015; El Ghoul et al., 2011; Ferrell et al., 2016) and adopt the mean of CSR in year t of all firms belonging to firm i's 2-digit SIC code as an instrument for the CSR performance of firm i in year t. The fundamental incentive for using this instrumental variable is that CSR orientation tends to correlated in given industries (Bozzolan et al., 2015; Hillman and Keim, 2001; Waddock and Graves, 1997), but arguably the industry-level CSR is not related to the financial reporting behavior of a single firm.

In Table 5, my results show that CSR is positively and significantly correlated with industry-level CSR performance in the first stage. My 2SLS tests confirm the positive and significant relationship between CSR and accrual-based earnings management in the pre-SOX period and also show that the accrual-based earnings management has been effectively curbed by the passage of SOX, which is consistent with my OLS regression results. For real earnings management in Table 5, I also find industry-level CSR is also a reasonable instrument for firms' CSR as it is positively and significantly related to CSR in the first stage. The results of my 2SLS tests are consistent with the results of my baseline regression models for real earnings

management. Specifically, I find firms practicing CSR are less likely to engage in real earnings management in the pre-SOX period and I do not find a significant shift from accrual-based earnings management to real earnings management in the post-SOX period. Overall, my 2SLS estimation supports my results generated from my baseline regressions.

TABLE 5

Accrual-Based/Real Earnings Management on CSR: 2SLS

	2SLS: 1st Stage	2SLS: 2nd Stage	2SLS: 1st Stage	2SLS: 2nd Stage
	RAW_CSR	***ABS_DA***	***RAW_CSR***	***COMBINED***
RAW_CSR		0.0040***		-0.0475***
		(2.60)		(-3.76)
SOX		-0.0103**		0.0901***
		(-2.06)		(3.19)
*RAW_CSR * SOX*		-0.0033**		-0.0223
		(-2.15)		(-1.28)
IND_CSR	0.9585***		0.9618***	
	(10.63)		(13.66)	
*IND_CSR*SOX*	1.0352***		0.8515***	
	(15.61)		(10.16)	
CONTROLS	Yes	Yes	Yes	Yes
INDUSTRY DUMMIES	Yes	Yes	Yes	Yes
YEAR DUMMIES	Yes	Yes	Yes	Yes
N	15,844	15,844	15,844	15,844
First-stage F-statistic	41.72		27.08	
First stage Cragg-Donald F-test statistics	433.47		438.06	
First-stage Cragg and Donald Test	(p-value < 0.001)		(p-value < 0.001)	

4.6 Robustness tests

So far, the results of my study found that firms with higher CSR engagement are more likely to engage in aggressive accrual-based earnings management but less likely to engage in real earnings management in the pre-SOX period. After the passage of SOX, my results indicate that firms practicing CSR generally become more transparent in their financial reporting. On the one hand, after the passage of SOX, CSR firms' discretionary accruals have been largely offset by the improved regulatory scrutiny. On the other hand, instead of shifting from accrual-based earnings management to real earnings management, firms practicing CSR show no significant evidence of engaging in real activities manipulation in the post-SOX period. Overall, my results suggest that the passage of SOX makes firms practicing CSR more transparent in both accrual-based earnings management and real earnings management. I obtain the above results by using the simple summation approach to calculate a firm's overall CSR score and interact it with SOX dummy as the variable of interest in this study. Manescu (2009) finds that the comparison between scores across years and dimensions can be spurious as the number of strengths and concern indicators for most dimensions varies as the KLD database develops over time. I therefore follow previous studies (Deng et al., 2013; Lins et al., 2017) and develop the adjusted CSR score as the alternative CSR measure by dividing the strengths and weaknesses for each dimension by the number of strength and weakness scores for the specific dimension and summing up the adjusted total strength scores and adjusted total weaknesses scores. In addition to the alternative measure of CSR, I also calculate discretionary accruals as in Dechow et al. (1995) as the alternative measure of discretionary accruals in the robustness tests. Furthermore, instead of using the combined measure of real earnings management (*COMBINED*), I also

follow Cohen and Zarowin (2010) and use *COMBINED* calculated as *AB_PROD* + *AB_EXP* or *AB_CFO* + *AB_EXP* as the alternative combined proxies for aggregated real earnings management[7]. Overall, the results from my robustness tests are similar to the results reported for my baseline models. I report the results of robustness tests in Table 6 and Table 7. With regards to the influence of SOX on accrual-based earnings management and real earnings management, the results of robustness tests confirm that SOX effectively curbs accrual-based earnings management whereas the positive and significant coefficients of SOX on real earnings management shows that the post-SOX period also witnesses more real earnings management owing to the increased regulatory scrutiny on accrual-based earnings management. Consistently, I find firms with higher CSR engagement have higher levels of aggressive accrual-based earnings management prior to the passage of SOX whereas this aggressiveness of accrual-based earnings management has been significantly lowered by the passage of SOX. Moreover, the robustness tests also confirm that that firms with higher CSR engagement are less likely to engage in real earnings management before the SOX period and also are less likely to substitute real earnings management for accrual-based earnings management in the post-SOX period. Overall, the results for the robustness test confirm my conjecture that socially responsible firms are more transparent in their financial reporting after the passage of SOX.

[7] Consistently, I multiply the abnormal levels of cash flow from operations (*AB_CFO*) and discretionary expenses (*AB_EXP*) by -1 so that higher values of *AB_CFO* and *AB_EXP* imply that the firm is more likely to engage in real activities manipulation.

TABLE 6

Accrual-Based Earnings Management and Real Earnings Manipulation on Alternative CSR

	(1) ***ABS_DA***	*(2)* ***AB_CFO***	*(3)* ***AB_PROD***	*(4)* ***AB_EXP***	*(5)* ***COMBINED***
ADJ_CSR	0.0104**	-0.0151***	-0.0756***	-0.0627***	-0.1534***
	(2.53)	(-2.62)	(-4.90)	(-3.65)	(-4.53)
SOX	-0.0291***	0.0161***	0.0463***	-0.0129	0.0495**
	(-6.44)	(3.35)	(3.91)	(-1.05)	(2.02)
*ADJ_CSR * SOX*	-0.0088**	0.0003	0.0166	-0.0016	0.0153
	(-2.11)	(0.06)	(1.05)	(-0.10)	(0.45)
COMBINED	-0.0196***				
	(-9.28)				
ABS_DA		-0.2277***	-0.1495***	-0.3698***	-0.7471***
		(-11.97)	(-4.36)	(-9.02)	(-9.64)
MB	0.0002**	-0.0004**	-0.0015**	-0.0019**	-0.0037**
	(2.02)	(-2.03)	(-2.09)	(-2.23)	(-2.16)
SIZE	-0.0030***	-0.0031***	0.0166***	0.0238***	0.0373***
	(-5.08)	(-2.71)	(4.75)	(6.56)	(4.95)
LEV	-0.0141***	-0.0024	0.0525**	0.1717***	0.2219***
	(-2.92)	(-0.30)	(2.31)	(6.88)	(4.45)
ROA	0.0210**	-0.2479***	-0.2371***	0.1734***	-0.3116***
	(2.45)	(-16.33)	(-7.96)	(4.51)	(-4.72)
LOSS	0.0488***	0.0588***	0.0246***	-0.0329***	0.0506***
	(21.48)	(20.47)	(4.46)	(-5.12)	(4.20)
FIRMAGE	-0.0083***	0.0112***	0.0170**	0.0370***	0.0652***
	(-7.20)	(4.79)	(2.35)	(4.95)	(4.16)
ADJ_GOV	-0.0131***	0.0221***	0.0380*	0.0701***	0.1302***
	(-2.76)	(2.87)	(1.84)	(3.36)	(2.95)
ADINT	-0.0381**	-0.0251	-0.7673**	-1.3745**	-2.1670**
	(-2.14)	(-0.93)	(-2.40)	(-2.46)	(-2.44)
RDINT	0.0070	0.0101***	-0.0295	-0.0910	-0.1104
	(1.25)	(3.49)	(-1.01)	(-1.64)	(-1.30)
BIG4	-0.0011	-0.0016	-0.0066	-0.0224**	-0.0307
	(-0.45)	(-0.42)	(-0.63)	(-1.99)	(-1.35)
INDUSTRY DUMMIES	Yes	Yes	Yes	Yes	Yes
YEAR DUMMIES	Yes	Yes	Yes	Yes	Yes
N	15,844	15,844	15,844	15,844	15,844
ADJUSTED R2	0.172	0.262	0.175	0.271	0.211

*, **, *** 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 7
Alternative Accrual-Based Earnings Management and Real Earnings Management on CSR

	(1) ALT_ ABSDA	*(2) AB_ CFO*	*(3) AB_ PROD*	*(4) AB_ EXP*	*(5) ALT_ COMBINED*
RAW_CSR	0.0014**	-0.0028***	-0.0131***	-0.0114***	-0.0273***
	(2.18)	(-3.06)	(-5.62)	(-4.29)	(-5.24)
SOX	-0.0274***	0.0200***	0.0540***	-0.0039	0.0702***
	(-6.20)	(4.10)	(4.56)	(-0.31)	(2.84)
*RAW_CSR * SOX*	-0.0014**	-0.0005	0.0002	-0.0029	-0.0032
	(-2.13)	(-0.57)	(0.10)	(-1.11)	(-0.61)
ALT_COMBINED	-0.0145***				
	(-6.89)				
ALT_ABS_DA		-0.1655***	-0.0653**	-0.3171***	-0.5479***
		(-8.55)	(-1.97)	(-7.92)	(-7.30)
MB	0.0002*	-0.0004**	-0.0014**	-0.0018**	-0.0037**
	(1.82)	(-2.05)	(-2.08)	(-2.24)	(-2.17)
SIZE	-0.0036***	-0.0020*	0.0203***	0.0278***	0.0461***
	(-5.56)	(-1.71)	(5.81)	(7.66)	(6.12)
LEV	-0.0138***	-0.0027	0.0477**	0.1658***	0.2108***
	(-2.75)	(-0.34)	(2.11)	(6.69)	(4.25)
ROA	-0.0116	-0.2548***	-0.2400***	0.1631***	-0.3317***
	(-1.27)	(-16.39)	(-8.08)	(4.27)	(-5.02)
LOSS	0.0497***	0.0560***	0.0206***	-0.0351***	0.0414***
	(21.35)	(19.16)	(3.70)	(-5.43)	(3.41)
FIRMAGE	-0.0082***	0.0120***	0.0180**	0.0379***	0.0678***
	(-6.94)	(5.08)	(2.51)	(5.08)	(4.34)
ADJ_GOV	-0.0012	0.0039**	0.0079**	0.0132***	0.0250***
	(-1.35)	(2.57)	(2.00)	(3.29)	(2.95)
ADINT	-0.0436**	-0.0257	-0.7582**	-1.3687**	-2.1527**
	(-2.39)	(-0.95)	(-2.39)	(-2.46)	(-2.44)
RDINT	0.0091*	0.0100***	-0.0293	-0.0900	-0.1093
	(1.74)	(3.33)	(-1.01)	(-1.63)	(-1.28)
BIG4	-0.0017	-0.0016	-0.0065	-0.0222**	-0.0307
	(-0.66)	(-0.41)	(-0.61)	(-1.97)	(-1.33)
INDUSTRY DUMMIES	Yes	Yes	Yes	Yes	Yes
YEAR DUMMIES	Yes	Yes	Yes	Yes	Yes
N	15,844	15,844	15,844	15,844	15,844
ADJUSTED R2	0.178	0.254	0.179	0.274	0.213

*, **, *** 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.

5 CONCLUSION

This paper extends the literature on CSR by investigating how firms practicing CSR respond differently from other firms in their financial reporting in the context of changing regulatory regimes by considering the passage of SOX in 2002. Despite recent literature has been permeating with the reference to the evidence that firms with better CSR performance present more transparent and honest financial reporting practices (Hong and Andersen, 2011; Kim et al., 2012), some studies also support the opportunistic use of CSR from agency cost perspective (Chih et al., 2008; Prior et al., 2008). My paper does not aim to declare a victor in this long-standing debate. In fact, my results show CSR firms are more likely to engage in accrual-based earnings management but less likely to engage in real earnings management in the pre-SOX period. Consistent with prior literature, I also find an overall trend that accrual-based earnings management generally decreases whereas real earnings manipulation increases after the passage of SOX. For firms practicing CSR, I find the accrual-based earnings management has been significantly lowered by the passage of SOX and I do not find evidence of firms practicing CSR significantly shift from accrual-based earnings management to real earnings management in the post-SOX period. Given real activities manipulation is generally believed to have more severe consequences than accrual-based earnings management (Cohen and Zarowin, 2008; Graham et al., 2005; Gunny, 2010; Zang, 2012), my results indicate that when facing the trade-off between accrual-based earnings management and real earnings management, socially responsible firms tend to choose the earnings management that is less costly. My results are consistent with the notion that firms with better CSR performance are less likely to engage in costly real earnings management strategy. Moreover, I find the relationship between CSR and accrual-based earnings management is

moderated by the effect of manager-shareholder incentive alignment. My results show that firms practicing CSR with low manager-shareholder incentive alignment are more likely to engage in accrual-based earnings management and received more constraining effect in the post-SOX period.

Overall, my results suggest firms practicing CSR present more transparent financial reporting practices in the post-SOX period. My findings suggest that the passage of SOX is effective in curbing CSR firms' accounting manipulations and the results contribute to the debate over the role of CSR and also speak to the literature on the relationship between accounting quality, corporate governance and relevant legislation.

CHAPTER 4

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

"I don't think that the market really understands how to value employee treatment and wellness and benefits… They don't think about the employee long-term morale or anything like that."

—Brian Krzanich, Intel's CEO, quoted in Forbes, 12/12/2017

"You take care of your employees, they'll take care of your customers, the business will thrive, and your shareholders will benefit. We've always believed that, and we've never wavered."

—Scott Scherr, Ultimate Software's CEO, quoted in Forbes, 12/12/2017

1 INTRODUCTION

Irrespective of firm size, employees can be seen as a firm's most valuable asset and a critical source of corporate success in modern knowledge-based economies. Prior studies have shown firms can gain competitive advantages by hiring, developing and retaining human capital (Becker, 1962; Coff, 1997; Lazear and Shaw, 2007; Teece, 2011). Many firms increasingly invest in employee-friendly treatment and employee welfare schemes to address the challenge of recruiting and retaining human capital to maintain a competitive advantage.[8] For instance, Colgate-Palmolive provides its employees with nutrition guidance, on-site fitness classes, bike-to-work programs, financial seminars and, in some locations, back-up child care services and flexible work arrangements (Forbes, 2017). Delta has rewarded its employee by paying out nearly $5 billion through its profit-sharing program within the

[8] See a recent article by Forbes (https://www.forbes.com/sites/maggiemcgrath/2017/12/12/unions-are-dead-why-competition-is-paying-off-for-americas-best-workers).

past five years (Forbes, 2017). In this study, I investigate the impact of employee-friendly treatment on firms' labor investment efficiency by examining whether employee treatment is associated with lower deviations of labor investment from the level justified by economic fundamentals. I further investigate whether labor investment efficiency and underlying employee treatment practices are associated with firm performance.

Employee-friendly treatment can potentially affect labor investment efficiency in several ways.[9] First, employee-friendly treatment could affect labor investment efficiency via favorable reputation and high talents attractiveness with both current employees and potential applicants. Hiring and firing employees can expose firms to the labor market friction. Should employee-friendly policies help firms to improve employee retention and facilitate easier recruitment via the interest alignment between employees and firms, employee-friendly firms will be less exposed to labor market friction (Akerlof, 1982; Chow, 1983; Edmans et al., 2016; Salop, 1979; Stigler, 1962; Turban and Greening, 1997; Weiss, 1980; Zingales, 2000).

Second, in line with stakeholder theory (Cornell and Shapiro, 1987; Donaldson and Preston, 1995; Maksimovic and Titman, 1991), a firm's employee-friendly policies signal its ability to honor the implicit claims and likely to contribute to satisfied employees. If this reduces industrial actions (e.g., strike) or improves productivity, financial stakeholders are less likely to increase costly explicit claims and employee-friendly firms are likely to enjoy better access to finance and lower financing costs (Cheng et al., 2014; Dhaliwal et al., 2011; El Ghoul et al., 2011). This could facilitate investment in productive opportunities as well as in labor.

[9] In light of previous studies of employee treatment (Bae et al. 2011; Cronqvist et al. 2009; Ertugrul 2013; Faleye and Trahan 2011; Ghaly et al. 2015; Verwijmeren and Derwall 2010), I use employee-friendly treatment, employee-friendly policies, employee welfare, employee welfare schemes and other similar phrases interchangeably to broadly characterize a firm's investment in employee benefits. In Appendix 2, I list the components of the employee-friendly treatment variables from KLD.

Third, the human capital theory of corporate governance (Rajan and Zingales, 2000, 1998; Zingales, 2000) suggests that the focus of corporate governance for modern firms should shift from a focus on agency problems between managers and shareholders to explore treatment of the labor force, an increasing focus of power and rents in the modern firms. If employee-friendly treatment facilitates better corporate governance, firms with employee-friendly policies are less likely to make suboptimal labor investment decisions.

Finally, research also suggests that employee treatment may be a manifestation of agency problems (Atanassov and Kim, 2009; Ben-Nasr and Ghouma, 2018; Cronqvist et al., 2009; Jensen and Meckling, 1976; Landier et al., 2007; Pagano and Volpin, 2005). Employee-friendly treatment can have a detrimental effect on labor investment efficiency if entrenched CEOs engage in empire building and over-invest in labor force, or conversely pursue peaceful life and turn down profitable investment projects and under-invest in labor. These conflicting arguments and mixed empirical results leave the impact of employee treatment on labor investment efficiency as an empirical question.

My research question is important for several reasons. First, labor is one of the two inputs in the neoclassical model of the firm (i.e., capital and labor) required to produce output. It is curious that previous studies on employee treatment have not focused on its impact on employees. Second, the neoclassical model views labor as a variable factor that does not involve adjustment costs. However, previous literature suggests that labor frictions exist and the associated costs can be substantial and efficient investment in human capital can be a crucial element of corporate decision-making (Danthine and Donaldson, 2002; Diamond, 1982; Farmer et al., 1985; Hamermesh, 1989; Hamermesh and Pfann, 1996; Mortensen and Pissarides, 1994; Pissarides, 2011; Yashiv, 2007). Third, Matsa (2018) also indicate that labor is different from capital because human capital cannot be owned, and can act

strategically by choosing where to work and whether to quit and can pressure management to be sensitive to their needs. Finally, previous research finds that firms may gain competitive advantages by hiring and retaining scarce human capital (Becker, 1962; Coff, 1997; Lazear and Shaw, 2007; Teece, 2011). Hence, exploring whether employee treatment influences hiring and firing is strategically and financially important.

In order to examine the relation between employee-friendly treatment and labor investment efficiency, I use firms' net hiring, measured as the percentage change in the number of employees (Pinnuck and Lillis, 2007). The main proxy for labor investment efficiency is the absolute value of the difference between the observed level of labor investment and that 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 absolute value of abnormal net hiring is an inverse measure of labor investment efficiency: the lower the value, the higher the labor investment efficiency. The employee treatment indicator is obtained from MSCI ESG Research, formerly known as KLD. The KLD database has been extensively employed in previous studies of employee welfare (Bae et al., 2011; Cronqvist et al., 2009; Ertugrul, 2013; Faleye and Trahan, 2011; Ghaly et al., 2015; Verwijmeren and Derwall, 2010). I use KLD's 'Employee Relations' metrics and I follow prior studies by summing identified strengths minus identified concerns in any given year. These strengths and concerns include union relations, cash profit sharing, employee involvement, and retirement benefits. I construct employee treatment (*EMP_TREAT)* as an index of employee-friendliness by summing over the indicator variables for strength and concern and then subtracting total concerns from total strength for each firm.

Using a sample of 20,583 U.S. firm-year observations that represents more than 3,000 individual firms over the period from 1995 to 2015, the results show that

employee-friendly policies are associated with higher labor investment efficiency. As well as being statistically significant, the results also show that the impact of employee treatment on labor investment efficiency is economically important: a one standard deviation increase in employee treatment is associated with a 4.3% decrease in abnormal net hiring, which indicates improved labor investment efficiency. Consistent with prior studies, I also find that employee-friendly treatment is positively associated with better financial performance as measured by labor productivity, profitability, and production efficiency. I also shed new light on the effect of labor investment efficiency directly on firm performance and find that abnormal labor investment (i.e., labor investment inefficiency) leads to a significant deterioration in all firm performance measures.

Testing the link between employee treatment and a firm's labor investment efficiency is challenging because it is difficult to prove causality in the absence of an exogenous shock. It could be argued that efficient labor investment provides the resources for management to treat their employees well, rather than employee-friendly treatment generating efficient labor investment decisions. It could also be that omitted variables (e.g., management competence, strategic position or corporate culture) influence both employee treatment and labor investment efficiency. I use several approaches to address the endogeneity problem. First, I use firm fixed effects in the baseline models to mitigate the impact of unobservable firm-specific time-invariant omitted variables. This is a simple development from previous studies but has a strong impact on the influence of omitted correlated variables. Second, I also gain confidence from the analysis of non-labor social dimensions that serve as the placebo test. If a firm's good employee treatment is merely a reflection of a firm's social performance/social capital, or omitted variables such as performance, management competence and/or strategic advantage are driving the results, I would expect other non-labor social dimensions to also have a significant relationship with

labor investment efficiency. The results show no significant results on other social dimensions and leave employee-friendly treatment as a plausible indicator of labor investment efficiency. Moreover, I further address the endogeneity concern by using instrumental variables under the Two-stage Least Squares (2SLS) estimation and by employing propensity score matching (PSM) approaches. The results from 2SLS and PSM approaches confirm the main results. In spite of various attempts to address the endogeneity and consistent results of additional tests, it is difficult to demonstrate causality without the benefit of an exogenous shock. To overcome this challenge, I follow prior studies (Buchanan et al., 2018; Lins et al., 2017) and treat the 2008-2009 financial crisis as an exogenous shock to firms and use it to disentangle the relation between employee treatment and labor investment efficiency. I adopt a difference-in-difference (DID) approach and use non-employee-friendly firms as a control group to isolate the effect of employee-friendly treatment on labor investment efficiency. I find that employee-friendly firms have higher labor investment efficiency than non-employee-friendly firms in the post-crisis period whereas employee-friendly firms suffer more inefficient labor investment during the financial crisis. This suggests that the effect of employee treatment on labor investment efficiency varies with economic conditions and the costs of adopting employee-friendly treatment can outweigh the benefits during financially difficult periods.

I also perform several tests to ensure the robustness of the findings. I find that the results are robust to the use of two alternative measures of employee treatment, to four different measures of labor investment efficiency, and to the inclusion of various additional governance and earnings quality controls in the models.

Our study contributes to the literature in several ways. First, we provide novel evidence that firms' employee-friendly treatment facilitate firms to have more efficient labor investment. Hiring and firing employees exposes firms to the labor market frictions and how firms can efficiently invest in labor can be paramount for corporate

decision-making (Benmelech et al., 2011; Campello et al., 2010; Jung et al., 2014; Matsa, 2018). Moreover, human capital can act strategically by choosing where to work and whether to quit. Our study investigates the role of employee-friendly policies in addressing employees' needs and the interest-alignment between firms and their employees and shows that firms' commitment to employee well-being helps firms to expose less to the labor market frictions via efficient hiring and retention.

Second, our study adds to the growing literature examining the influence of firms' non-financial stakeholders on firm performance (Edmans, 2011; Edmans et al., 2016; Ertugrul, 2013; Faleye and Trahan, 2011; Fauver et al., 2018). Specifically, recent studies investigate the impact of employee-friendly policies on long-term shareholder returns (Edmans, 2011), acquisition performance (Ertugrul, 2013), abnormal stock returns (Faleye and Trahan, 2011), firm value (Fauver et al., 2018) and stock price crash risk (Ben-Nasr and Ghouma, 2018). Nevertheless, it has not examined the empirical question of whether labor investment efficiency affects firm performance. Our study attempts to fill this void in the literature by focusing on the influence of both employee-friendly treatment and labor investment efficiency on firm performance. Despite previous studies already shows that employee-friendly treatment is associated with better performance, our evidence shows that employee-friendly treatment is associated with firm performance both directly and, additionally, via its link with labor investment efficiency. Hence, our study extends the recent literature by addressing the economic implications of employee treatment and labor investment efficiency for firms' value creation.

Third, recent studies also find that firms with high CSR engagement enjoy low information asymmetry and have higher capital investment efficiency (Benlemlih and Bitar, 2018; Cook et al., 2018; Cui et al., 2018). Our study is related but distinct from their studies as our study particularly focuses on one of the important dimensions of

CSR, employee treatment and relations and extend investment efficiency to labor and employment decisions. To the best of our knowledge, this is the first paper to investigate the relationship between employee treatment and labor investment efficiency.

Fourth, we also add to the burgeoning literature on labor investment efficiency by focusing on firms' commitment to employee well-being. Previous literature has documented that financial reporting quality, stock price informativeness, institutional investors' horizons, and laborism can be influential factors for labor investment efficiency (Ben-Nasr and Alshwer, 2016; Ghaly et al., 2017; Jung et al., 2016, 2014). Our study contributes to this emerging stream of literature on the determinants of labor investment efficiency by showing employee treatment is also one of the determinants of labor investment efficiency.

2 HYPOTHESIS DEVELOPMENT

Recent studies have addressed firms' employee treatment schemes and their relevance to firm performance. Many previous studies show that employee-friendly treatment schemes have favorable impact on firms' operation and performance (Edmans, 2011; Edmans et al., 2016; Ertugrul, 2013; Faleye and Trahan, 2011; Fauver et al., 2018). For example, Edmans (2011) finds that employee satisfaction is positively associated with long-term shareholder returns. Fauver et al. (2018) use a sample from 43 countries over the period 2013 to 2014 and find that firms with employee-friendly culture are valued higher and perform better. Mao and Weathers (2015) and Chen et al. (2016) also find that firms treating their employees well produce more and better patents. The empirical evidence above suggests that employee-friendly treatment schemes are in line with the benefits to shareholders.

Another stream of literature examines 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., 2015). For instance, Bae et al. (2011) show that firms treating their employees well maintain low debt ratios and suggest that treating employees well is an important element of their financing policies. Ghaly et al. (2015) also find that firms that are strongly committed to employee well-being tend to hold more cash.

Employee-friendly treatment could potentially contribute to higher labor investment efficiency in three ways. First, one potential channel through which employee-friendly treatment can affect labor investment efficiency is where a firm's reputation for employee friendliness is known by both current and potential employees in the labor market. Employees of firms that devote material corporate resources to employee-friendly treatment perceive their current jobs as superior to alternatives and are likely to be collaborative (Flammer and Luo, 2017). The gift exchange model of efficiency wage theory (Akerlof, 1982) also suggests that employees consider employee-friendly benefits as a gift and reciprocate by exerting greater efforts in their work. Thus, for employees, employee-friendly treatment encourages nurturing and constraining mechanisms that facilitate alignment of interests between employees and their firms, and the benefits of the current position lead to lower employee turnover (Salop, 1979; Zingales, 2000). As a result, firms can better anticipate their employment needs, which may lower the risk of over-investing or under-investing in labor. Equally, employee-friendly treatment helps firms to attract applicants from the labor market (Chow, 1983; Stigler, 1962; Turban and Greening, 1997; Weiss, 1980). Prior research suggests that application decisions are related to corporate reputation, and that job seekers' perception of employers is related to the information available about the firm (Gatewood et al., 1993). Hence, the impact of employee-friendly treatment on reputation can be influential for both firms' retention and recruitment.

Edmans et al. (2016) also suggest that the retention and recruitment benefits of satisfied employees are particularly important in flexible labor markets such as the U.S. Firms with a good reputation for employee treatment will find it relatively easy to attract employees and are less likely to suffer labor under-investment.

Second, stakeholder theory 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; Donaldson and Preston, 1995; Maksimovic and Titman, 1991). A firm's failure to achieve good employee relations can lead to low employee morale and high employee turnover, which can ultimately erode the firm's reputation in the labor market. This may cause parties to implicit contracts to doubt a firm's ability to honor its implicit claims and ultimately transform those agreements into costly explicit contracts (Cornell and Shapiro, 1987). For example, external capital suppliers may increase the cost of capital in order to compensate for the potential risk to future cash flows and value being adversely affected by unsatisfied non-financial stakeholders (e.g., strike, boycott). Several recent studies also highlight the influence of external financing costs in constraining firms' employment decisions (Benmelech et al., 2011; Campello et al., 2010; Matsa, 2018). In contrast, prior studies find that firms having harmonious relations with their stakeholders enjoy better access to finance and lower financing costs (Cheng et al., 2014; Dhaliwal et al., 2011; El Ghoul et al., 2011).[10] As a result, profitable investments are less likely to be missed and firms face lower risks of labor under-investment owing to financial pressure.

Third, Rajan and Zingales (2000, 1998) and Zingales (2000) formalize the human capital theory of corporate governance suggesting that the focus of corporate

[10] Similar views arise within the broader CSR literature (see e.g., Benlemlih and Bitar, 2018; Cheng et al., 2011; Choi et al., 2013; Cook et al., 2018; Cui et al., 2018; Ferrell et al., 2016; Kim et al., 2012) and a recent paper by Flammer and Luo (2017) shows that a large number of CSR programs are employee-related.

governance for the modern firms will shift from addressing agency problems between managers and shareholders to exploring the treatment of general labor force. In this model employee treatment is a crucial component of the governance structure (Guo et al., 2016). Consistent with the human capital theory of corporate governance, several studies highlight the positive effect of employee-friendly treatment on corporate governance (Ferrell et al., 2016; Guo et al., 2016). For instance, Guo et al., (2016) find that employee treatment policies are an important predictor of internal control weaknesses and firms with employee-friendly treatment have a significantly lower propensity for employee-related material weaknesses and financial restatements. Moreover, Ferrell et al., (2016) also find that firms with fewer agency problems tend to engage more in CSR activities and suggest that such activities reduce the adverse impact of managerial entrenchment on firm value.

In contrast to the positive view regarding employee-friendliness, some studies also find that employee-friendly treatment can be a manifestation of agency problems and therefore hampers firms' performance (Atanassov and Kim, 2009; Ben-Nasr and Ghouma, 2018; Cronqvist et al., 2009; Landier et al., 2007; Pagano and Volpin, 2005). A firm's investment in employee benefits can exacerbate its agency problems as managers may seek a good relationship with subordinates by overpaying them (Jensen and Meckling, 1976). For instance, earlier research finds that employee-friendly treatment can aggravate agency costs by serving as an antitakeover device and a tool to help underperforming managers avoid dismissal (Atanassov and Kim, 2009; Pagano and Volpin, 2005). Similarly, Cronqvist et al. (2009) show that entrenched CEOs are more likely to adopt employee-friendly practices and Landier et al. (2007) shows that managers adopt employee-friendly treatment to improve their social interactions with the labor force to gain private benefits. In these cases, employee-friendly treatment can exacerbate agency problems and is expected to have a detrimental effect on labor investment efficiency. Entrenched CEOs are likely

to adopt employee-friendly practices and engage in empire building by over-investing in the labor force. Also, underperforming CEOs may use employee-friendly treatment as a tool to avoid dismissal or prefer to enjoy a peaceful life by giving up profitable labor investment projects and under-invest in labor.

Overall, whether employee-friendly treatment facilitates higher labor investment efficiency is an empirical question. In light of the prior studies showing that employee-friendly treatment generally has a favorable impact on firms' operations, I hypothesize that employee-friendly treatment enables firms to have lower deviations of labor investment from the employment level justified by economic fundamentals, namely higher labor investment efficiency and develop the following hypothesis:

Hypothesis 1*:* Employee treatment is positively associated with labor investment efficiency.

I further examine the impact of both employee friendliness and abnormal net hiring on firm performance. I expect that one of the channels via which employee-friendly treatment and labor investment efficiency can affect value creation is through financial performance. In light of the previous literature suggesting that employee-friendly policies generally have a positive influence on value creation, I hence expect that firms treating their employees well enjoy better firm performance. Conversely, 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 a negative impact on a firm's performance. Therefore, I hypothesize that there is a positive relationship between employee treatment and firm performance but a negative relation between abnormal net hiring and firm performance:

***Hypothesis 2**:* Employee treatment is positively associated with firm performance whereas abnormal net hiring is negatively associated with firm performance.

3 RESEARCH DESIGN

3.1 Measure of employee treatment

In order to assess a firm's employee treatment, I use data from KLD which is based on a variety of sources, including company filings, government data, nongovernmental organization data, and more than 14,000 global media sources. Following previous studies of 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), I construct the employee treatment variable using KLD's rating on *'Employee Relations'*, with a higher net score demonstrating better employee treatment. the primary measure of employee treatment, *EMP_TREAT*, is estimated by adding identified strengths and subtracting identified concerns included in *'Employee Relations'* dimensions each year. The employee treatment variable contains labor-relevant strengths covering union relations, cash profit sharing, employee involvement, and retirement benefits. Following Ertugrul (2013) and Ghaly et al. (2015), I also include the 'work/life benefits' indicator from the *'Diversity'* dimension. For employee treatment concerns, I include concerns regarding union relations, health and safety, retirement benefits, workforce reductions, and other concerns. I construct *EMP_TREAT* as an index of employee-friendliness by summing the indicator variable for strengths and subtracting concerns for each firm. I list the KLD components of the employee treatment proxy in Appendix 2.

In the robustness tests, I test alternative employee treatment measures and use both the *Fortune* magazine's list of the *'100 Best Companies to Work For In America'*, available from the personal website of Alex Edmans[11], plus the employee-relevant components available from the ASSET4 database, including Health & Safety, Employment Quality, Training and Development, and Diversity and Opportunities.

3.2 Measure of labor investment efficiency

To measure labor investment, I use firms' net hiring, the percentage change in the number of employees (Pinnuck and Lillis, 2007). I follow previous literature (Ben-Nasr and Alshwer, 2016; Jung et al., 2014) and estimate labor investment efficiency as the absolute value of the difference between the observed level of labor investment and that justified by economic fundamentals. Abnormal net hiring is the absolute value of the residuals from the following equation (Model 1). The lower the value the higher the labor investment efficiency. Following previous studies (Ben-Nasr and Alshwer, 2016; Jung et al., 2014; Pinnuck and Lillis, 2007), I use equation one to estimate abnormal net hiring but also use several alternative approaches in the robustness section.

$$NET\ HIRE_{it} = \beta_0 + \beta_1 SALES\_G_{it-1} + \beta_2 SALES\_G_{it} + \beta_3 \Delta ROA_{it} + \beta_4 \Delta ROA_{it-1} +$$
$$\beta_5 ROA_{it} + \beta_6 RETURN_{it} + \beta_7 SIZE\ P_{it} + \beta_8 LIQ_{it-1} + \beta_9 \Delta LIQ_{it-1} + \beta_{10} \Delta LIQ_{it} +$$
$$\beta_{11} LEV_{it} + \beta_{12} LOSSBIN1_{it-1} + \beta_{13} LOSSBIN2_{it-1} + \beta_{14} LOSSBIN3_{it-1} +$$

[11] The 'workforce reduction' concern indicates the company has made significant reduction in its workforce in recent years, which may directly link with the percentage change in the number of employees. In untabulated robustness checks, I also use two alternative employee treatment variables that exclude 'workforce reduction' or replace 'workforce reduction' with ''work/life benefits'' concern, and I find the results are qualitatively similar.

$\beta_{15}LOSSBIN4_{it-1} + \beta_{16}LOSSBIN5_{it-1} + Industry\ \ Fixed\ Effect + \varepsilon_{it}$

(1)

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; and *LOSSBIN* is an indicator variable for each 0.005 interval of prior year ROA from 0 to -0.025. In all cases, i indicates the firm and t the year.

Consistent with prior studies (Ben-Nasr and Alshwer, 2016; Jung et al., 2014; Pinnuck and Lillis, 2007), I 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}) and 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}). I report the descriptive statistics and results for Model 1 in Appendix 3.

3.3 Empirical models

My primary analysis of the relationship between employee treatment and labor investment efficiency is based on equation two:

$$AB\_NETHIRE_{it} = \beta_0 + \beta_1 EMP\_TREAT_{it} + \beta_2 MTB_{it-1} + \beta_3 SIZE_{it-1} + \beta_4 LIQ_{it-1} +$$

$$\beta_5 LEV_{it-1} + \beta_6 DIVD_{it-1} + \beta_7 TANGIBLES_{it-1} + \beta_8 LOSS_{it-1} + \beta_9 LABINT_{it-1} +$$

$\beta_{10}SD\_CFO_{it-1} + \beta_{11}SD\_SALES_{it-1} + \beta_{12}SD\_NETHIRE_{it-1} + \beta_{13}UNION_{it-1} +$

$\beta_{14}AB\_INVEST_{it} + Firm\ \ Fixed\ Effect + Year\ \ Fixed\ Effect + \varepsilon_{it}$

(2)

Following previous studies (Ben-Nasr and Alshwer, 2016; Jung et al., 2014), *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 the 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 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. I also include firm and year fixed effects to control for the time-invariant unobservable firm characteristics and time-specific changes in economic conditions. All regressions are estimated with heteroscedasticity robust standard errors that are clustered by firm.

My analyses on the impact of employee treatment and abnormal net hiring on firm performance are based on equation three:

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

(3)

PERFORMANCE$_{it}$ is one of three indicators of firm performance as measured by labor productivity (*SALES*), profitability (*ROA*) and production efficiency (*PRO_EFF*). *SALES* is employee productivity, measured as the natural logarithm of sales divided by the number of employees; *ROA* is return on assets; *PRO_EFF* is firm-level production efficiency (Charnes et al., 1978; Demerjian et al., 2012), which measures the efficiency of a firm relative to the most efficient firm in the same industry estimated by data envelope analysis (DEA).[12] DEA calculates a firm's production efficiency and uses an optimization procedure to maximize the ratio of outputs to inputs. Demerjian et al. (2012) form an efficient frontier by measuring the amount and mix of resources used to generate revenue by the firms within each industry. Firms operating on the frontier are assigned a score of one; the lower the score, the further it is from the frontier. I follow Faleye and Trahan (2011) and include corporate

[12] The production efficiency data is from Demerjian et al. (2012). DEA calculates a firm's production efficiency and uses an optimization procedure to maximize the ratio of outputs to inputs. Demerjian et al (2012) consider one output and seven inputs, all derived from firms' publicly available financial reports. Revenue is the sole output measure; we characterize an able management team as one that generates the highest level of revenue from a given set of inputs. They consider the seven inputs into the revenue production process: Net Property, Plant, and Equipment (PP&E); Net Operating Leases; Net R&D; Purchased Goodwill; Other Intangible Assets; Cost of Inventory; and Selling, General, and Administrative Expenses (SG&A). I obtain the data from the website: http://faculty.washington.edu/pdemerj/data.html. See Demerjian et al. (2012) for more detailed discussions of the DEA approach and the estimation process.

governance (*GOVERN*) as an additional control variable. I include firm and year fixed effect and cluster standard errors at the firm level.

In addition to the tests above, I further investigate whether the effect of employee-friendly treatment on labor investment efficiency is common to most periods or unique to periods of limited financial resources. Several previous studies (Bharath et al., 2013; Buchanan et al., 2018; Lins et al., 2017, 2013) use the 2008-2009 financial crisis as an exogenous shock to firms. For instance, Lins et al. (2017) investigate the value of CSR during the financial crisis and find that high-CSR firms experienced high stock returns, profitability and growth and sales per employee relative to low-CSR firms during the 2008-2009 financial crisis. Buchanan et al. (2018) find that CSR firms have higher firm values before the financial crisis but experience more loss in firm value during the crisis. Following these studies, I use the 2008-2009 financial crisis as an exogenous shock to firms and use it to disentangle the relation between employee treatment and labor investment efficiency. I follow Lins et al. (2017) and Buchanan et al. (2018) and apply difference-in-difference (DID) model with continuous treatment and include firm and time fixed effects to circumvent the endogeneity problem (Meyer, 1995; Roberts and Whited, 2012). I follow Lins et al. (2017) and construct a panel for all the firms in the sample starting in 2007, prior to the onset of the crisis, and ending in 2015. For this panel, I estimate the following DID regression models:

$$AB\_NETHIRE_{it} = \beta_0 + \beta_1 EMP\_FRD_{i2006} * CRISIS_t + \beta_2 CONTROLS_{it-1} + Firm\ Fixed\ Effect + Year\ Fixed\ Effect + \varepsilon_{it} \quad (4)$$

$$AB\_NETHIRE_{it} = \beta_0 + \beta_1 EMP\_FRD_{i2006} * POSTCRISIS_t + \beta_2 CONTROLS_{it-1} + Firm\ Fixed\ Effect + Year\ Fixed\ Effect + \varepsilon_{it}$$

(5)

Consistent with Lins et al. (2017) and Buchanan et al. (2018), I construct *EMP_FRD* by measuring firm's employee treatment in the year 2006 to address the concern that firms change their employee treatment policies in anticipation of, or in response to, the influence from the recent financial crisis. To investigate changes in labor investment efficiency for employee-friendly firms surrounding the financial crisis, I define employee-friendly firms (*EMP_FRD*) as one that has positive employee treatment scores as of the end of the year 2006. Then, I use a propensity score matching (PSM) approach to construct comparable non-employee-friendly firms as the control group in five dimensions: market-to-book, firm size, liquidity, leverage, and industry defined according to Fama-French 48 industries classification. *CRISIS* is a dummy variable set to one for the year 2008 and 2009. *POST_CRISIS* is a dummy variable set to one in the period 2010 to 2015. Other control variables (*CONTROLS*) are the same as those adopted in Model 2. Following Lins et al. (2017), I include firm and year fixed effect and cluster standard errors at the firm level.[13]

3.4 Sample and descriptive statistics

3.4.1 Sample

[13] I also follow Lins et al. (2017) and double cluster standard errors by firm and time, and I find the results are qualitatively similar.

The sample selection begins with all KLD firm-year from 1990-2015. I merge the data with COMPUSTAT for financial data and CRSP to obtain total annual stock return and also exclude observations from financial services (primary two-digit SIC codes between 60-69). I estimate the expected level of investment in labor based on economic fundamentals using Model 1 for all firms listed in COMPUSTAT during the period between 1991 and 2016. I calculate the inverse proxy of labor investment efficiency as absolute values of the difference between the observed and the expected values of labor investment. I obtain the industry-level rate of industry unionization from the website of UNIONSTATS which provides time-variant estimates of union membership and coverage data by industry. After merging with the above databases, the final sample consists of an unbalanced panel of 20,583 firm-year observations from more than 3,000 U.S. firms. In order to test the impact of employee treatment and abnormal net hiring on firm performance, I exclude firm-years with insufficient data to compute Model 3, resulting in a test sample of 12,669 to 13,681 firm-years observations.

3.4.2 Descriptive statistics and univariate results

In order to obtain the primary measure of abnormal net hiring, I first estimate Model 1. I report the descriptive statistics and results of Model 1 in Appendix A-3. Following Pinnuck and Lillis (2007), I winsorize all continuous variables at the 1st and 99th percentiles of their respective distribution to reduce the influence of outliers. the 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), Jung et al. (2014) and Ben-Nasr and Alshwer (2016). The results and the sign of each variable are consistent with the results of these 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 the measure of abnormal net hiring, *AB NETHIRE*, an inverse measure of labor investment efficiency.

In panel A of Table 1, I 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 one standard deviation of 0.18. This is close to Jung et al. (2014) results with a mean of 0.11 and a median of 0.07 with a standard deviation of 0.13 for abnormal net hiring. I 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 (i.e., labor over-investment) whilst negative abnormal net hiring (*UNDER_LABOR*) indicates that actual net hiring is less than expected (i.e., labor under-investment). Consistent with Ghaly et al. (2015), the 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. The descriptive statistics of other control variables are generally consistent with Biddle et al. (2009) and Jung et al. (2014). For Model 3, the descriptive statistics include three firm performance measures, *SALES*, *ROA* and *PRO_EFF* and corporate governance (*GOVERN*). In Panel B of Table 1, I report the frequency of firms in the sample by year plus the mean employee treatment and abnormal net hiring variables per year. Given KLD only covers firms that comprise the Standard & Poor's (S&P) 500 and the Domini 400 Social Index until 2000, the sample by year before 2002 is relatively small. In 2001, it further extended its coverage to firms in the Russell 1,000 Index, which results in an increase in sample size after 2002.

TABLE 1

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

	N	Mean	Median	Std.Dev	25th Per	75th Per
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	0.053	0.037	0.058	0.022	0.062
SD_SALESit-1	20,583	0.144	0.103	0.135	0.060	0.180
SD_NETHIREit-1	20,583	0.177	0.111	0.237	0.061	0.201
UNIONit-1	20,583	0.104	0.074	0.089	0.040	0.143
INVESTit	20,583	0.108	0.084	0.171	0.046	0.120
SALESit	13,681	5.682	5.640	0.880	5.190	6.130
ROAit	13,681	0.044	0.054	0.127	0.017	0.097
PRO_EFFit	12,669	0.345	0.294	0.168	0.240	0.399
GOVERNANCEit-1	13,681	-0.274	0.000	0.687	-1.000	0.000

Panel A of Table 1 presents the descriptive statistics for the 20,583 firm-year observations over the period between 1995 and 2015. This table presents the number of observations, the mean, the median, the standard deviation, and the values for the first and the third quartile for all the variables in Equation 2 and Equation 3.

TABLE 1

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

Panel B of Table 1 presents the mean abnormal net hiring (*AB_NETHIRE*) and employee treatment (*EMP_TREAT*) by year over the period between 1995 and 2015.

In Panel C of Table 1, I contrast the descriptive statistics of firms with positive, zero, and negative employee treatment scores. I define firms with positive employee treatment scores as employee-friendly firms, and firms with negative employee treatment scores as non-employee-friendly firms. The comparison indicates that firms with employee-friendly treatment policies have a 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 a mean of 12.4% and a median of 7.5% for abnormal net hiring. The differences for the firm performance variables are also all statistically significant at the 1% level, with firms with positive employee treatment outperforming those with negative.

Table 2 presents the Pearson correlation coefficients for all variables in Model 2 and 3. I 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 consistent with the expectations. For instance, I find firms with higher growth options (*MTB*), higher levels of liquidity (*LIQ*) and higher concurrent abnormal non-labor investments (*INVEST*) are more likely to have higher abnormal net hiring. However, larger firms (*SIZE*), firms paying dividends in the past (*DIVD*) and firms with a higher level of tangibility (*TANGIBLES*) are negatively associated with abnormal net hiring. In addition, I generally find abnormal net hiring is negatively associated with firm performance whereas employee treatment is positively associated with firm performance.

TABLE 1

Panel C: Descriptive Statistics by Employee-Friendly versus Non-Employee-Friendly Firms

	Employee-Friendly Firms (A)			Neutral Firms			Non-Employee-Friendly Firms (B)			Difference Tests (A-B) p-value	
	N	Mean	Median	N	Mean	Median	N	Mean	Median	t-test	Wilcoxon Test
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
EMP_TREATit	3,030	1.271	1.000	13,079	0.000	0.000	4,474	-1.215	-1.000	< 0.001	< 0.001
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
ROAit	2,165	0.063	0.066	8,569	0.042	0.053	2,947	0.038	0.048	< 0.001	< 0.001
PRO_EFFit	1,966	0.434	0.370	7,985	0.324	0.281	2,718	0.341	0.293	< 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

Panel C of Table 1 reports the average values of the firm characteristics for the full sample and subsamples based on the sign of the employee treatment scores. I also report the significance of the differences in means and medians between firms with positive and negative employee treatment scores. The sample period is from 1995 to 2015. N denotes the number of observations. *, **, *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels.

TABLE 2

Correlations among Employee Treatment, Abnormal Net Hiring, and Other Variables

	1	2	3	4	5	6	7	8
1. AB_NETHIRE	1							
2. EMP_TREAT	-0.030***	1						
3. MTB	0.023***	0.070***	1					
4. SIZE	-0.108***	0.153***	0.192***	1				
5. LIQ	0.146***	0.024***	0.051***	-0.198***	1			
6. LEV	0.036***	-0.037***	-0.018***	0.108***	-0.224***	1		
7. DIVD	-0.123***	0.042***	-0.013*	0.369***	-0.268***	0.046***	1	
8. TANGIBLES	-0.072***	-0.021***	-0.114***	0.147***	-0.327***	0.255***	0.251***	1
9. LOSS	0.102***	-0.074***	-0.017**	-0.300***	0.161***	0.057***	-0.272***	-0.079***
10. LABINT	-0.038***	-0.081***	0.00400	-0.100***	-0.105***	-0.087***	0.019***	0.026***
11. INVEST	0.332***	-0.00900	0.064***	-0.093***	0.074***	0.040***	-0.096***	-0.041***
12. SD_CFO	0.170***	-0.029***	0.159***	-0.289***	0.253***	-0.075***	-0.275***	-0.227***
13. SD_SALES	0.097***	-0.061***	0.029***	-0.199***	0.00200	0.00100	-0.147***	-0.184***
14 SD_NETHIRE	0.141***	-0.044***	0.000	-0.109***	0.069***	0.108***	-0.184***	-0.083***
15. UNION	-0.020***	0.061***	-0.067***	0.095***	-0.026***	0.061***	0.136***	0.205***
16. SALES	-0.040***	0.094***	-0.024***	0.200***	-0.100***	0.097***	0.086***	0.134***
17. ROA	-0.149***	0.068***	0.053***	0.234***	-0.154***	-0.077***	0.189***	0.045***
18 PRO_EFF	-0.012*	0.159***	0.146***	0.521***	-0.087***	0.017**	0.158***	-0.018**
19. GOVERNANCE	-0.00200	0.026***	-0.037***	-0.199***	0.038***	-0.027***	0.028***	0.061***

TABLE 2
(continue)

	9	10	11	12	13	14	15	16	17	18	19
9. LOSSit-1	1										
10. LABINTit-1	-0.067***	1									
11. INVESTit	0.088***	-0.027***	1								
12. SD_CFOit-1	0.266***	-0.036***	0.200***	1							
13. SD_SALESit-1	0.087***	0.091***	0.081***	0.335***	1						
14 SD_NETHIREit-1	0.133***	-0.053***	0.070***	0.161***	0.205***	1					
15. UNIONit-1	-0.031***	-0.155***	-0.047***	-0.095***	-0.076***	-0.00100	1				
16. SALESit	-0.074***	-0.498***	-0.00900	-0.019***	0.083***	-0.00500	0.101***	1			
17. ROAit	-0.430***	0.086***	-0.223***	-0.316***	-0.032***	-0.133***	0.013*	0.150***	1		
18 PRO_EFF	-0.168***	-0.059***	-0.00100	-0.062***	0.00100	-0.050***	-0.038***	0.278***	0.239***	1	
19. GOVERNANCEit-1	0.00700	0.027***	0.0110	0.032***	-0.00100	-0.016**	0.042***	-0.030***	-0.013*	-0.144***	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 0.01 levels.

4 RESULTS

4.1 The Impact of Employee Treatment on Abnormal Labor Investment

Table 3 shows the main results for the relationship between employee treatment scores (*EMP_TREAT*) and abnormal net hiring. Column 1 shows the results for the 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 support the hypothesis, suggesting that higher employee treatment scores are associated with lower deviations of labor investment from the level justified by economic fundamentals, i.e., higher labor investment efficiency. Moreover, I find *EMP_TREAT* is also economically highly significant. The results show that a one standard deviation increase in employee treatment is associated with a 4.3% decrease in labor investment inefficiency.[14] I also find that larger firms and firms with a higher level of tangibility exhibit more efficient labor investments, whilst those with a higher level of liquidity, leverage and higher abnormal non-labor investments are more likely to suffer inefficient labor investment.

In columns 2 and 3 of Table 3, I re-estimate the 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 suggest

[14] The sample average value *AB_NETHIRE* is 0.122. The coefficient for *EMP_TREAT* is equal to -0.0065 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.

that firms with employee-friendly treatment face lower propensities of both labor overinvestment and underinvestment. In column 4 of Table 3, I use the Fama-MacBeth approach to estimate the baseline regression model and I find the results are similar to the main results in column 1. Finally, in column 5, I restrict the sample to firms with positive (*EMP_TREAT>0*) or negative (*EMP_TREAT<0*), but not neutral (*EMP_TREAT=0*) employee treatment performance and the results are consistent with the result reported in column 1. The negative relation between employee treatment (*EMP_TREAT)* and abnormal net hiring (*AB_NETHIRE*) in all regressions is inconsistent with the view that employee-friendly treatment is a manifestation of agency costs, which would imply an impact on labor investment but not divestment. Thus, the results in Table 3 are consistent with Hypothesis 1.

TABLE 3

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	-0.0065***	-0.0134**	0.0043***	-0.0043***	-0.0076**
	(-3.19)	(-2.01)	(2.77)	(-4.03)	(-2.48)
MTBit-1	0.0003	0.0031**	0.0007	-0.0005	-0.0008
	(0.52)	(2.58)	(1.40)	(-1.35)	(-1.11)
SIZEit-1	-0.0891***	-0.1343*	0.0535**	-0.0184	-0.0941*
	(-3.27)	(-1.75)	(2.48)	(-1.72)	(-1.87)
LIQit-1	0.0090***	0.0123***	-0.0022	0.0114***	0.0058*
	(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	0.0073	0.0078	-0.0068*	-0.0147***	-0.0014
	(1.20)	(0.39)	(-1.84)	(-3.61)	(-0.14)
TANGIBLESit-1	-0.0606**	-0.0791	0.0518**	-0.0087	-0.0610
	(-2.15)	(-1.19)	(1.98)	(-1.26)	(-1.36)
LOSSit-1	-0.0037	-0.0035	-0.0070**	0.0151**	-0.0003
	(-0.86)	(-0.28)	(-2.05)	(2.09)	(-0.04)
LABINTit-1	-1.9138**	-11.1029***	-2.2398***	-0.4089***	-1.2774
	(-2.09)	(-3.78)	(-4.40)	(-3.03)	(-1.15)
INVESTit	0.3249***	0.4249***	-0.2339***	0.3678***	0.4287***
	(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	-0.1537***	-0.3022***	0.0095	0.0607***	-0.2360***
	(-8.47)	(-6.86)	(1.25)	(4.67)	(-4.81)
UNIONit-1	0.0352	0.0587	0.0182	-0.0007	0.1302**
	(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%

This table presents the results from regressing abnormal net hiring on employee treatment and other control variables over the sample period between 1995 and 2015. Column 1 shows the results regressing abnormal net hiring (*AB_NETHIRE*) on employee treatment and control variables. Column 2 shows the results regressing labor overinvestment (*OVER_LABOR*) on employee treatment and control variables. Column 3 shows the results regressing labor underinvestment (*UNDER_LABOR*) on employee treatment and control variables. Column 4 presents the results of a Fama-MacBeth regression. Column 5 excludes the firms with neutral employee treatment scores (*EMP_TREAT* = 0).

*, **, *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels.
All test statistics and significance level are calculated based on the standard error adjusted by a one-dimensional cluster at the firm level.

4.1.1 Over- and Under-Hiring (Firing)

My results so far show that employee-friendly treatment is associated with higher labor investment efficiency. In order to further investigate the potential channel through which employee-friendly treatment contributes to higher labor investment efficiency I further decompose over- and underinvestment, based on whether the expected level of net hiring from Model (1) is positive or negative. In Table 4, column 1 and 2, I further decompose labor overinvestment into over-hiring (*OVERHIRING*) and under-firing (*UNDERFIRING*) based on the actual net hiring and expected amount. I define over-hiring (*OVERHIRING*) as actual net hiring exceeds the expected amount when expected net hiring is positive and under-firing (*UNDERFIRING*) as actual net hiring exceeds the expected amount when expected net hiring is negative. In the same vein, I decompose labor underinvestment into under-hiring (*UNDERHIRING*) and over-firing (*OVERFIRING*) in column 3 and 4. By further decomposing over- and underinvestment, I can test whether the favorable impact of employee treatment on labor investment efficiency is from the benefits of employee retention within firms or improved recruitment. I re-estimate the baseline model for each subsample and the results show that the estimated coefficient on *EMP TREAT* is negative and statistically significant for over-hiring (*OVERHIRING*) and positive and statistically significant for under-hiring (*UNDERHIRING*). Hence, the results indicate that employee-friendly treatment contributes to higher labor investment efficiency by reducing both over and under-hiring but have little effect on over and under-firing.

TABLE 4

Potential Mechanism: Over- and Under-Hiring (Firing)

	(1) ***OVER HIRING***	*(2)* ***UNDER FIRING***	*(3)* ***UNDER HIRING***	*(4)* ***OVER FIRING***
EMP_TREATit	-0.0071**	-0.0098	0.0041***	-0.0078
	(-2.11)	(-0.28)	(3.20)	(-0.85)
MTBit-1	0.0029***	-0.0007	0.0008	0.0008
	(3.03)	(-0.28)	(1.62)	(0.36)
SIZEit-1	-0.0689*	0.1514	0.0545**	-0.0077
	(-1.75)	(0.60)	(2.22)	(-0.09)
LIQit-1	0.0068**	-0.0054	-0.0007	-0.0051
	(2.63)	(-0.57)	(-0.31)	(-0.92)
LEVit-1	0.0335	-0.1221	-0.0538***	-0.1772**
	(1.53)	(-1.31)	(-6.63)	(-2.78)
DIVDit-1	0.0048	-0.0577	-0.0038	-0.0218
	(0.49)	(-1.02)	(-1.07)	(-0.74)
TANGIBLESit-1	-0.0355	0.0189	0.0485*	0.3347***
	(-0.79)	(0.10)	(1.95)	(3.30)
LOSSit-1	0.0050	0.0622**	-0.0060*	-0.0073
	(0.63)	(2.35)	(-1.77)	(-0.63)
LABINTit-1	-4.3269***	-30.6010*	-1.7338***	-9.5145***
	(-3.25)	(-1.91)	(-3.70)	(-4.31)
INVESTit	0.2338***	0.0844	-0.2335***	0.2220
	(9.70)	(0.77)	(-5.87)	(1.21)
SD_CFOit-1	-0.0090	0.4069	-0.0513	-0.1990
	(-0.12)	(1.44)	(-0.89)	(-0.64)
SD_SALESit-1	-0.0218	0.3168	0.0204	0.0654
	(-0.70)	(1.35)	(1.41)	(0.73)
SD_NETHIREit-1	-0.1081***	-0.3740**	0.0037	0.0775**
	(-5.02)	(-2.18)	(0.50)	(2.15)
UNIONit-1	0.0846	0.5654	0.0227	-0.2335
	(1.03)	(1.48)	(0.69)	(-1.48)
Firm Fixed Effect	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes
N	5,716	811	12,791	1,265
Adjusted R2	29.8%	40.8%	33.8%	18.4%

Column 1 to 4 present the results of estimating the baseline model on various subsets of the sample from 1995 to 2015. Overhiring is the actual net hiring that exceeds the expected amount, when expected net hiring is positive (Column 1). Underfiring is the actual net hiring that exceeds the expected amount when expected net hiring is negative (Column 2).

Underhiring is actual net hiring that is less than the expected amount when the expected amount if positive (Column 3). Overfiring is actual net hiring that is less than the expected amount when the expected amount is negative (Column 4).

*, **, *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels. All test statistics and significance level are calculated based on the standard error adjusted by a one-dimensional cluster at the firm level.

4.1.2 Financial Crisis as an Exogenous Shock

My evidence so far shows that employee-friendly treatment is associated with high labor investment efficiency across our sample period. In the decomposition of over- and underinvestment test earlier, I find that the favourable influence of employee-friendly treatment on labor investment efficiency is primary driven by effective hiring in expansion periods (i.e., the expected level of net hiring is positive and the economic fundamentals suggest a firm's labor force should expand). In contrast, I do not find significant evidence indicating the positive effect of employee-friendly treatment on labor investment efficiency in contraction period (i.e., underfiring and overfiring, when the expected level of net hiring is negative and the economic fundamentals suggest a firm's labor force should contract). One significant period for firms' labor force contraction can be financial crisis when firms face limited financial resources over an uncertain duration and are more likely to significantly contract their investments (Almeida et al., 2012). In this section, I follow Lins et al. (2017) and Buchanan et al. (2018) and use the 2008-2009 financial crisis as an exogenous shock to investigate whether the positive impact of employee-friendly treatment on labor investment efficiency is unique to the financial crisis or common to most periods.

Following Lins et al. (2017) and Buchanan et al. (2018), I apply a difference-in-difference (DID) model with continuous treatment and include firm and time fixed effects and use non-employee-friendly firms as a control group to difference out possible confounding factors and isolate the effect of employee treatment on labor investment efficiency. As for Lins et al. (2017), I construct a panel for all the firms in our sample starting in 2007, prior to the onset of the crisis, and ending in 2015. The firm's employee-friendly treatment dummy (*EMP_FRD*) itself is absorbed by the firm

fixed effects and financial crisis dummies (*CRISIS* and *POST_CRISIS*) are absorbed by the year fixed effects. To capture the DID of employee-friendly firms' labor investment efficiency, the key variables of interest are the interaction terms, *EMP_FRD * CRISIS* in Model 4 and *EMP_FRD * POST_CRISIS* in Model 5.

In Table 5, I present the results of the DID regressions for the different response of labor investment efficiency to the financial crisis and post-financial crisis period between employee-friendly firms and non-employee-friendly firms. Specifically, I find the coefficient of interest, *EMP_FRD * CRISIS*, is positive and statistically significant. This evidence suggests that firms with employee-friendly policies find it difficult to adjust their labor investment efficiently during financial turmoil periods. In contrast, I find the coefficient estimate on the interaction term *EMP_FRD * POST_CRISIS*, is negative and significant, which suggests that the favourable effect of employee-friendly treatment on labor investment efficiency found during the post-crisis period. Buchanan et al. (2018) find that CSR firms have higher firm values in the non-financial crisis period but experience more loss in firm value during the crisis. Specifically, they find that CSR engagement enhances firm value through reduced conflict of interest between managers and non-investing stakeholders in non-financial crisis period whereas CSR-related costs can outweigh conflict resolution benefits during the financial crisis. My results reflect their findings and show that employee-friendly treatment facilitates efficient labor investment in the post-financial crisis period but not during the financial turmoil period. In light of Buchanan et al. (2018), one potential reason could be that firms' financial resources become more valuable and the expected return on investment falls in financial crisis period, agency conflicts can be severe and outweigh conflict resolution benefits. Overall, the results in Table 5 suggest that the effect of employee-friendly treatment on labor investment efficiency

varies with economic conditions and the costs of adopting employee-friendly policies can outweigh the benefits when firms are financially stressed.

TABLE 5

The Different Response of Labor Investment Efficiency to the Financial Crisis and Post-Financial Crisis Period between Employee-Friendly Firms and Non-Employee-Friendly Firms

	OLS		
	(1) ***AB_NETHIRE***	***(2)*** ***AB_NETHIRE***	***(3)*** ***AB_NETHIRE***
*EMP_FRD2006 * CRISISt*	0.0428***		0.0233**
	(3.86)		(2.54)
*EMP_FRD2006 * POST_CRISISt*		-0.0402***	-0.0246**
		(-3.39)	(-2.36)
MTBit-1	-0.0028	-0.0028	-0.0028
	(-1.63)	(-1.84)	(-1.43)
SIZEit-1	-0.1568	-0.1547	-0.1540
	(-1.38)	(-1.35)	(-1.35)
LIQit-1	0.0003	0.0003	0.0003
	(0.04)	(0.04)	(0.04)
LEVit-1	0.0124	0.0136	0.0125
	(0.36)	(0.41)	(0.37)
DIVDit-1	0.0365	0.0360	0.0362
	(1.24)	(1.23)	(1.23)
TANGIBLESit-1	0.1011	0.0851	0.0868
	(0.79)	(0.67)	(0.68)
LOSSit-1	-0.0091	-0.0080	-0.0085
	(-0.74)	(-0.67)	(-0.70)
LABINTit-1	0.2551	0.1803	0.1943
	(0.04)	(0.03)	(0.03)
INVESTit	0.6579***	0.6576***	0.6572***
	(4.29)	(4.30)	(4.29)
SD_CFOit-1	0.4237	0.4210	0.4192
	(0.84)	(0.83)	(0.83)
SD_SALESit-1	0.0417	0.0361	0.0386
	(0.64)	(0.55)	(0.59)
SD_NETHIREit-1	-0.0827	-0.0854	-0.0852
	(-1.25)	(-1.32)	(-1.31)
UNIONit-1	0.2707*	0.2625*	0.2637*
	(2.01)	(1.93)	(1.94)
Firm Fixed Effect	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes
N	1,446	1,446	1,446
Adjusted R2	24.0%	24.0%	24.0%

This table presents the results from the DID regression of labor investment efficiency on the indicators of employee-friendly firms (*EMP_FRD*) and financial crisis (*CRISIS*) or post-financial crisis (*POST_CRISIS*). *EMP_FRD* is set equal to one if a firm has positive employee treatment scores as of the year 2006, and zero otherwise. *CRISIS* is set equal to one if the time period is between 2008 and 2009, and equals zero otherwise. Other variables are the same in Model 2 and are defined in Appendix

*, **, *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels. All test statistics and significance level are calculated based on the standard error adjusted by a one-dimensional cluster at the firm level.

4.2 The Impact of Employee Treatment and Abnormal Net Hiring on Firm Performance

To demonstrate the economic implications of employee treatment (*EMP TREAT*) and abnormal net hiring (*AB_NETHIRE)*, I investigate the impact of employee treatment and abnormal net hiring on three measures of firm performance: sales per employee (*SALES)*, return on assets (*ROA*) and production efficiency (*PRO_EFF*). Given that previous research (Edmans, 2011; Edmans et al., 2016; Ertugrul, 2013; Faleye and Trahan, 2011; Fauver et al., 2018) suggests that employee-friendly policies positively influence value creation, I expect that firms treating their employees well will have better performance. In contrast, given abnormal net hiring captures the deviation of labor investment from the employment level justified by a firm's underlying economics, I predict that abnormal net hiring has a negative impact on firm performance.

The results in Table 6 confirm the predictions in Hypothesis 2. I find the estimated coefficients on employee treatment are positive and significant when the return on assets (*ROA*) and production efficiency (*PRO_EFF*) are the dependent variables, indicating that employee-friendly treatment positively enhances firm performance. However, I do not find significant results for sales per employee (*SALES*). On the other hand, I find that the coefficients of abnormal net hiring (*AB NETHIRE)* are all negative and statistically significant, suggesting that abnormal net hiring adversely affect firms' labor productivity, profitability, and production efficiency. Moreover, I also find *EMP_TREAT* and *AB_NETHIRE* are also economically highly significant. The results show that a one standard deviation increase in employee treatment and abnormal net hiring is associated with a 9.2% increase and a 12.4%

decrease in *ROA* respectively.[15] Overall, the tests for the impact of employee treatment and abnormal net hiring on firm performance suggest that employee-friendly treatment policies enhance firm performance whereas sub-optimal net hiring is costly in terms of firm performance.

[15] The sample average value *ROA* is 0.044. The coefficient for *EMP_TREAT* is equal to 0.00501 and its standard deviation is equal to 0.804. A one standard deviation increases in *EMP_TREAT* is associated with a 9.2% increase in *ROA* (0.00501*0.804/0.044) = 0.092. The coefficient for *AB_NETHIRE* is equal to -0.034 and its standard deviation is equal to 0.161. A one standard deviation increases in *AB_NETHIRE* is associated with a 12.4% decrease in ROA (-0.034*0.161/0.044) = -0.124.

TABLE 6

The Effect of Employee Treatment and Abnormal Net Hiring on Labor Productivity and Profitability

	(1) SALES	*(2) ROA*	*(3) PRO_EFF*
EMP_TREATit-1	-0.0002	0.0050***	0.0119***
	(-0.03)	(3.62)	(5.22)
AB_NETHIREit-1	-0.1137***	-0.0350***	-0.0136*
	(-3.80)	(-3.66)	(-1.78)
SIZEit-1	0.4890***	0.1338***	0.1445***
	(4.57)	(5.52)	(5.73)
LIQit-1	-0.0314***	-0.0011	-0.0030*
	(-3.69)	(-0.72)	(-1.84)
LEVit-1	-0.0648**	-0.0339***	-0.0147
	(-2.15)	(-2.89)	(-1.44)
MTBit-1	-0.0007	0.0031***	0.0016***
	(-0.40)	(4.87)	(3.54)
PPEit-1	-0.0080	-0.0035	-0.0316
	(-0.07)	(-0.16)	(-1.01)
INVESTit-1	-0.2744***	-0.0316*	0.0345***
	(-7.63)	(-1.79)	(4.13)
LOSSit-1	-0.0257**	-0.0165***	-0.0030
	(-2.26)	(-4.32)	(-0.89)
SALESGROWTH1it-1	0.3088***	0.0577***	0.0516***
	(10.42)	(7.65)	(6.88)
SALESGROWTH2it-1	0.1685***	0.0321***	0.0202***
	(5.39)	(5.78)	(4.36)
GOVERNANCEit-1	0.0054	0.0031**	-0.0044**
	(1.07)	(2.07)	(-2.15)
Firm Fixed Effect	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes
N	13,681	13,681	12,669
Adjusted R2	92.9%	57.8%	69.4%

This table presents the results from regressing labor productivity, profitability and production efficiency on employee treatment, abnormal net hiring and other control variables as dependent variables. Column 1 shows the results of the regression using employee productivity measured as the natural logarithm of sales per employee as the dependent variable. Column 2 shows the results of the regression using the return on assets as the dependent variable. Column 3 shows the results of the regression using production efficiency as the dependent variable.

4.3 Endogeneity Concerns

4.3.1 Omitted Variable and Reverse Causality Concern: Non-Labor Dimensions of CSR

In this section, I examine the non-labor dimensions of firms' social performance on labor investment efficiency. 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. The main reason for me to investigate the impact of the 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 I report in the previous section. If a firm's good employee treatment is merely a reflection of a firm's overall social performance/social capital, or omitted variables such as performance, management competence and/or strategic advantage are driving the results, I might expect that characteristic to similarly affect other dimensions of CSR. If I find a significant effect on other elements of CSR, it is strongly suggestive that the result for employee treatment may be driven by endogeneity.

I test the impact of each dimension of CSR on abnormal net hiring in Table 7, which 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. Five social dimensions are very different from employee treatment: Environment; Community; Diversity; Product; and Human Rights. The other, employee relations, includes but extends, the dimensions I labeled employee treatment. If reverse causality or omitted variables drive the relationship, I should

observe significant results between abnormal net hiring and these additional social dimensions. If it is employee treatment policies that drive more efficient labor investment, I should only observe significant results between employee relations and labor investment efficiency.

TABLE 7

The Effect of CSR Dimensions on Abnormal Net Hiring

	(1) *AB_ NET HIRE*	*(2)* *AB_ NET HIRE*	*(3)* *AB_ NET HIRE*	*(4)* *AB_ NET HIRE*	*(5)* *AB_ NET HIRE*	*(6)* *AB_ NET HIRE*
ENVIRONMENTit	0.0012					
	(0.68)					
COMMUNITYit		-0.0000				
		(-0.01)				
EMP_RELATIONit			-0.0048***			
			(-3.18)			
DIVERSITYit				-0.0022		
				(-1.48)		
PRODUCTit					0.0007	
					(0.25)	
HUMAN_RIGHTSit						0.0012
						(0.25)
MTBit-1	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003
	(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	0.0090***	0.0090***	0.0090***	0.0090***	0.0090***	0.0090***
	(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	0.0073	0.0073	0.0075	0.0073	0.0073	0.0073
	(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	-0.0031	-0.0031	-0.0035	-0.0030	-0.0031	-0.0031
	(-0.72)	(-0.72)	(-0.81)	(-0.69)	(-0.72)	(-0.72)
LABINTit-1	-1.9619**	-1.9536**	-1.8941**	-1.9397**	-1.9548**	-1.9561**
	(-2.14)	(-2.14)	(-2.07)	(-2.12)	(-2.14)	(-2.14)
INVESTit	0.3246***	0.3246***	0.3248***	0.3247***	0.3246***	0.3247***
	(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	-0.1535***	-0.1536***	-0.1539***	-0.1539***	-0.1536***	-0.1536***
	(-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%

This table presents the results from regressing abnormal net hiring on individual components of CSR and other control variables over the period between 1995 and 2015. The individual components of CSR are environment (*ENVIRONMENT*), community (*COMMUNITY*), employee relations (*EMP_RELATION*), diversity (*DIVERSITY*), product (*PRODUCT*) and human rights (*HUMAN_RIGHTS*).

*, **, *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels. All test statistics and significance level are calculated based on the standard error adjusted by a one-dimensional cluster at the firm level.

In Table 7, the results show that only the employee relation variable is significantly associated with abnormal net hiring[16]. These results are therefore consistent with the contention that it is the employee-related social dimensions that affect abnormal net hiring instead of a firm's social performance/social capital in general. They are also inconsistent with the contention that labor investment efficiency impacts on CSR, or that labor investment efficiency and CSR are both caused by an omitted correlated variable such as management competence or competitive advantage.

4.3.2 Reverse causality: 2SLS estimation using instrumental variables

Despite examining the non-labor dimensions of social performance, and incorporating an extensive list of control variables, I cannot rule out the possibility that the results suffer from endogeneity. For instance, it could be argued that firms with high labor investment efficiency provide the resources for management to specifically treat their employees well, rather than employee-friendly treatment generating efficient labor investment decisions. In order to address this concern, I use an instrumental variable approach. First, as an instrument for employee treatment of firm *i* in year *t*, I 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 (Jiraporn et al., 2014; Wang and Pirinsky, 2010), and employee welfare and treatment practices are likely to be affected by firms' geographic proximity. In addition, in the spirit of Lin et al. (2011) and Laeven and

[16] Here, I use the 'employee relations' (*EMP_REL*) 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, I find the results are consistent if I use the 'employee treatment' (*EMP_TREAT*).

Levine (2009), I 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 the 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 be correlated within given industries or states, but the industry-level and state-level employee treatment is not related to the labor investment efficiency of a single firm.

In Table 8, I report results for Model 2 and 3 using instrumental variables estimated using 2SLS. The first column of each set of test reports the first-stage results, indicating a strong correlation between the 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. These results confirm the negative and significant association between employee treatment and abnormal net hiring, which is consistent with the results generated from the baseline OLS regressions. Moreover, the results also generally indicate that the favorable impact of employee-friendly treatment, and the detrimental impact of abnormal net hiring on firm performance. In untabulated results, I generate similar results using GMM and LIML. Across all models, the two instrumental variables pass both the Cragg and Donald (1993) instrument relevance test and the Sargan (1958) over-identification test.

TABLE 8

The Effect of Employee Treatment on Abnormal Net Hiring and the Effect of Employee Treatment and Abnormal Net Hiring on Employee Productivity, Profitability and Production Efficiency

	First Stage	*Second Stage*	*First Stage*	*Second Stage*	*First Stage*	*Second Stage*	*First Stage*	*Second Stage*
	(1) EMP_ TREAT	*(1) AB_ NETHIRE*	*(2) EMP_ TREAT*	*(2) SALES*	*(3) EMP_ TREAT*	*(3) ROA*	*(4) EMP_ TREAT*	*(4) PRO_EFF*
EMP_TREAT		-0.0207***		-0.0176		0.0029*		0.0340***
		(-2.64)		(-1.05)		(1.71)		(5.12)
AB_NETHIRE				-0.1161***		-0.0290***		-0.0131*
				(-3.87)		(-4.69)		(-1.76)
EMP_TREAT_STATE	0.7252***		0.6935***		0.6935***		0.6088***	
	(11.52)		(13.12)		(13.12)		(8.28)	
EMP_TREAT_INDUSTRY	0.8701***		0.8279***		0.8279***		0.8477***	
	(13.21)		(15.30)		(15.30)		(14.90)	
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	18,428	18,428	13,565	13,565	13,565	13,565	12,064	12,064
Adjusted R2	51.2%	35.6%	54.8%	94.7%	54.8%	63.4%	54.8%	73.4%
First-stage F-statistic	23.96		36.69		36.69		25.95	
First stage Cragg-Donald F-test statistics	777.64		1023.45		1023.45		758.27	

First-stage Cragg and Donald Test	(p-value < 0.001)		(p-value < 0.001)		(p-value < 0.001)		(p-value < 0.001)	
Hansen J-statistic (Overidentification Test)		(p-value = 0.555)		(p-value = 0.324)		(p-value = 0.425)		(p-value = 0.649)

This table presents the results from instrumental variable regressions that control for the endogeneity of employee treatment. I 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 employee productivity, profitability, and production efficiency (*SALES, ROA and PRO_EFF*).

*, **, *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels.
All test statistics and significance level are calculated based on the standard error adjusted by a one-dimensional cluster at the firm level.

4.3.3 Fortune's Best 100 List, ASSET4 and PSM approach

My 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) and better firm performance. 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; Chen et al., 2016; Edmans, 2011; Faleye and Trahan, 2011; Ghaly et al., 2015; Guo et al., 2016). If effective, this would be a valuable alternative which would provide a useful robustness test. One potential concern is that the *Fortune List* will be biased towards large and successful firms. Given this reservation, a better contrast between the performance of the *Fortune List* firms and other firms might be achieved using the propensity score matching (PSM) approach. I use the PSM approach by matching control firms with firms listed in the *Fortune List* based on growth option (*MTB*), firm size (*SIZE*), liquidity (*LIQ*) and leverage (*LEV*) plus industry and year. Firms listed in the *Fortune List* are viewed as treated firms and I select the nearest neighbor as the control firm. I find that the *Fortune List* produces results which are compatible with those based on the KLD employee treatment score and the PSM results in Table 9 confirm that employee-friendly firms generally enjoy low abnormal net hiring, i.e., higher labor investment efficiency and better financial performance. To examine the robustness of the results, I further use an alternative employee treatment proxy from the ASSET4 database. The employee-relevant variables in ASSET4 are under the Social category and I construct the employee treatment proxy from four employee-relevant variables:

Health & Safety, Employment Quality, Training and Development, and Diversity and Opportunities. In untabulated results, I find the relationship between abnormal net hiring and employee treatment is still negative and statistically significant at 1% level when I use the employee treatment measure from the ASSET4 database.

TABLE 9

Propensity score matching test of Fortune's '100 Best Companies to Work For' list

	SAMPLE	*TREATED GROUP*	*CONTROL GROUP*	*DIFF*	*T-stat*	*N*
EMP_TREAT	ATT	0.853	0.069	0.784	11.72***	435
ET_STRENGTH	ATT	1.260	0.561	0.6989	11.81***	435
ET_CONCERN	ATT	0.407	0.492	-0.085	-2.02**	435
ASSET4	ATT	254.605	210.031	44.574	4.68***	239
AB_NETHIRE	ATT	0.089	0.107	-0.018	-2.09**	435
SALES	ATT	5.688	5.397	0.292	2.68***	435
ROA	ATT	0.111	0.099	0.012	1.90*	435
PRO_EFF	ATT	0.523	0.451	0.072	5.28***	433

This table presents the results from using a propensity score matching (PSM) approach to compare the employee-friendly firms with non-employee-friendly firms in several dimensions. I consider firms in the Fortune's '100 Best Companies to Work For' list as employee-friendly firms and use the PSM approach to construct comparable firms that are not listed in the Fortune's '100 Best Companies to Work For' list as the control group in several dimensions: market-to-book, firm size, liquidity, leverage, industry defined according to Fama-French 48 industries classification and same year.

*, **, *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels. All test statistics and significance level are calculated based on the standard error adjusted by a one-dimensional cluster at the firm level.

4.4 Subsample Analysis

In this section, I further investigate whether the impact of employee-friendly treatment on labor investment efficiency varies in the cross-section. First, I examine whether the impact is stronger for human capital-intensive firms. I follow Ghaly et al. (2015) and measure the human capital intensity of the firm using the ratio of R&D expenditure to total sales because R&D-intensive firms require higher levels of expertise and education. I consider a firm as human-capital-intensive if the firm with above-median R&D expenditure to total sales. The first two columns in Table 10 shows the results of the regressions for the two subsamples based on the R&D intensity. I find the coefficient on employee treatment is negative and significant for the subsample of firms with high human capital intensity. In contrast, I find the coefficient of employee treatment is smaller and insignificant for the subsample with low human capital intensity. Second, I further divide the firms into two subsamples based on whether a firm belongs to a human-capital-intensive industry. Following prior studies (Ertugrul, 2013; Ghaly et al., 2015), I define a firm as human-capital-intensive if the firm belongs to telecommunications, high-tech, and healthcare industries[17]. The results in Table 10 show that the coefficient on employee treatment is larger and more significant for firms operating in these human-capital-intensive industries. Third, I follow previous studies (Belo et al., 2014; Ben-Nasr and Alshwer, 2016; Ghaly et al., 2017) and construct the labor skills proxy by collecting JobZones data from Occupational Information Network and gather the data on the number of employees by occupation from the Occupational Employment Statistics (OES) program of the Bureau of Labor Statistics. In column 5 and 6, I find the coefficient for *EMP_TREAT* is negative and significant at the 5% level

[17] I include the following two- and three-digit SIC codes: 283, 357, 36, 384, 48 and 80.

in both sub-samples but is lower in absolute value for the high labor skills group. Overall, the results of the human capital tests (human capital-intensive firms, industry and labor skills) are consistent with the argument that human-capital-intensive firms face higher labor adjustment costs and the favorable effect of employee-friendly treatment on labor investment efficiency is stronger. Fourth, I test whether the impact of employee treatment on labor investment efficiency is more pronounced for firms operating in industries with higher product market competition[18]. Again, the results show that the coefficient for *EMP_TREAT* is larger for the high product market competition group, suggesting that employee friendliness provides competitive advantages when market competition is strong. Fifth, I test whether the relation between employee treatment and labor investment efficiency varies with the degree of interest alignment between employees and firms. I split the sample into two subgroups based on firms' employee stock options (*ESO*). Specifically, I follow Core and Guay (2002) and use the logarithm of incentive granted to split the sample[19]. The results show that employee-friendliness functions better to lower the propensity of inefficient labor investment for firms with better alignments of interests between employees and firms. Finally, I split the sample into two subgroups based on firms' labor union measured by the industry level of unionization. When the negotiation power of labor unions is strong, firms are less likely to able to hire and fire efficiently. Consistently, the results confirm the conjecture and show that the effect of employee-friendliness in reducing abnormal net hiring is lower where strong labor unions exist.

[18] The product market competition is measured by product market fluidity from Hoberg et al. (2014), which reflects changes in a firm's product space due to moves made by the firm's product market competitors. A higher value of fluidity indicates that a firm faces greater competitive threats in its product markets. I obtain the data from the website: http://hobergphillips.tuck.dartmouth.edu.

[19] I follow previous studies on non-executive stock options and collect firm-level option data for all employees and senior executives from Compustat and Execucomp (Babenko et al., 2011; Chang et al., 2015; Core and Guay, 2001; Hochberg and Lindsey, 2010). Due to the availability of the option data, the option data is from 2004-2013. See Core and Guay (2002) for the details of calculation of option incentive.

TABLE 10

The Effect of Employee Treatment on Abnormal Net Hiring: Subsample Analysis

	AB_NETHIRE					
	Human Capital Intensive Firms		***Human Capital Intensive Industries***		***Labor Skills***	
	High	***Low***	***High***	***Low***	***High***	***Low***
EMP_TREATit	-0.0058***	-0.0031	-0.0100***	-0.0036**	-0.0052**	-0.0041**
	(-2.75)	(-1.35)	(-2.80)	(-2.13)	(-1.97)	(-2.00)
MTBit-1	-0.0000	-0.0010*	-0.0003	-0.0005	-0.0003	-0.0002
	(-0.05)	(-1.78)	(-0.50)	(-1.22)	(-0.65)	(-0.41)
SIZEit-1	-0.0217*	-0.0225*	-0.0204	-0.0217**	-0.0269**	-0.0306***
	(-1.88)	(-1.87)	(-1.09)	(-2.36)	(-1.99)	(-2.80)
LIQit-1	0.0079***	0.0129***	0.0076***	0.0111***	0.0085***	0.0093***
	(10.60)	(9.26)	(7.69)	(11.30)	(9.88)	(7.57)
LEVit-1	0.0205***	0.0411***	0.0404***	0.0257***	0.0295***	0.0281***
	(2.87)	(5.59)	(4.04)	(4.28)	(3.71)	(4.10)
DIVDit-1	-0.0068*	-0.0148***	0.0015	-0.0136***	-0.0067	-0.0090***
	(-1.78)	(-3.86)	(0.22)	(-4.66)	(-1.44)	(-2.64)
TANGIBLESit-1	-0.0099	-0.0067	-0.0085	-0.0034	-0.0167*	0.0034
	(-0.91)	(-0.90)	(-0.45)	(-0.58)	(-1.80)	(0.44)
LOSSit-1	0.0118***	-0.0020	0.0153**	0.0024	0.0095*	0.0015
	(2.84)	(-0.39)	(2.42)	(0.66)	(1.95)	(0.35)
LABINTit-1	-0.4790**	-0.2644**	-0.3280	-0.2971***	-1.1986***	-0.2395**
	(-2.18)	(-2.02)	(-0.56)	(-2.74)	(-2.64)	(-2.14)
INVESTit	0.3509***	0.2877***	0.2808***	0.3425***	0.2467***	0.5042***
	(33.63)	(30.74)	(21.82)	(40.50)	(26.77)	(40.76)
SD_CFOit-1	0.1546***	0.0741	0.2022***	0.1215***	0.2085***	0.0402
	(5.46)	(1.42)	(5.26)	(3.40)	(6.40)	(0.99)
SD_SALESit-1	0.0076	0.0689***	-0.0352	0.0662***	0.0445***	0.0385***
	(0.51)	(5.39)	(-1.46)	(6.35)	(2.80)	(3.13)
SD_NETHIREit-1	0.0707***	0.0538***	0.0736***	0.0558***	0.0584***	0.0596***
	(9.61)	(7.44)	(6.59)	(9.68)	(7.31)	(8.38)
UNIONit-1	0.0026	0.0105	0.0279	0.0089	-0.0367	0.0257
	(0.12)	(0.59)	(0.65)	(0.61)	(-1.34)	(1.59)
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
N	11,445	9,138	5,238	15,345	9,556	9,270
Adjusted R2	15.9%	13.7%	15.3%	14.2%	13.9%	18.9%

TABLE 10 (Continue)

The Effect of Employee Treatment on Abnormal Net Hiring: Subsample Analysis

	AB_NETHIRE					
	Product Market Competition		***Employee Stock Option***		***Labor Union***	
	High	***Low***	***High***	***Low***	***High***	***Low***
EMP_TREATit	-0.0068***	-0.0033*	-0.0058**	-0.0029	-0.0042**	-0.0054**
	(-2.64)	(-1.70)	(-2.14)	(-0.60)	(-2.15)	(-2.29)
MTBit-1	-0.0005	-0.0002	-0.0005	0.0027**	-0.0005	-0.0002
	(-1.05)	(-0.38)	(-0.72)	(2.39)	(-1.02)	(-0.52)
SIZEit-1	-0.0195	-0.0338***	-0.0242	-0.0090	-0.0295**	-0.0213*
	(-1.43)	(-3.24)	(-0.81)	(-0.31)	(-2.56)	(-1.80)
LIQit-1	0.0095***	0.0067***	0.0044**	0.0104***	0.0072***	0.0102***
	(10.75)	(6.43)	(2.29)	(5.41)	(7.79)	(11.41)
LEVit-1	0.0305***	0.0284***	0.0501***	0.0313**	0.0230***	0.0325***
	(4.12)	(3.87)	(4.17)	(2.04)	(3.10)	(4.63)
DIVDit-1	-0.0012	-0.0127***	-0.0058	-0.0173**	-0.0100***	-0.0100***
	(-0.24)	(-3.87)	(-0.93)	(-2.39)	(-2.65)	(-2.59)
TANGIBLESit-1	-0.0108	-0.0152*	-0.0211	0.0043	-0.0194**	-0.0047
	(-1.25)	(-1.92)	(-1.51)	(0.26)	(-2.36)	(-0.58)
LOSSit-1	0.0079	0.0011	0.0004	0.0010	-0.0004	0.0128***
	(1.63)	(0.26)	(0.05)	(0.10)	(-0.09)	(2.84)
LABINTit-1	-0.3448	-0.1687	-0.2537	-0.2186	-0.9295**	-0.3367***
	(-1.39)	(-1.46)	(-0.54)	(-0.60)	(-2.52)	(-2.73)
INVESTit	0.2869***	0.3787***	0.3499***	0.4334***	0.4617***	0.2635***
	(30.93)	(31.78)	(17.27)	(18.21)	(36.07)	(30.97)
SD_CFOit-1	0.1728***	0.0920**	0.1545**	0.0888	-0.0033	0.2143***
	(5.39)	(2.19)	(2.07)	(1.18)	(-0.08)	(7.17)
SD_SALESit-1	0.0337**	0.0530***	0.0038	0.0419	0.0679***	0.0296**
	(2.31)	(4.10)	(0.14)	(1.40)	(4.54)	(2.31)
SD_NETHIREit-1	0.0661***	0.0466***	0.0183	0.0401**	0.0665***	0.0522***
	(8.98)	(6.12)	(1.33)	(2.46)	(9.61)	(6.85)
UNIONit-1	-0.0097	0.0304*	-0.0123	0.0583	0.0358*	-0.3013***
	(-0.42)	(1.73)	(-0.40)	(1.49)	(1.88)	(-3.73)
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
N	9,686	9,685	2,258	2,253	9,754	10,829
Adjusted R2	15.00%	13.40%	14.90%	16.00%	16.30%	14.90%

4.5 Robustness Tests: Alternative Labor Investment Efficiency

To examine the robustness of the results, I further consider alternative measures for labor investment efficiency. Prior research has also tested the sensitivity of the estimation process to alternative definitions of labor investment efficiency. First, following Cella (2009), I use a firm's industry median level of net hiring as a proxy for the optimal level. Second, I 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. Third, I 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, the lagged value of observed labor investment, unionization rate and the logarithm of GDP per capita. Fourth, I also use the Pinnuck and Lillis (2007) model with both year and industry fixed effect to estimate the abnormal net hiring. Overall, the robustness tests in Table 11, using the alternative labor investment efficiency measures, yield similar results to the main results.

TABLE 11

Alternative Employee Treatment and Labor Investment Efficiency Proxies

	Cella (2009)	*Biddle (2009)*	*Augmented Pinnuck and Lillis (2007)*	*Pinnuck and Lillis (2007) with Year and Industry Fixed Effect*
	(1) AB_ NETHIRE	*(2) AB_ NETHIRE*	*(3) AB_ NETHIRE*	*(4) AB_ NETHIRE*
EMP_TREATit	-0.0057***	-0.0060***	-0.0051**	-0.0058***
	(-2.94)	(-2.85)	(-2.40)	(-2.84)
MTBit-1	0.0011**	0.0006	0.0008	0.0003
	(2.05)	(1.05)	(1.42)	(0.51)
SIZEit-1	-0.0671**	-0.0673**	-0.0828***	-0.0913***
	(-2.48)	(-2.36)	(-2.69)	(-3.35)
LIQit-1	0.0092***	0.0080***	0.0081***	0.0088***
	(4.43)	(3.95)	(4.15)	(4.53)
LEVit-1	-0.0070	0.0289***	0.0240**	0.0266**
	(-0.52)	(2.60)	(2.08)	(2.49)
DIVDit-1	0.0029	0.0079	0.0063	0.0050
	(0.46)	(1.25)	(0.98)	(0.84)
TANGIBLESit-1	-0.0676**	-0.0617**	-0.0761***	-0.0611**
	(-2.56)	(-2.11)	(-2.64)	(-2.18)
LOSSit-1	-0.0014	0.0068	-0.0026	-0.0014
	(-0.32)	(1.55)	(-0.58)	(-0.33)
LABINTit-1	-2.5555***	-2.8015***	-1.8496**	-2.2275**
	(-2.73)	(-2.78)	(-1.98)	(-2.49)
INVESTit	0.2722***	0.3500***	0.3006***	0.3267***
	(6.52)	(5.53)	(5.46)	(5.54)
SD_CFOit-1	-0.0331	0.0414	-0.0305	0.0254
	(-0.49)	(0.60)	(-0.46)	(0.39)
SD_SALESit-1	0.0361*	0.0034	0.0062	0.0121
	(1.86)	(0.16)	(0.33)	(0.62)
SD_NETHIREit-1	-0.1595***	-0.1604***	-0.1746***	-0.1568***
	(-8.51)	(-8.49)	(-8.99)	(-8.61)
UNIONit-1	0.0312	0.0129	0.0875**	0.0498
	(0.72)	(0.32)	(2.19)	(1.25)
Firm Fixed Effect	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes
N	20,583	20,583	19,994	20,583
Adjusted R2	23.8%	26.1%	24.0%	25.5%

This table presents the results from regressing the alternative measure of abnormal net hiring on employee treatment and other control variables over the period between 1995 and 2015. Column 1 shows the results of regression using the alternative abnormal net hiring is based on Cella (2009). Column 2 shows the results of regression using the alternative abnormal net hiring is based on Biddle (2009). Column 3 shows the results of regression using the alternative abnormal net hiring is based on augmented Pinnuck and Lillis (2007). Column4 shows the results of regression using the alternative abnormal net hiring based on Pinnuck and Lillis (2007) with both year and industry fixed effect.

*, **, *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels. All test statistics and significance level are calculated based on the standard error adjusted by a one-dimensional cluster at the firm level.

4.6 Additional Control Variables

I test the robustness of the results to the inclusion of additional control variables that were not included in the baseline model because the data requirements lead to additional sample loss. As corporate governance and the influence of institutional investor may potentially affect investment policies and employee treatment, I add governance proxies, corporate governance, and institutional ownership to the baseline regression. As Jung et al. (2014) also find that high-quality financial reporting aids more efficient investments in labor I also include financial reporting quality as a control variable in the regression. I use discretionary accruals as the proxy for financial reporting quality and this using the performance-adjusted modified Jones model suggested in Kothari et al. (2005). I estimate the model for every industry classified by the two-digit SIC code for each year. Following previous studies, I use the absolute value of discretionary accruals as the proxy for financial reporting quality. The larger the absolute value of discretionary accruals, the lower the level of financial reporting quality. As a further test, I replace the Kothari et al. (2005) earnings quality measure using the Dechow and Dichev (2002) approach but the results are largely unchanged. In Appendix A-4, I report the results including the additional control variable which are entirely consistent with those reported.

5 CONCLUSION

In this study, I investigate whether employee treatment affects firms' labor investment efficiency and financial performance. The results show that employee-friendly policies lead to better labor investment efficiency. The evidence shows that

the economic impact of employee treatment for labor investment efficiency is also considerable. The results imply that a one standard deviation increase in employee treatment is associated with a 4.3% decrease in labor investment inefficiency. Moreover, the evidence shows that employee treatment is positively associated with firm performance both directly and via its link with labor investment efficiency. In particular, the results show that employee-friendly practices generally have a favorable impact on financial performance whereas abnormal net hiring is negatively related to labor productivity, ROA and production efficiency.

My results are robust to a variety of sensitivity tests and continue to hold when I adopt instrumental variables estimation, PSM, alternative measures for both employee treatment and labor investment efficiency, or include additional control variables. I have followed previous research in the selection of sensitivity tests but I additionally use firm-fixed effects, rather than the more usual industry fixed effects. I also find the use of non-labor social dimensions as a placebo test is a helpful approach to test for endogeneity in terms of omitted variables. The underlying assumption is that if good employee treatment is merely a reflection of a firm's social performance/social capital, or omitted variables such as performance, management competence and/or strategic advantage, are driving the results, they are also expected to have a significant influence on other social dimensions. By replicating the analysis with a variety of non-labor CSR categories, the results alleviate this concern because non-labor social dimensions do not repeat the significant results of the employee treatment variable. 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. I address this challenge, by following recent studies (Buchanan et al., 2018; Lins et al., 2017) and consider the 2008-2009 financial crisis as an exogenous shock to firms and use it to disentangle the relation between employee treatment and labor investment efficiency. Adopting difference-in-difference (DID)

methodology that uses non-employee-friendly firms as a control group to isolate the effect of employee-friendly treatment on labor investment efficiency, I find that employee-friendly firms have higher labor investment efficiency than non-employee-friendly firms in the post-crisis period whereas employee-friendly firms experience more inefficient labor investment during the financial crisis.

My results suggest that employee treatment policies have important implications for employment decisions and the allocation of resources. The results are consistent with prior research that demonstrates a positive relationship between employee treatment and financial performance, but the research contributes by focusing on the relationship between employee treatment and labor investment efficiency. I also demonstrate that labor investment efficiency impacts on firm performance beyond the direct impact of employee treatment. Taken together, the findings highlight the important role of employee-friendly treatment in contributing to firms' investment behavior, efficiency and value creation. Hence, in a broad sense, the study also speaks to the literature about stakeholder relationship, employee welfare and corporate investment policies, and relevant legislation regarding employment.

CHAPTER 5

The Effect of Real Earnings Adjustments on Corporate Labor Investment

1 INTRODUCTION

An extensive body of previous research investigates the relations between accounting quality and corporate investment. Many previous studies show that high quality of financial reporting can increase investment efficiency (e.g., Biddle et al., 2009; Biddle and Hilary, 2006; Bushman and Smith, 2001; Healy and Palepu, 2001; Lambert et al., 2007). While managers can manage reported earnings by altering accounting accruals, extant literature documents that firms may also use real activities earnings management as an alternative to accrual-based earnings management (Beyer et al., 2010; Dechow and Skinner, 2000; Graham et al., 2005; Zang, 2012). In particular, numerous previous studies have shown the prevalence of managers manipulating reported earnings via changes in real activities after the passage of Sarbanes-Oxley Act (SOX) in 2002 owing to the greater scrutiny on aggressive accrual-based earnings management (Cohen et al., 2008; Graham et al., 2005; Lobo and Zhou, 2006; Zang, 2012). This notion is consistent with Ewert and Wagenhofer (2005) model which shows that tighter accounting standards reduce accruals management but increase real earnings management. Accrual-based earnings management is through the choice of accounting methods rather than changing the underlying operating activities of the firm, and is short-lived and has a subsequent reversal. In contrast, real earnings management involves 'departures from normal operational practices, motivated by managers' desire to mislead at least some stakeholders into believing certain financial reporting goals have been met in the normal course of operations' (Roychowdhury 2006, p. 337). In a survey by Graham

et al (2005) among more than 400 top executives, 80% of survey participants show that they would decrease discretionary spending (e.g. R&D, advertising and maintenance) to meet certain earnings targets and show a greater willingness to engage in real activities rather than accruals to manage reported earnings.

Despite managers' preference for real earnings management, Graham et al (2005) show that 96.9% of the respondents indicate their preference for achieving a smoother earnings path and 78% of the respondents also admit to taking real economic actions to achieve smoother earnings. Accounting literature recognizes that practice of income smoothing has a long tradition and firms can dampen the fluctuations of earnings realizations by using their discretion to engage in accrual-based earnings smoothing and real earnings smoothing (Acharya and Lambrecht, 2015; Huang et al., 2009; Khurana et al., 2017; Lambert, 1984). However, previous accounting literature predominantly focuses on accrual-based earnings smoothing and largely neglects real earnings smoothing (Khurana et al., 2017; Lambert, 1984). Khurana et al (2017) define real earnings smoothing as real economic actions that managers undertake to reduce earnings volatility and can be achieved by changing the timing or structuring of an operating, investment or financing transactions. For instance, managers can smooth earnings by distorting real decisions via production

and investment decisions (Acharya and Lambrecht, 2015; Khurana et al., 2017; Lambert, 1984)[20].

Despite the prevalent use of real earnings adjustments[21] (i.e., real earnings management and real earnings smoothing) in practice, little evidence has been provided by prior literature on the implications of real earnings adjustments on corporate investment and potential costs and benefits of real earnings adjustments. This paper fills an important void in the literature by primarily investigating how real earnings adjustments influence corporate labor investment. Investigating the influence of real earnings adjustments on corporate employment decisions can be important for several reasons. First, as one of the two inputs (i.e., capital and labor) that neoclassical firms require to produce output, labor costs typically account for approximately two-thirds of economy-wide value added (Hamermesh, 1995). While a vast amount of literature has long explored the impact of market frictions on investment activities, prior literature largely focuses on investment activities related to capital instead of labor and little is known about the role that financial reporting plays in affecting corporate employment decisions and its propagation. Second, the predominant focus of prior studies on capital investment may attribute to the classic view that considers labor as solely a variable factor of production that is free of

[20] Previous studies show that managers can manipulate real transactions to distort earnings in various ways. Apart from the real earnings management via price discounts to temporarily increase sales, overproduction to report lower cost of goods sold, and reduction of discretionary expenditures to improve reported margins (Roychowdhury, 2006), previous studies also show that managers can manipulate real transactions via managerial discretion over R&D expenditures (Baber et al., 1991; Bushee, 1998; Cheng, 2004; Dechow and Sloan, 1991), cutting advertising expenditures (Cohen and Zarowin, 2010), stock repurchases (Hribar et al., 2006); sales of profitable assets (Bartov, 1993; Herrmann et al., 2003), sales price reductions (Jackson and Wilcox, 2000), derivative hedging (Barton, 2001; Pincus and Rajgopal, 2002) and securitization (Dechow and Shakespeare, 2009). It could be potentially possible that a firm could also engage real earnings management by manipulating real transactions mentioned above to smooth their earnings. It is outside the scope of this paper to examine all of these issues, which can be one of the limitations of this study. In this study, I follow Khurana et al (2017) and use real earnings smoothing proxy that consists of real activities undertaken to adjust discretionary expenses or production.

[21] I use the term “real earnings adjustments” to refer to real earnings management and real earnings smoothing.

adjustment costs because the timing of labor costs is perfectly matched with the cash flow they generate (Dixit et al., 1994). However, previous studies in labor economics have already shown that labor has a fixed, or quasi-fixed cost component and labor frictions exist in the labor market (Anderson et al., 2003; Danthine and Donaldson, 2002; Diamond, 1982; Mortensen and Pissarides, 1994; Oi, 1962; Yashiv, 2007) and related labor costs can be substantial (Bhattacharjee et al., 2015; Farmer et al., 1985; Hamermesh, 1995; Hamermesh and Pfann, 1996). Consistently, several recent papers show that firms need external capital to finance their labor payments and capital market frictions can be influential for firms' ability to recruit, train, and retain an effective workforce (Benmelech et al., 2011; Campello et al., 2010; Jung et al., 2014; Matsa, 2018). Finally, prior literature has also shown how firms can obtain competitive advantages by hiring, developing and retaining human capital (Becker, 1962; Coff, 1997; Lazear and Shaw, 2007; Teece, 2011). Hence, investigating how real earnings adjustments influence a firm's investment in labor can be paramount.

One potential channel for real earnings adjustments to be associated with labor investment efficiency is through its impact on the information asymmetry between managers and outside capital providers. A vast amount of literature provides evidence that agency conflicts and the information asymmetry between managers and outside capital providers cause firms to undertake suboptimal levels of investment (e.g., Stein 2003). Due to the mismatch between labor costs and the cash flow generated, firms need to seek external financing for their labor costs throughout the production process. As a result, the imperfections in the capital market also apply to labor investment. Hence, real earnings adjustment can play a role in affecting firms' labor investment efficiency via the market frictions stemming from information asymmetry between managers and outside capital suppliers.

Previous studies provide mixed empirical evidences on whether earnings smoothing reduces or improves the informativeness of firms' reported current and

past earnings about their future earnings and cash flows. The positive view shows that earnings smoothing can improve the informativeness if managers use their discretion to convey their assessment of future earnings (Demski, 2010; Erickson et al., 2016; Gassen and Fülbier, 2015; Goel and Thakor, 2003; Kirschenheiter and Melumad, 2002; Tucker and Zarowin, 2006). In contrast, the negative view suggests that earnings smoothing can also be used to mask true firm performance and therefore makes earnings noisier (Bhattacharya et al., 2003; Jayaraman, 2008; Khurana et al., 2017; Leuz et al., 2003; McInnis, 2010). Graham et al (2005) show that one of the incentives for managers to engage in real earnings management is to smooth earnings, which implies that earnings management and earnings smoothing are not two independent concepts. However, Khurana et al (2017) show that real earnings smoothing may have distinctive implications as real earnings management because they differ in several significant ways and potentially have different costs. First, real earnings management emphasizes on upward earnings management to meet earnings targets in influencing investor perception of firm profitability whilst real earnings smoothing emphasizes earnings management in influencing investor perception of earnings volatility (Khurana et al., 2017). As a result, real earnings management targets an earnings level (mean) whereas real earnings smoothing targets the volatility (variance) of earnings. Second, the underlying motivations are different as myopic managers engaged in real earnings management to meet short-term benchmarks while real earnings smoothing might be used for managers' long-term strategic decisions (Khurana et al., 2017). Third, recent research identifies that real earnings management is more common than accrual-based earnings management due to a general shift after the passage of SOX in 2002 (Cohen et al., 2008; Lobo and Zhou, 2006). Even so, real earnings smoothing is more prevalent than real earnings management and managers have limited ability to continually manage earnings upward (Graham et al., 2005; Khurana et al., 2017).

In summary, given the real earnings management distorts accounting information and by definition involves suboptimal managerial decisions with potentially adverse consequences (Bereskin et al., 2018; Dechow et al., 2010; Kothari et al., 2005; Roychowdhury, 2006), I hypothesize that real earnings management is negatively associated with labor investment efficiency. One the other hand, given the various incentives related to earnings smoothing and mixed empirical evidence, the question of whether real earnings smoothing can influence labor investment efficiency can only be answered empirically. I further argue that real earnings smoothing is more likely to improve labor investment efficiency when the underlying motivation for managers to engage in earnings smoothing is to convey private information rather than to pursue personal interest. Accordingly, I posit that the association between real earnings smoothing and labor investment efficiency is primarily driven by the informational component rather than the garbling component of real earnings smoothing[22].

To test the hypotheses on the relation between real activities adjustments and labor investment efficiency, I use a large sample of 46,761 U.S. firm-year observations that represent more than 5,600 unique firms for the period of 1995 to 2016. To measure real earnings smoothing, I follow Khurana et al (2017) to derive the primary measure of real earnings smoothing by combining two types of real earnings smoothing: real earnings smoothing through managerial discretion over expense and real earnings smoothing through managerial discretion over production. To measure labor investment efficiency, I follow previous studies (Ben-Nasr and Alshwer, 2016; Jung et al., 2014; Pinnuck and Lillis, 2007) and use firms' net hiring (percentage change in the number of employees) to proxy for labor investment. The expected level

[22] The informational component captures the informativeness of current earnings about future earnings and cash flows; the garbling component captures the noise of current earnings on future earnings.

of net hiring captures normal hiring practices based on companies' fundamental economics, whereas the difference between the observed level of labor investment and the one justified by economic fundamentals (i.e., abnormal net hiring) serves as an inverse measure of labor investment efficiency which captures the unexpected part beyond firm's fundamental economics.

This study produces several new and significant findings. First, I find that firms engaging in more real earnings management have larger magnitudes of abnormal net hiring, suggesting real earnings management leads to more inefficient employment practices and lowers labor investment efficiency. I find all forms of real earnings management activities (abnormal cash flow, overproduction, and abnormal discretionary expenses) significantly deteriorate labor investment efficiency. Second, in contrast, I find that real earnings smoothing significantly improve labor investment efficiency. That is consistent with the informational smoothness hypothesis that real earnings smoothing conveys managers' private information about firms' future profitability and improve labor investment efficiency through reduced information asymmetry between managers and outside capital suppliers. Third, I conduct the smoothing decomposition tests and find that the positive relation between real earnings smoothing and labor investment efficiency is primarily driven by the informational component instead of the garbling component of smoothing. This further supports the informational smoothness hypothesis.

I also investigate the mechanisms through which real earnings adjustments affect corporate employment decisions. I find that the relation between real earnings smoothing and labor investment efficiency holds for both labor overinvestment and underinvestment regardless the period of expected expansion and expected contraction, suggesting that real earnings smoothing improves labor investment efficiency by alleviating both adverse selection and moral hazard. On the contrary, I find opposite effects of real earnings management.

In additional analyses, I further find that financial constraints play an important role in the relationship between real earnings smoothing and labor investment efficiency. The results show that the informational effect of real earnings smoothing on labor investment efficiency is more pronounced for firms with higher levels of financial constraints. The results indicate that managers of financially constrained firms have stronger incentives to engage in real earnings smoothing to convey information to outside capital suppliers for financing purposes. In particular, I find that financially constrained firms with equity-based financing incentives have stronger incentives to engage real earnings smoothing to lower the information asymmetry between themselves and outside capital suppliers for financing purposes whereas I find debt-focused constrained firms may use real earnings smoothing as an earnings manipulation tool and lead to a deterioration in labor investment efficiency. The findings are consistent with Hoberg and Maksimovic (2015) who find that equity market and debt market constraints are different in terms of constraints origins and asymmetric information is likely a strong driver of financial constraints among firms attempting to issue equity, but not for debt market constrained firms.

My main results are robust to a battery of sensitivity checks including (1) examine the role of other non-labor investments for the relation between real earnings smoothing, real earnings management, and labor investment efficiency; (2) four alternative proxies for labor investment efficiency; and (3) consider several additional control variables in the baseline regression model.

The contribution of this paper is manifold. First, prior literature has documented that stock price informativeness, laborism, and long-term investors influence firms' labor investment efficiency (Ben-Nasr and Alshwer, 2016; Ghaly et al., 2017; Jung et al., 2016), I contribute to this growing line of literature on the determinants of labor investment efficiency by focusing on the influence of real earnings adjustments on labor investment efficiency. The most closely related prior literature to the study is

Jung et al. (2014) which emphasizes the role of accruals-based financial reporting quality on labor investment efficiency. The research is relevant but distinct from Jung et al. (2014) as the study complements their study by providing evidence towards the role of real earnings adjustments, an area that is becoming prevalent in practice but still under-explored in research for labor investment. From this perspective, the research also echoes recent literature that investigates the financing of labor and how the frictions in capital market affect firms' employment decisions (Benmelech et al., 2011; Campello et al., 2010; Jung et al., 2014; Matsa, 2018) and fills the important void in the accounting literature by investigating the impact of real earnings adjustments on corporate employment decisions.

Second, I contribute to prior literature that investigates the effects of real earnings management (Francis et al., 2016; Gunny, 2010; Lo, 2008; Roychowdhury, 2006) by identifying different costs and benefits of real earnings management when the underlying incentives are different. Specifically, this study shows that real earnings smoothing, as one form of real earnings management, can have a positive effect on corporate labor investment.

Third, I contribute to the under-explored stream of literature on the effects of real earnings smoothing. Previous accounting literature has largely focused on accrual-based earnings smoothing with little attention paid to real earnings smoothing (Khurana et al., 2017; Lambert, 1984). The only prior literature is Khurana et al. (2017) which finds that real earnings smoothing helps managers withhold bad news which results in an increase of firm-specific stock price crash risk. Different from Khurana et al. (2017) which highlights the dark side of real earnings smoothing, I shed lights on the positive side of real earnings smoothing in increasing firm labor investment efficiency. Also, this paper is the first study to decompose real earnings smoothing into informational and garbling components, a modified model from Dou et al. (2013) and Tucker and Zarowin (2006). The decomposition enables us to understand when

real earnings smoothing could be beneficial: when firms' underlying incentive of smoothing is to convey private information.

Finally, this is the first paper that directly compares the potential costs and benefits of real earnings management. Managers can engage in real earnings management to smooth earnings (Graham et al., 2005). From the conceptual and practical perspective, it is difficult to distinguish earnings smoothing from earnings management and they are not two independent concepts. Instead, this study intends to show that there can be potential costs and benefits of real earnings adjustments. As real earnings management and real earnings smoothing are both real earnings adjustments made by managers, the costs and benefits of real earnings management is under-explored, particularly when managers engage in real earnings management with the objective of smoothing earnings. This paper fills this void by highlighting the distinctive implications of real earnings management when underlying incentives are different for firms' employment decisions and therefore will be of interest to both scholars and practitioners.

The remainder of the paper is organized as follows. Section 2 reviews prior literature and develops the hypotheses. Section 3 details the sample, measurements, and research design. Section 4 presents and discusses the main empirical results and additional analyses and section 5 presents robustness checks. At last, section 6 concludes the paper.

2 LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1 Labor Investment Efficiency

Previous literature shows that firms in practice face capital market imperfections stemming from information asymmetry and may either over- or under-invest (e.g.,

Stein 2003). Prior studies identify moral hazard and adverse selection as the two primary imperfections in the market that make firms depart from the optimal investment level. On the one hand, 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 maximization (Jensen and Meckling, 1976), which can cause either over- or underinvestment depending on the availability of capital (Bertrand and Mullainathan, 2003; Blanchard et al., 1994; Jensen, 1986; Lambert et al., 2007; Richardson, 2006; Stiglitz and Weiss, 1981). On the other hand, adverse selection costs could induce investment inefficiency if managers are better informed than outside capital suppliers and try to time capital issuances to sell overprice equities. Investors may respond to this information disadvantage by increasing the cost of capital, which consequently lowers the firm's flexibility in obtaining external financing (Baker et al., 2003; Myers and Majluf, 1984).

Several prior studies suggest that the capital market imperfection for capital investment also applies to labor investment because labor also has a fixed, or quasi-fixed cost component and labor frictions exist in the labor market (Anderson et al., 2003; Danthine and Donaldson, 2002; Diamond, 1982; Mortensen and Pissarides, 1994; Oi, 1962; Yashiv, 2007) and related labor costs can be substantial (Bhattacharjee et al., 2015; Farmer et al., 1985; Hamermesh, 1995; Hamermesh and Pfann, 1996). In addition, a number of recent studies show that financial market imperfections can have significant impact on employment decisions of firms (Benmelech et al., 2011; Campello et al., 2010; Jung et al., 2014; Matsa, 2018). Ben-Nasr and Alshwer (2016) document that stock price informativeness positively affects labor investment efficiency as managers could use the information incorporated in stock prices when making human capital investment. Their results suggest that better-informed stock prices could lead to better monitoring of managers which in turn reduces managerial moral hazard behavior in inefficient labor investment. Consistent

with the role of monitoring, Ghaly et al. (2017) find that monitoring by long-term investors could reduce agency conflicts in firms' labor investment decisions, leading to higher labor investment efficiency. Jung et al. (2016) document that laborism which captures the presence of left-leaning government, the rigidity of employee protection laws, and collectivist culture, is negatively related to labor investment efficiency. They posit that a strong laborism will pressure firms to retain existing employees and to continue to hire labor even if unnecessary, resulting in deviations of firms' labor investment from the optimal level.

The most closely related prior literature is Jung et al. (2014) which emphasizes on the role of accrual-based financial reporting quality in improving labor investment efficiency and find that higher financial reporting quality is associated with higher labor investment efficiency. The paper complements Jung et al. (2014) by investigating the role of real activities adjustments, an area that is becoming prevalent in practice but still under-explored in research.

2.2 Role of Real Earnings Management

Real earnings management refers to managerial decisions to undertake actions that change the timing or structuring of an operation, investment and financing transaction with the objective to present favorable results. Roychowdhury (2006, p. 337) defines real earnings management as "management actions that deviate from normal business practices, undertaken with the primary objective of meeting certain earnings thresholds". Previous research indicates that firms use real activities earnings management as an alternative tool for accrual-based earnings management to manipulate earnings (Cohen et al., 2008; Dechow and Skinner, 2000; Zang, 2012). In a survey by Graham et al (2005) among more than 400 top executives, the survey

participants show their preference to manipulate earnings through real activities rather than through accruals.

The prevalence of real earnings management may be due to several reasons. First, there may be a lack of flexibility for firms to manage accruals because the year-end shortfall between actual earnings and targets might exceed the extent of accruals manipulation or accruals management is constrained by the business operations or the accrual manipulation in prior years. In such cases, real earnings management provides a more timely and flexible alternative. Second, managing accruals might be risky for Securities and Exchange Commission (SEC) scrutiny and class action litigation. In comparison with accrual manipulation, real activities management in pricing and production is less likely to attract regulatory scrutiny. Dechow et al. (1996) show that SEC enforcement actions are more likely to be associated with earnings overstatements but not relate to decisions on pricing, production, and discretionary expenses. Cohen et al. (2008) also document that firms switched from accrual-based to real earnings management after the passage of SOX in 2002 because of the stricter scrutiny in curbing accrual-based earnings management. Third, accrual-based earnings management must take place at the end of fiscal year or quarter and managers are likely to face uncertainty as to the choice of accounting treatment that auditors will allow at that time.

Linking to the research question, prior literature suggests financial reporting quality can facilitate firms to lower the information asymmetries between managers and outside capital suppliers and market frictions (Bushman and Smith, 2001; Jung et al., 2014; Lambert et al., 2007; Leuz and Verrecchia, 2000; Verrecchia, 2001). On the one hand, high quality of financial reporting can curb moral hazard and facilitates firms to invest more efficiently through the monitoring functions of corporate disclosures (Biddle et al., 2009). The notion is consistent with Bushman and Smith (2001) which highlight the governance role of financial reporting and show that high

financial reporting quality can help promote the effective governance and monitoring. As real earnings management captures the abnormal components of operational costs due to managerial discretionary behavior, it represents a distortion to the accounting measurement system and therefore indicates lower quality of financial reporting (Dechow et al., 2010; Roychowdhury, 2006). Cohen and Zarowin (2010) show that SEO firms engage in real earnings management, and the decline in post-SEO performance due to the real earnings management is more severe than that due to accrual management. Consistently, Kothari et al. (2015) find that managers exhibit a greater propensity for real earnings management at the time of a seasoned equity offering (SEO) and such real activities manipulation are likely to cause post-SEO stock market underperformance. Bereskin et al (2018) find there are significant negative consequences associated with real earnings management through altering R&D expenditures.

On the other hand, adverse selection can also cause firms to undertake suboptimal levels of investment through higher cost of capital and the lack of flexibility in obtaining external financing (Biddle et al., 2009). From equity providers' perspective, Kim and Sohn (2013) find a positive relationship between real earnings management and a firm's cost of equity capital, indicating that capital market demands a higher risk premium for these activities as they exacerbate the information quality of earnings. From debt holders' perspective, Ge and Kim (2014) find a positive association between real earnings management and the cost of new bond issues, suggesting that credit rating agencies and bondholders also require high-risk premiums for the increased credit risk due to real earnings management.

In summary, real earnings management captures the value-destroying abnormal components of operational costs due to managerial discretionary behavior. It represents a distortion to the accounting measurement system and low quality of financial reporting because it exacerbates the reported earnings. Since high-quality

financial reporting can potentially mitigate moral hazard problems by enabling more efficient contracting and enhancing the monitoring abilities of capital market participants, real earnings management therefore can be negatively associated with labor investment efficiency. Moreover, a high risk premium required by capital market participants for real earnings management can also lead to adverse selection in the timing of securities offering. If financing of profitable investment in labor is costly, overinvestment in labor also can take place. The discussion above leads to the following hypothesis (stated in the alternative form):

HYPOTHESIS 1: Real earnings management is negatively associated with labor investment efficiency.

It is noted that there are some counter arguments to the hypothesis above. For example, Alissa (2013) finds that firms successfully achieve better credit ratings by managing their earnings via real activities. Kim et al. (2010) find that firms use real earnings management to avoid violations of debt covenants which consequently reduces the cost of debt. Also, Gunny (2010) finds that real earnings management can be positively associated with future period earnings and cash flow performance for the firms that just meet or beat their earnings benchmarks, which suggests that firms can also engage in real earnings management to signal future firm prospects. These studies and observations show that real earnings management may also be beneficial to firms. If this were the case, I would not obtain empirical results consistent with the hypothesis.

2.3 Role of Real Earnings Smoothing

Another primary focus of this paper is to examine the role of real earnings smoothing in affecting labor investment efficiency. Earnings smoothing can be defined as managerial discretionary behavior to intentionally dampen the fluctuations of their firms' earnings realization (Beidleman, 1973). Even though earnings smoothing practice has a long tradition, prior accounting literature has largely focused on accrual-based earnings smoothing with little attention paid to real earnings smoothing, even though real earnings smoothing potentially can be more pervasive in practice in comparison with accrual-based earnings smoothing (Khurana et al., 2017; Lambert, 1984).

Previous studies provide mixed empirical evidences on whether earnings smoothing garbles accounting earnings information or improves the informativenss of firms' reported current and past earnings about their future earnings and cash flows. The positive view shows that earnings smoothing can improves the informativenss (Demski, 2010; Erickson et al., 2016; Gassen and Fülbier, 2015; Goel and Thakor, 2003; Kirschenheiter and Melumad, 2002; Tucker and Zarowin, 2006). In particular, earnings smoothing can signal good prospect and investors perceive firms with smoother earnings to be less risky and therefore require a lower expected return or cost of capital (Erickson et al., 2016; Graham et al., 2005; Trueman and Titman, 1988). Also, creditors also prefer firms with smoother earnings and require a lower cost of debt (Gassen and Fülbier, 2015). Following this stream of literature, smoothed earnings can provide firms with financing benefits to mitigate the adverse selection problems, which facilitates firms to address labor adjustment and therefore higher labor investment efficiency. Moreover, prior literature also finds that managers engage in earnings smoothing to provide private information about future earnings to the market. For example, Goel and Thakor (2003) state that earnings smoothing could reduce information asymmetries between managers and external funding providers and can encourage liquidity trading by uninformed investors. Also, Dichev and Tang

(2009) show that smoother earnings are more persistent and could to be predicted better up to five years ahead.

However, an emerging stream of literature also points out the negative side of earnings smoothing (Bhattacharya et al., 2003; Jayaraman, 2008; Khurana et al., 2017; Leuz et al., 2003; McInnis, 2010). In specific, managers have motivations to smooth earnings for private gains (e.g., meeting bonus targets) (Healy, 1985) and/or ensuring job security (e.g., maximizing tenure) (Fudenberg and Tirole, 1995). Similarly, Leuz et al. (2003) find that managers are more likely to engage in earnings smoothing if they could obtain more private benefits. Moreover, Bhattacharya et al. (2003) find that earnings smoothing decreases the informativeness of reported earnings as it deviates from the firm's underlying performance. Jayaraman (2008) also finds that bid-ask spreads and the probability of informed trading are higher when earnings are smoother than cash flows. In addition, Khurana et al. (2017) show that firms with higher levels of real earnings smoothing experience a higher level of stock price crash risk.

The survey by Graham et al (2005) shows that managers can engage in real earnings management to smooth earnings. Hence, on a conceptual and practical level, earnings smoothing and earnings management are not two independent concepts. Even though real earnings management and real earnings smoothing are both real earnings adjustments made by managers, Khurana et al (2017) suggest that the implications of real earnings smoothing can be different from real earnings management in several ways. First, real earnings management emphasizes on upward earnings management to meet earnings targets in influencing investor perception of firm profitability whilst real earnings smoothing emphasizes earnings management in influencing investor perception of earnings volatility (Khurana et al., 2017). As a result, real earnings management targets an earnings level (mean) whereas real earnings smoothing targets the volatility (variance) of earnings. Second,

the underlying motivations are different as myopic managers engaged in real earnings management to meet short-term benchmarks while real earnings smoothing might be used for managers' long-term strategic decisions (Khurana et al., 2017). Third, recent research identifies that real earnings management is more common than accrual-based earnings management due to a general shift after the passage of SOX in 2002 (Cohen et al., 2008; Lobo and Zhou, 2006). Even so, real earnings smoothing is more prevalent than real earnings management because managers have limited ability to continually manage earnings upward (Graham et al., 2005; Khurana et al., 2017). The distinctive features between real earnings management and real earnings smoothing lead to an open empirical question of whether real earnings smoothing has the same implications as real earnings management for corporate labor investment, and the potential costs and benefits associated with real earnings adjustment is also under-explored, particularly when managers engage in real earnings management with the objective of smoothing earnings.

As discussed above, given the two competing views on the role of earnings smoothing, the question of whether real earnings smoothing is positively or negatively associated with labor investment efficiency can only be answered empirically. I develop the second hypothesis as follows (stated in the alternative form):

HYPOTHESIS 2: Real earnings smoothing is positively associated with labor investment efficiency.

One possible explanation of the mixed empirical results regarding smoothing may attribute to managers' underlying motivations to engage in earnings smoothing. According to Tucker and Zarowin (2006), managers may smooth earnings in the purpose of conveying their private information and assessment of future earnings. In such a case, the reported (smoothed) earnings will be more likely to provide

informative contents to the outsiders and reduce information asymmetry between firms and outside capital suppliers. On the contrary, if managers smooth earnings in the purpose of distorting the earnings numbers for personal interest, the reported (smoothed) earnings will be more likely to add noise to the market. Dou et al. (2013) decompose income smoothing into its informational component and garbling component by modifying the approach in Tucker and Zarowin (2006). Specifically, they find that firms use earnings smoothing to provide information to their suppliers in the presence of incomplete contracts and the effect is driven by the informational component instead of the garble component of earnings smoothing. In contrast, Amiram and Owens (2018) find that the garbling effect of earnings smoothing can dominate debt contract design and associate with a higher cost of debt when managers' private benefits consumption threat is high.

Hence, if real earnings smoothing improves labor investment efficiency, I expect that the positive impact of real earnings smoothing on labor investment efficiency will be dominated by the informational components when managers smooth earnings to convey information and signal future firm prospect to outside capital suppliers. I, therefore, posit the third hypothesis as follows (stated in the alternative form):

HYPOTHESIS 3: The association between real earnings smoothing and labor investment efficiency is driven by the informational component of real earnings smoothing.

3 SAMPLE & EMPIRICAL DESIGN

3.1 Sample and Data

My sample selection begins with all firms in COMPUSTAT and I merge the data with CRSP to obtain total annual stock returns. I exclude firm-year observations associated with firms in utility (primary two-digit SIC codes 49) and financial services (primary two-digit SIC codes between 60-69). I obtain the industry-level rate of industry unionization rate from the website of UNIONSTATS which provides estimates of union membership and coverage data by industry. For additional tests, I obtain institutional ownership data from Thomson Financial Institutional Holdings (13f). The final sample for regression analysis consists of 46,761 firm-year observations that represent more than 5,600 unique firms for the period from 1995 to 2016.

3.2 Measuring Labor Investment Efficiency

In order to test the hypotheses, I follow the Pinnuck and Lillis (2007) two-step approach that has been used by numerous prior studies on labor investment efficiency (Ben-Nasr and Alshwer, 2016; Ghaly et al., 2017; Jung et al., 2014). I capture abnormal net hiring from the following equation:

$$NETHIRE_{it} = \beta_0 + \beta_1 SALEGROWTH_{it-1} + \beta_2 SALEGROWTH_{it} + \beta_3 \Delta ROA_{it} + \beta_4 \Delta ROA_{it-1} + \beta_5 ROA_{it} + \beta_6 4RETURN_{it} + \beta_7 SIZE\_P_{it-1} + \beta_8 LIQ_{it-1} + \beta_9 \Delta LIQ_{it-1} + \beta_{10} \Delta LIQ_{it} + \beta_{11} LEV_{it-1} + \beta_{12} LOSSBIN1_{it-1} + \beta_{13} LOSSBIN2_{it-1} + \beta_{14} LOSSBIN3_{it-1} + \beta_{15} LOSSBIN4_{it-1} + \beta_{16} LOSSBIN5_{it-1} + INDUSTRY\ DUMMIES + \varepsilon_{it} \quad (1)$$

$NETHIRE_{it}$ represents a firm's net hiring as measured by the difference between the number of employees at year t and t-1 scaled by the number of employees at year t-1. Following prior studies (Ben-Nasr and Alshwer, 2016; Ghaly et al., 2017; Jung et

al., 2014; Pinnuck and Lillis, 2007), I include the following control variables that affect hiring. First, I control for the previous-year and current-year sale growth ($SALEGROWTH_{it-1}$, $SALEGROWTH_{it}$) as it represents change in demand for a firm's products and services and is considered as fundamental determinant of profitability and the level of investment a firm should make. Both current year and prior year sales growth are included because of the uncertainty as to the time lag between sales growth and change in employees. *SALEGROWTH* is the percentage change in sale revenue. Second, I include firms' previous-year change in profitability, the current-year change in profitability and current-year profitability (ΔROA_{it}, ΔROA_{it-1} and ROA_{it}) to control the normal fundamental impact of a change in earnings and the level of profitability on the demand for labor, where *ROA* is the ratio of net income scaled by beginning of the year total assets. Third, I include the annual stock return for year t ($RETURN_{it}$) which captures future expected growth that is not captured by sales growth measures. Fourth, I include the percentile rank of the logarithm of the market value of equity at the beginning of the year to control for firm size ($SIZE\_P_{it-1}$). Firm size can proxy for life cycle of a firm which may affect employment growth rates and entry into a more mature, lower investment stage of the firm's life cycle and also the likelihood of firms facing cash flow shortages because smaller firms are more likely to have cash flow problems leading them to reduce discretionary investments. Fifth, I include firms' previous-year liquidity, previous-year change in liquidity and current-year change in liquidity (LIQ_{it-1}, ΔLIQ_{it-1} and ΔLIQ_{it}) where *LIQ* is the ratio of cash and short-term investments plus receivables to current liabilities. These variables are included to control for changes in employment due to cash flow shortages and short-term liquidity problems. Sixth, I control for the previous-year leverage calculated as the ratio of long-term debt to total assets at the beginning of the year (LEV_{it-1}). Leverage is included to control for long-term financing requirement and for reduced funds available for investment, which may trigger delay in hiring or retrenchment of

employees. Finally, I control for small reported losses ($LOSSBIN_{it-1}$) dummies which are indicators for each 0.005 interval of prior year *ROA* from 0 to -0.0025.

I apply the estimated coefficients using Equation 1 to each firm-year observation to calculate the expected level of net hiring. Following prior studies, I use the absolute value of the abnormal net hiring as the inverse proxy for measuring labor investment efficiency and the abnormal net hiring is defined as the difference between the actual change in a firm's labor force and the expected change based on economic fundamentals. A higher value of abnormal net hiring indicates a higher deviation of actual labor investment from its expected value and therefore suggests a lower level of labor investment efficiency.

3.3 Measuring Real Earnings Management

I follow previous studies to develop the proxies for real earnings management (Cohen and Zarowin, 2008; Cohen et al., 2008; Roychowdhury, 2006), I adopt three metrics to estimate the level of real earnings management: the abnormal levels of cash flow from operations (*REM_ABCFO*), production costs *(REM_PROD)* and discretionary expenses (*REM_DEXP*).

I firstly generate the normal levels of *CFO*, production costs and discretionary expenses using the models in Roychowdhury (2006). I calculate normal *CFO* as a linear function of sales and changes in sales. To adopt this model, I run the following cross-sectional regression for each industry and year:

$$\frac{CFO_{it}}{Asset_{i,t-1}} = k_1 \frac{1}{Asset_{i,t-1}} + k_2 \frac{Sales_{it}}{Asset_{i,t-1}} + k_3 \frac{\Delta Sales_{it}}{Asset_{i,t-1}} + \mathcal{E}_{it} \quad (2)$$

For every firm-year, abnormal cash flow from operations is the residual from the corresponding industry-year model and the firm-year sales and lagged assets.

The second measure of real earnings management is abnormal production costs. Prior studies (Badertscher, 2011; Cohen et al., 2008; Roychowdhury, 2006; Zang, 2012) define production costs as the sum of *COGS* and change in inventory during the year and they express expenses as a linear function of contemporary sales. I estimate normal production costs from the following equation and the abnormal production cost is the residual from the model.

$$\frac{PROD_{it}}{Asset_{i,t-1}} = k_1 \frac{1}{Asset_{i,t-1}} + k_2 \frac{Sales_{it}}{Asset_{i,t-1}} + k_3 \frac{\Delta Sales_{it}}{Asset_{i,t-1}} + k_4 \frac{\Delta Sales_{i,t-1}}{Asset_{i,t-1}} + \mathcal{E}_{it}$$

(3)

The third measure of real activities manipulation is abnormal discretionary expenses. Following Roychowdhury (2006) and Cohen et al. (2008), I estimate the normal level of discretionary expenses using the following equations:

$$\frac{DISX_{it}}{ASSET_{i,t-1}} = k_1 \frac{1}{Asset_{i,t-1}} + k_2 \frac{Sales_{it}}{Asset_{i,t-1}} + \mathcal{E}_{it}$$

(4)

Following Cohen and Zarowin (2010) and Kim et al. (2012), I also construct the combined measures of real activities manipulation by aggregating the three individual real activities manipulation proxies. I multiply *REM_ABCFO* and *REM_DEXP* by negative one so that *REM_ABCFO* and *REM_DEXP* increases as firms engage in more real activities management. I construct the combined real earnings management measure, *REM_COMBINED* as *REM_ABCFO* + *REM_PROD* +

REM_DEXP and the higher values indicate more real activities management.[23] I recognize that the combined measure may overlook the different implications of individual proxies for earnings, we, therefore, report results corresponding to both the combined measures as well as the three individual real earnings management proxies, respectively.

3.4 Measuring Real Earnings Smoothing

In line with Khurana et al. (2017), the real earnings smoothing proxy consists of real activities undertaken to adjust discretionary expenses or production. To elaborate, I measure real smoothing through managerial discretion over expenses using the negative correlation between the managed component of earnings attributed to adjustment of discretionary expenses and pre-managed earnings. I define the managed component of earnings attributed to the adjustment of discretionary expenses as negative one times abnormal discretionary expenses estimated using the Roychowdhury (2006) model. Larger values of the managed component of earnings imply more income-increasing real earnings management via discretionary expenses. The pre-managed earnings are calculated as earnings minus the managed component of earnings attributed to the adjustment of discretionary expenses. Following that, I calculated the correlation between the managed component of

[23] As a robustness check, instead of using *COMBINED* calculated as *AB_CFO* + *AB_PROD* + *AB_EXP*, I also use *COMBINED* calculated as *AB_EXP* + *AB_PROD* or *AB_CFO* + *AB_EXP* as the alternative combined proxies for aggregated real earnings management and the combined real activities manipulation proxies increases as firms engage in more aggressive real earnings management. I do not combine *AB_PROD* and *AB_CFO*, because previous studies Roychowdhury (Roychowdhury, 2006) and Cohen and Zarowin (2010) suggest that the same activities can lead to abnormally low *CFO* and abnormally high production costs, which leads to double counting if I add these two variables. The robustness tests using alternative proxies for aggregated real earnings management yield similar results and are qualitatively consistent with those reported results.

earnings attributed to discretionary expenses and the pre-managed earnings over the rolling five-year window ending in the current year. To ease the interpretation, I multiply the correlation by negative one and label it as *RES_DEXP*. Higher values of *RES_DEXP* imply more real earnings smoothing.

Similarly, I measure real smoothing through managerial discretion over production using the negative correlation between the managed component of earnings attributed to adjustment of production and pre-managed earnings. I define the managed component of earnings attributed to the adjustment of production as abnormal production costs estimated using the Roychowdhury (Roychowdhury, 2006) model. The pre-managed earnings are calculated as earnings minus the managed component of earnings attributed to adjustment of production. Next, I calculate the correlation between the managed component of earnings attributed to production and the pre-managed earnings over the rolling five-year window ending in the current year. I then multiply the correlation by negative one and label it as *RES_PROD* so that higher values of *RES_PROD* imply more real earnings smoothing.

In order to capture the total effects of real smoothing and to mitigate measurement errors in each individual proxy for real smoothing, I follow Khurana et al. (2017) and combine *RES_DEXP* and *RES_PROD* to construct *RES_COMBINED*, as the primary measure for real earnings smoothing. Consistent with Khurana et al. (2017), the values of *RES_DEXP* and *RES_PROD* can range from -1 to 1 separately and the values of *RES_COMBINED* range from -2 to 2.

3.5 Empirical Model

To test the impact of smoothness and real earnings management on labor investment efficiency, I estimate the following regression model:

$$|AB\_NETHIRE_{it}| = \beta_0 + \beta_1 RES\_COMBINED_{it-1}/REM\_COMBINED_{it-1} + \beta_2 MTB_{it-1} + \beta_3 SIZE_{it-1} + \beta_4 LIQ_{it-1} + \beta_5 LEV_{it-1} + \beta_6 DIVD_{it-1} + \beta_7 TANGIBLES_{it-1} + \beta_8 LOSS_{it-1} + \beta_9 LABINT_{it-1} + \beta_{10} SDCFO_{it-1} + \beta_{11} SDSALES_{it-1} + \beta_{12} SDNETHIRE_{it-1} + \beta_{13} UNION_{it-1} + \beta_{14} ABINVEST_{it} + INDUSTRY\ DUMMIES + YEAR\ DUMMIES + \varepsilon_{it} \quad (5)$$

Following previous literature (Ben-Nasr and Alshwer, 2016; Biddle et al., 2009; Biddle and Hilary, 2006; Jung et al., 2014), I control for the following control variables that are likely to be associated with hiring, including growth options (MTB_{it-1}), firm size ($SIZE_{it-1}$), liquidity (LIQ_{it-1}), leverage (LEV_{it-1}), dividend payout ($DIDV_{it-1}$), tangibility ($TANGIBLE_{it-1}$), loss occurrence ($LOSS_{it-1}$) and labor intensity ($LABINT_{it-1}$). I also consider the volatilities for three variables, including firms' cash flow (SD_CFO_{it-1}), sales (SD_SALES_{it-1}) and net hiring ($SD\_NETHIRE_{it-1}$) volatilities over the period from t-1 to t-5. Moreover, I include industry-level unionization rate control for labor protection owing to organized labor. I measure $UNION_{it-1}$ using industry-level unionization rates to proxy for whether firms in a given industry that have a high level of labor protection. Finally, to control for the potential effect of other non-labor investment decisions on abnormal net hiring, I include AB_INVEST_{it}, which measures the magnitude of non-labor investments deviating from their expected level. As in Biddle et al. (2009), I use the absolute value of the residuals from the regression of non-labor investment ($INVEST_{it}$) on sales growth ($SALESGROWTH_{it-1}$), where $INVEST_{it}$ is the sum of capital expenditures, acquisition expenditures, and research and development expenditures, minus cash receipts from the sale of property, plant, and equipment, scaled by lagged total assets. Industry fixed effect and year fixed effect are included to control for the variations in labor investment over time and across industries. All standard errors are corrected for firm-level clustering to mitigate potential autocorrelation problems.

4 RESULTS

4.1 Descriptive Statistics

To proxy for labor investment efficiency, I use the absolute value of abnormal net hiring which is the difference between the actual change in a firm's labor force and the expected change based on fundamental economic factors estimated by Equation 1. The absolute value of abnormal net hiring is the inverse proxy for labor investment efficiency and a high level of abnormal net hiring suggests a high deviation of actual labor investment from its expected value. In Table 1, Panel A summarizes the descriptive statistics and Panel B provides the estimated results for Equation 1. In order to minimize the impact of outliers, I follow Pinnuck and Lillis (2007) and winsorize all continuous variable at the 1st and 99th percentiles of their respective distribution. Overall, the signs of variables are in line with expectation and the results from Equation 1 are comparable to those prior studies (Ben-Nasr and Alshwer, 2016; Jung et al., 2014; Pinnuck and Lillis, 2007). The abnormal net hiring is used as the key dependent variable in the regression analysis in Equation 5.

TABLE 1

Panel A

Descriptive Statistics of Selected Variables in Equation 1

Variable	N	Mean	Std.Dev	25th Per	Median	75th Per
NET_HIREit	112,882	0.078	0.365	-0.062	0.021	0.139
SALESGROWTHit	112,882	0.183	0.737	-0.050	0.069	0.222
SALESGROWTHit-1	112,882	0.254	0.912	-0.035	0.084	0.257
ΔROAit	112,882	0.017	0.311	-0.043	0.006	0.050
ΔROAit-1	112,882	0.006	0.305	-0.045	0.006	0.050
ROAit	112,882	-0.090	0.486	-0.084	0.027	0.082
RETURNit	112,882	0.232	1.246	-0.314	0.000	0.350
SIZEit-1	112,882	5.213	2.438	3.458	5.162	6.895
LIQit-1	112,882	2.002	2.563	0.721	1.197	2.189
ΔLIQit-1	112,882	0.227	1.274	-0.229	-0.011	0.241
ΔLIQit	112,882	0.148	0.962	-0.235	-0.018	0.216
LEVit-1	112,882	0.286	0.387	0.029	0.198	0.386

This table presents the descriptive statistics for the 112,882 firm-year observations over the period between 1991 and 2016. This table presents the number of observations, the mean, the median, the standard deviation, and 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 employees. *SALE_GROWTH* is the percentage change in sale revenue. *ROA* is net income scaled by the beginning of the year total asset. *RETURN* is the annual stock return for year t. *SIZE_R* is the log of the 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.

Panel B

Regression Results (Dependent Variable = *NET_HIRE*)

	(1) *Expected Sign*	*(2)* *Coefficient (t-stat)*
SALESGROWTHit	+	0.1751***
		(44.50)
SALESGROWTHit-1	+	0.0224***
		(10.89)
ROAit	+	0.0293***
		(6.42)
ΔROAit	-	-0.1090***
		(-17.30)
ΔROAit-1	+	0.0260***
		(4.54)
RETURNit	+	0.0262***
		(20.90)
SIZE_Pit-1	+	0.0079***
		(13.09)
LIQit-1	+	-0.0019
		(-1.01)
ΔLIQit	+/-	0.0135***
		(9.71)
ΔLIQit-1	+	0.0890***
		(22.95)
LEVit-1	+/-	0.0009
		(0.21)
LOSSBIN1it-1	-	-0.0220***
		(-2.81)
LOSSBIN2it-1	-	-0.0231***
		(-3.24)
LOSSBIN3it-1	-	-0.0351***
		(-4.83)
LOSSBIN4it-1	-	-0.0266***
		(-3.38)
LOSSBIN5it-1	-	-0.0377***
		(-4.75)
Industry Fixed Effect		Yes
N		112,882
Adjusted R2		0.171

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 0.01 levels.

Table 2 reports descriptive statistics on the variables used to estimate the primary baseline regression of Equation 5. The average (median) of abnormal net hiring, *AB_NETHIRE*, is equal to 0.14 (0.08) with standard deviation of 0.13. This is highly comparable to Jung et al (2014) which has mean (median) of abnormal net hiring of 0.11 (0.07) with standard deviation of 0.13. One of the variables of interest, real earnings smoothing (*RES_COMBINED*), has a mean (median) of 1.46 (1.68) and standard deviation of 0.60. Two real earnings smoothing components, *RES_DEXP* and *RES_PROD*, have a mean (median) of 0.67 (0.85) and 0.78 (0.91) respectively. The descriptive statistics of real earnings smoothing proxies is highly comparable to Khurana et al (2017) which has real earnings smoothing with mean (median) of 1.49 (1.70) and standard deviation of 0.55[24]. In terms of real earnings management proxies, the mean (median) the combined real earnings management proxy (*REM_COMBINED*) is equal to -0.10 (-0.09). The individual real earnings management proxies: negative abnormal cash flow, abnormal production and negative abnormal discretionary expenses (*REM_ABCFO, REM_PROD,* and *REM_DEXP*) have mean (median) of -0.04 (0.05), -0.05 (-0.05) and -0.01 (0.01) respectively. The descriptive statistics of other control variables in Equation (5) are comparable to related studies (Ben-Nasr and Alshwer, 2016; Biddle et al., 2009; Jung et al., 2014).

[24] Apart from the comparison of descriptive statistics, I also replicate the study of Khurana et al (2018) on the influence of real earnings smoothing on stock price crash risk. My results are highly similar and comparable with the results of Khurana et al (2018). I provide the replication results in Appendix B-2.

TABLE 2
Descriptive Statistics of Selected Variables in Equation (5)

	N	Mean	Std.Dev	25th Per	Median	75th Per
AB_NETHIREit	46,761	0.1433	0.2149	0.0388	0.0827	0.1614
OVER_LABORit	16,651	0.1849	0.3130	0.0327	0.0832	0.1913
UNDER_LABORit	30,110	-0.1203	0.1269	-0.1512	-0.0825	-0.0418
RES_COMBINEDit-1	46,761	1.4550	0.6028	1.2153	1.6828	1.8935
RES_DEXPit-1	46,761	0.6734	0.4184	0.5518	0.8545	0.9608
RES_PRODit-1	46,761	0.7817	0.3300	0.7468	0.9146	0.9735
REM_COMBINEDit-1	46,761	-0.1001	0.5719	-0.3459	-0.0889	0.1455
REM_ABCFOit-1	46,761	-0.0375	0.2343	-0.1211	0.0507	0.0195
REM_PRODit-1	46,761	-0.0519	0.2593	-0.1674	-0.0498	0.0586
REM_DEXPit-1	46,761	-0.0107	0.3956	-0.1228	0.0086	0.1331
MTBit-1	46,761	2.6155	3.8119	1.0761	1.8443	3.1648
SIZEit-1	46,761	0.5496	0.2920	0.2972	0.5753	0.8115
LIQit-1	46,761	1.7666	2.0044	0.7560	1.1962	2.0032
LEVit-1	46,761	0.2561	0.3282	0.0310	0.1909	0.3532
DIVDit-1	46,761	0.3729	0.4836	0.0000	0.0000	1.0000
TANGIBLESit-1	46,761	0.2598	0.2172	0.0923	0.1970	0.3648
LOSSit-1	46,761	0.3036	0.4598	0.0000	0.0000	1.0000
LABINTit-1	46,761	0.0091	0.0240	0.0025	0.0048	0.0092
INVESTit	46,761	11.7524	68.9415	4.8070	8.8246	12.4683
SD_CFOit-1	46,761	0.0743	0.0860	0.0288	0.0489	0.0846
SD_SALESit-1	46,761	0.1949	0.1963	0.0751	0.1338	0.2377
SD_NETHIREit-1	46,761	0.2132	0.2821	0.0725	0.1324	0.2396
UNIONit-1	46,761	0.0911	0.0791	0.0338	0.0700	0.1250

Table 2 presents the descriptive statistics for the 46,761 firm-year observations over the period between 1995 and 2016. This table presents the number of observations, the mean, the median, the standard deviation, and the values for the first and the third quartile for all the variables in Equation 5.

AB_NETHIRE is the absolute value of the difference between actual net hiring and the expected level measured on Pinnuck and Lillis (2007). *OVER_LABOR* is the positive abnormal net hiring as the measure for labor overinvestment. *UNDER_LABOR* is the negative abnormal net hiring as the measure for labor underinvestment. *REM_ABCFO* is calculated as negative one times the level of abnormal cash flows from operations following Roychowdhury (2006). *REM_PROD* is the level of abnormal production costs, where production costs are defined as the sum of the cost of goods sold and the change in inventories following Roychowdhury (2006). *REM_DEXP* is calculated as negative one times the level of abnormal discretionary expenses, where discretionary expenses are the sum of R&D expenses, advertising expenses and SG&A expenses following Roychowdhury (2006). *REM_COMBINED* is the sum of real earnings management proxies, measured as *RM_ABCFO + RM_PROD + RM_DEXP*; Higher values indicate more real earnings management. *RES_DEXP* is a measure of real smoothing based on managerial discretion over the level of expense. *RES_PROD* is a measure of real smoothing based on managerial discretion over the level of production costs. *RES_COMBINED* is the sum of *ES_DEXP* and *ES_PROD*. *SIZE* is the log of the market value of equity 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. *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. *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. *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. *SD*_NETHIRE is the standard deviation of percentage change in employees over year t-5 to *t-1.* LABINT is the ratio of employees to total assets at the beginning of the year. UNION is the industry-level rate of labor unionization for year *t-1. AB*_INVEST it the absolute value of the residual from the model of Biddle et al (2009).

Table 3 reports the Pearson correlation coefficients between abnormal net hiring, real earnings smoothing, real earnings management and other control variables in Equation 5. In line with the hypotheses, I find a negative and significant correlation between abnormal net hiring (*AB_NETHIRE*) and all measures of real earnings smoothing (*RES_COMBINED, RES_DEXP,* and *RES_PROD*), indicating that firms with more smooth earnings are generally associated with higher level of labor investment efficiency. In contrast, I find that real earnings management (*REM_COMBINED, REM_ABCFO, REM_PROD,* and *REM_DEXP*) are generally associated with higher levels of abnormal net hiring, representing lower labor investment efficiency. Even though real earnings smoothing and real earnings management have distinctive correlation with labor investment efficiency, I find the correlation between these two variables are significantly and positively correlated rather than mechanically negatively correlated. The correlations among other control variables in Equation 5 are generally consistent with the expectations. For instance, I find real earnings smoothing is positively correlated with firm size, market-to-book ratio and profitability whereas negatively correlated with leverage and discretionary accruals, which is consistent with the correlation in Khurana et al (2018). I find that firms with loss, higher market-to-book ratio, higher levels of liquidity and higher concurrent abnormal non-labor investments are more likely to have higher abnormal net hiring. The evidence generally suggests that firms with poor financial position, or with abundant growth options or liquidity are less likely to suffer inefficient investment in labor. The results seem to reflect the findings of prior studies on agency costs and show that firms with more growth options and liquidity are more likely to have higher agency costs (e.g., Smith and Watts, 1992). Also, firms with inefficient non-labor investment are also expected to have inefficient in their labor investment. In addition, larger firms, firms paying dividends in the past and firms with higher levels of tangibility and union power are negatively associated with abnormal net hiring.

TABLE 3
Correlations among Labor Investment Efficiency, Real Earnings Smoothing, Real Earnings Management and Other Variables

	1	2	3	4	5	6	7	8
1. AB_NETHIRE	1							
2. RES_COMBINED	-0.085***	1						
3. RES_DEXP	-0.065***	0.851***	1					
4. RES_PROD	-0.072***	0.747***	0.287***	1				
5. REM_COMBINED	0.022***	0.020***	0.018***	0.014***	1			
6. REM_ABCFO	0.097***	-0.179***	-0.134***	-0.156***	0.216***	1		
7. REM_PROD	0.022***	-0.00600	-0.012**	0.00400	0.867***	0.183***	1	
8. REM_DEXP	-0.041***	0.139***	0.113***	0.110***	0.749***	-0.401***	0.489***	1
9. MTB	0.012**	0.019***	0.024***	0.00500	-0.155***	-0.054***	-0.115***	-0.117***
10. SIZE	-0.124***	0.161***	0.129***	0.131***	-0.093***	-0.201***	-0.041***	0.012***
11. LIQ	0.066***	-0.060***	-0.062***	-0.030***	-0.095***	-0.045***	-0.081***	-0.057***
12. LEV	0.074***	-0.098***	-0.076***	-0.083***	0.028***	0.164***	0.028***	-0.075***
13. DIVD	-0.121***	0.191***	0.154***	0.154***	0.029***	-0.119***	0.010**	0.105***
14. TANGIBLES	-0.032***	-0.015***	-0.088***	0.085***	0.058***	-0.055***	0.050***	0.084***
15. LOSS	0.119***	-0.249***	-0.203***	-0.198***	0.054***	0.316***	0.059***	-0.148***
16. LABINT	0.00700	0.042***	0.050***	0.013***	0.175***	0.00200	0.150***	0.154***
17. INVEST	0.111***	-0.030***	-0.011**	-0.041***	-0.013***	0.129***	-0.028***	-0.076***
18. SD_CFO	0.177***	-0.249***	-0.202***	-0.198***	-0.093***	0.339***	-0.098***	-0.271***
19. SD_SALES	0.145***	-0.071***	-0.042***	-0.077***	0.105***	0.165***	0.080***	0.00200
20. SD_NETHIRE	0.174***	-0.079***	-0.060***	-0.069***	0.024***	0.101***	0.067***	-0.069***
21. UNION	-0.028***	-0.00700	-0.033***	0.028***	0.040***	0.021***	0.044***	0.017***

TABLE 3 (continued)

	9	10	11	12	13	14
9. MTB	1					
10. SIZE	0.202***	1				
11. LIQ	0.016***	-0.082***	1			
12. LEV	-0.066***	-0.033***	-0.246***	1		
13. DIVD	0.045***	0.472***	-0.095***	-0.057***	1	
14. TANGIBLES	-0.069***	0.140***	-0.230***	0.156***	0.147***	1
15. LOSS	-0.064***	-0.391***	-0.016***	0.120***	-0.324***	-0.027***
16. LABINT	-0.023***	-0.118***	-0.063***	0.011**	-0.034***	0.011**
17. INVEST	-0.008*	-0.033***	-0.00500	0.079***	-0.025***	-0.00600
18. SD_CFO	0.027***	-0.415***	0.042***	0.182***	-0.292***	-0.195***
19. SD_SALES	-0.00200	-0.339***	-0.061***	0.141***	-0.222***	-0.185***
20. SD_NETHIRE	-0.00500	-0.157***	0.00100	0.152***	-0.197***	-0.040***
21. UNION	-0.028***	0.094***	-0.052***	0.037***	0.141***	0.169***

	15	16	17	18	19	20
15. LOSS	1					
16. LABINT	0.00400	1				
17. INVEST	0.028***	0.016***	1			
18. SD_CFO	0.302***	0.051***	0.097***	1		
19. SD_SALES	0.185***	0.135***	0.042***	0.498***	1	
20. SD_NETHIRE	0.168***	0.042***	0.032***	0.220***	0.273***	1
21. UNION	-0.047***	-0.099***	-0.013***	-0.076***	-0.057***	-0.028***

4.2 Real Earnings Management and Labor Investment Efficiency

Table 4 reports the OLS results of the regressions examining the relationship between real earnings management and abnormal net hiring. Column 1 presents the results for the regression model using the absolute value of the residual (*AB NETHIRE*) as the outcome variable and the combined real earnings management proxy (*REM_COMBINED*) as the variable of interest. The main result shows that the estimated coefficient on *REM_COMBINED* is positively and statistically significant, suggesting that firms engaging in more real earnings management are associated with higher deviations of labor investment from the level justified by economic fundamentals (i.e., lower labor investment efficiency).

Cohen and Zarowin (2010) suggest that each individual type of real earnings management may have different implications for earnings that may be diluted by using the combined real earnings management proxy. Thus, I also report results corresponding to three individual real earnings management proxies (*REM_ABCFO, REM_PROD,* and *REM_DEXP*). As mentioned earlier, higher values of these proxies indicate more real activities management. In column 2, I report the OLS results obtained by regressing the proxy for labor investment efficiency on abnormal cash flows (*REM_ABCFO*). The estimated coefficient on *REM_ABCFO* suggests that firms engaging in more sales manipulation tend to have a higher value of abnormal net hiring. In column 3, I find the real earnings management proxy via overproduction (*REM_PROD*) is positively associated with abnormal net hiring, suggesting that firms engaging real earnings management via overproduction also tend to suffer inefficient labor investment. In fact, I find that both the coefficient and significance level of *REM_PROD* is the largest among three forms of real earnings management for labor

investment efficiency. One of the potential explanations might be that real earnings management via overproduction is more likely to be related to labor force adjustment and overproduction, therefore, might have a more direct influence on a firm's employment decision.[25] Finally, I find the estimated coefficient of abnormal discretionary expenses (*REM_DEXP*) is also positively associated with abnormal net hiring. Overall, I find persistent results that real earnings management significantly deteriorates labor investment efficiency. Apart from real earnings management proxies, I also find several significant relations between the control variables and abnormal net hiring. For instance, the coefficients on *MTB, LIQ, LEV, LOSS, SD_CFO, SD_SALES,* and *SD_NETHIRE* are positive and significant at the 1%, suggesting that firms with higher market-to-book, liquidity, leverage, losses and higher volatilities of operating cash flows, sales, and past net hiring invest less efficiently in labor.

[25] I discuss the possibility of alternative channel via which real earnings management can affect labor investment efficiency and the potential mechanical relationship between the overproduction and abnormal net hiring in Section 5.3.

TABLE 4
The Effect of Real Earnings Management on Abnormal Net Hiring

	(1) ***AB_ NETHIRE***	*(2)* ***AB_ NETHIRE***	*(3)* ***AB_ NETHIRE***	*(4)* ***AB_ NETHIRE***
REM_COMBINEDit-1	0.0136***			
	(5.39)			
REM_ABCFOit-1		0.0209***		
		(3.08)		
REM_PRODit-1			0.0293***	
			(5.30)	
REM_DEXPit-1				0.0096**
				(2.45)
MTBit-1	0.0013***	0.0011***	0.0013***	0.0012***
	(3.73)	(3.20)	(3.56)	(3.32)
SIZEit-1	-0.0133***	-0.0157***	-0.0153***	-0.0143***
	(-2.67)	(-3.17)	(-3.10)	(-2.88)
LIQit-1	0.0077***	0.0076***	0.0077***	0.0076***
	(9.18)	(9.02)	(9.16)	(8.99)
LEVit-1	0.0200***	0.0192***	0.0200***	0.0208***
	(4.06)	(3.84)	(4.08)	(4.17)
DIVDit-1	-0.0134***	-0.0125***	-0.0126***	-0.0128***
	(-5.42)	(-5.06)	(-5.11)	(-5.20)
TANGIBLESit-1	-0.0367***	-0.0325***	-0.0362***	-0.0362***
	(-4.38)	(-3.87)	(-4.33)	(-4.29)
LOSSit-1	0.0207***	0.0190***	0.0205***	0.0226***
	(7.78)	(6.94)	(7.68)	(8.37)
LABINTit-1	-0.1843***	-0.1272**	-0.1804***	-0.1543***
	(-3.04)	(-2.39)	(-2.97)	(-2.62)
INVESTit	0.0003	0.0003	0.0003*	0.0003*
	(1.63)	(1.61)	(1.65)	(1.65)
SD_CFOit-1	0.2195***	0.1833***	0.2181***	0.2149***
	(7.95)	(6.90)	(7.98)	(7.66)
SD_SALESit-1	0.0411***	0.0494***	0.0422***	0.0447***
	(4.24)	(5.15)	(4.37)	(4.60)
SD_NETHIREit-1	0.0787***	0.0788***	0.0773***	0.0794***
	(11.90)	(11.90)	(11.67)	(11.97)
UNIONit-1	-0.0531	-0.0532	-0.0523	-0.0532
	(-1.59)	(-1.59)	(-1.56)	(-1.59)
Industry Fixed Effect	Yes	Yes	Yes	Yes

Year Fixed Effect	Yes	Yes	Yes	Yes
N	46,761	46,761	46,761	46,761
Adjusted R2	0.083	0.083	0.083	0.083

This table presents the results from regressing abnormal net hiring on real earnings management proxies and other control variables over the sample period between 1995 and 2016. Column 1 shows the results regressing abnormal net hiring (*AB_NETHIRE*) on the combined measure of real earnings management (*REM_COMBINED*) and control variables. Column 2 shows the results regressing abnormal net hiring (*AB_NETHIRE*) on *REM_ABCFO* calculated as negative one times the level of abnormal cash flows from operations following Roychowdhury (2006) and control variables. Column 3 shows the results regressing abnormal net hiring (*AB_NETHIRE*) on *REM_PROD* as the level of abnormal production costs, where production costs are defined as the sum of the cost of goods sold and the change in inventories following Roychowdhury (2006) and control variables. Column 4 shows the results regressing abnormal net hiring (*AB_NETHIRE*) on *REM_DEXP* calculated as negative one times the level of abnormal discretionary expenses, where discretionary expenses are the sum of R&D expenses, advertising expenses and SG&A expenses following Roychowdhury (2006).

*, **, *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels. All test statistics and significance level are calculated based on the standard error adjusted by a one-dimensional cluster at the firm level.

4.3 Real Earnings Smoothing and Labor Investment Efficiency

Table 5 tests the relationship between real earnings smoothing and labor investment efficiency. I find that the estimated coefficient for the overall real earnings smoothing proxy (*RES_COMBINED*) is negative and significant.[26] The result is consistent with the informative smoothing hypothesis that real earnings smoothing may convey manager's private information about a firm's future earnings and therefore can lower the information asymmetry between firms and outside capital suppliers, thus reducing inefficient labor investment. In column 2 and 3, I test the real earnings smoothing based on managerial discretion over the level of expenses and production costs. Consistent with the main result, I find that these two real earnings smoothing types are also negatively associated with abnormal net hiring and the estimated coefficients of these two variables are statistically significant. In fact, I find that the impact of *RES_PROD* is higher than *RES_DEXP*, both statistically and economically. This is consistent with the above explanation that production-related activities adjustments might have a more direct influence on firms' labor investment efficiency.

[26] In untabulated results, I control real earnings management in the real earnings smoothing tests, and control for real earnings smoothing when test the effect of real earnings management on labor investment efficiency. The results remain similar.

TABLE 5

The Effect of Real Earnings Smoothing on Abnormal Net Hiring

	(1) *AB_ NETHIRE*	*(2)* *AB_ NETHIRE*	*(3)* *AB_ NETHIRE*	*(4)* *AB_ NETHIRE*	*(5)* *AB_ NETHIRE*
RES_COMBINEDit-1	-0.0111***				
	(-5.33)				
RES_DEXPit-1		-0.0102***			
		(-3.55)			
RES_PRODit-1			-0.0190***		
			(-4.83)		
RES_INFit-1				-0.0127***	
				(-3.60)	
RES_GARit-1					-0.0003
					(-0.10)
MTBit-1	0.0011***	0.0011***	0.0011***	0.0012***	0.0012***
	(3.07)	(3.07)	(3.10)	(2.66)	(2.70)
SIZEit-1	-0.0158***	-0.0158***	-0.0160***	-0.0123**	-0.0125**
	(-3.20)	(-3.19)	(-3.24)	(-2.01)	(-2.04)
LIQit-1	0.0073***	0.0073***	0.0075***	0.0064***	0.0065***
	(8.75)	(8.72)	(8.96)	(6.55)	(6.75)
LEVit-1	0.0192***	0.0199***	0.0193***	0.0176***	0.0189***
	(3.87)	(3.99)	(3.89)	(2.75)	(2.96)
DIVDit-1	-0.0109***	-0.0114***	-0.0114***	-0.0109***	-0.0124***
	(-4.39)	(-4.63)	(-4.60)	(-3.66)	(-4.16)
TANGIBLESit-1	-0.0359***	-0.0365***	-0.0329***	-0.0367***	-0.0348***
	(-4.29)	(-4.33)	(-3.91)	(-3.51)	(-3.32)
LOSSit-1	0.0194***	0.0206***	0.0199***	0.0136***	0.0159***
	(7.18)	(7.62)	(7.41)	(4.08)	(4.82)
LABINTit-1	-0.1223**	-0.1253**	-0.1270**	-0.0618	-0.0708
	(-2.26)	(-2.31)	(-2.31)	(-1.13)	(-1.27)
INVESTit	0.0003*	0.0003*	0.0003	0.0030***	0.0030***
	(1.65)	(1.65)	(1.64)	(4.96)	(4.97)
SD_CFOit-1	0.1840***	0.1903***	0.1900***	0.0502	0.0632**
	(6.87)	(7.00)	(7.13)	(1.58)	(2.03)
SD_SALESit-1	0.0499***	0.0494***	0.0491***	0.0372***	0.0360***
	(5.20)	(5.13)	(5.11)	(3.40)	(3.28)
SD_NETHIREit-1	0.0788***	0.0790***	0.0787***	0.0717***	0.0721***
	(11.91)	(11.92)	(11.90)	(8.77)	(8.80)
UNIONit-1	-0.0509	-0.0511	-0.0530	-0.0200	-0.0217
	(-1.52)	(-1.53)	(-1.58)	(-0.48)	(-0.53)

Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes
N	46,761	46,761	46,761	30,036	30,036
Adjusted R2	0.083	0.083	0.083	0.120	0.119

This table presents the results from regressing abnormal net hiring on real earnings smoothing proxies and other control variables over the sample period between 1995 and 2016. Column 1 shows the results regressing abnormal net hiring (*AB_NETHIRE*) on the combined measure of real earnings smoothing (*RES_COMBINED*) and control variables. Column 2 shows the results regressing abnormal net hiring (*AB_NETHIRE*) on the measure of real smoothing based on managerial discretion over the level of expense (*RES_DEXP)* and control variables. Column 3 shows the results regressing abnormal net hiring (*AB_NETHIRE*) on the measure of real smoothing based on managerial discretion over the level of production costs (*RES_PROD)* and control variables. Column 4 shows the results regressing abnormal net hiring (*AB_NETHIRE*) on the informative component of real smoothing (*RES_INF*) and control variables. Column 5 shows the results regressing abnormal net hiring (*AB_NETHIRE*) on the garbling component of real smoothing (*RES_GAR*) and control variables.

*, **, *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels. All test statistics and significance level are calculated based on the standard error adjusted by a one-dimensional cluster at the firm level.

4.4 Decomposition of Real Earnings Smoothing for Labor Investment Efficiency

So far, the results suggest real earnings smoothing is negatively associated with abnormal net hiring, showing that real earnings smoothing facilitates higher labor investment efficiency. In this section, I further test the notion by investigating the impact of the decompositions of real earnings smoothing on labor investment efficiency. In particular, I predict that the impact of real earnings smoothing on labor investment efficiency is primarily driven by the informational component (rather than the garbled component) of real earnings smoothing.

I decompose the smoothing proxy into the informational component and garbling component by following Tucker and Zarowin (2006) and Dou et al. (2013). Specifically, Tucker and Zarowin (2006) investigate whether smoothing garbles earnings information or improve the informativeness of past and current earnings by testing the extent to which investors are able to predict future performance. The rationale is that smoothing by managers in the current period is public information to investors. Investors will observe this public information and it will facilitate investors to predict future performance and to price the firm accordingly so that prices lead earnings. If managers smooth income because of other incentives, smoothing garbles earnings information and the extent to which prices lead earnings is not expected to vary based on the level of income smoothing. Dou et al. (2013) modify the basic model of Tucker and Zarowin (2006) by considering the differential predictability of earnings for profit and loss firms and believing that the earnings of profitable firms are easier to predict. I follow the modified model of Dou et al. (2013) and estimate the equation as follows:

$$R_{it} = \beta_0 + \beta_1 EPS_{it-1} + \beta_2 EPS_{it} + \beta_{3PROFIT} PROFIT * EPS_{T3} + \beta_{3LOSS} LOSS * EPS_{T3} + \beta_4 R_{T3} + \varepsilon_{it} \quad (6)$$

Where EPS_{t-1} and EPS_t are earnings per share for year t-1 and t, and EPS_{T3} is the sum of EPS for years from *t+1* to *t+3*. *PROFIT* and *LOSS* are the indicator variables for cumulative three-year earnings being positive or negative. All EPS variables are basic EPS excluding extraordinary items, adjusted for stock splits and stock dividends, and deflated by the stock price at the beginning of year t. R_{T3} is the aggregate stock return in years *t+1* to *t+3* with annual compounding (Dou et al., 2013; Tucker and Zarowin, 2006). The current year's stock return R_{it} contains all publicly available information and I include EPS_{t-1} and EPS_t to control for unexpected earnings in the current period as suggested by Lundholm and Myers (2002). $\beta_{3PROFIT}$ and β_{3LOSS} are future earnings response coefficients (FERC) which capture revisions in investors' expectations about future earnings. If smoothing enables investors in the current period to formulate better expectations about future earnings, $\beta_{3PROFIT}$ and β_{3LOSS} are expected to be increasing functions of smoothing (Dou et al., 2013, p. 1639). In order to decompose income smoothing into informational and garbling components, I estimate Equation 6 for all firms[27]. I then estimate the following model:

$$RES\_COMBINED_{it} = \alpha_0 + \alpha_{1PROFIT} \beta_{3PROFIT} + \alpha_{LOSS} \beta_{3LOSS} + \varepsilon_{it} \quad (7)$$

[27] Dou et al (2013) estimate equation (7) for each industry in each country. I estimate equation (7) for each firm and request each firm at least has 5 observations. In order to further mitigate the concern that there is no substantial variation at the firm level that enables capturing the informational component. I further estimate cross-sectional industry regression model as estimate of firm i's. Namely, for each year, I estimate the model for every industry classified by its 2-digit SIC. I find the results are similar.

After estimating Equation 7, the predicted value of $RES\_COMBINED_{it}$ for firm *i* is the proxy for the informational component (RES_INF_{it}) which facilitate investors to predict future earnings. In contrast, the residual, ε_{it}, is the proxy for the garbling component (RES_GAR_{it}) of smoothing which provides noise for investors to predict future earnings. I then re-estimate the baseline model (Equation 5) to test the impact of informational and garbling components of smoothing on labor investment efficiency.

Table 5 column 4 and 5 report the effects of the informational component and garbling component of real earnings smoothing on labor investment efficiency, respectively. I find that the estimated coefficient of the informational component is negative and significant. This is consistent with the prediction that the informational component of smoothing can convey managers' private information about firms' future and lower information asymmetry, which therefore leads to higher labor investment efficiency. In contrast, I find that the estimated coefficient of garbling component is insignificant, indicating that if smoothing garbles the informativeness of earnings, the garbled smoothing is not able to lower information asymmetry and higher labor investment efficiency.

In sum, the results from Table 4 and 5 suggest that real earnings smoothing play a distinctive role from real earnings management activities in affecting labor investment efficiency, and that real earnings smoothing is more important and beneficial to firms' labor investment efficiency when firms engage real smoothing activities in a way that conveys information to outsiders.

4.5 Labor Overinvestment and Underinvestment

In Table 6, I further investigate the influence of real earnings smoothing and real earnings management on labor overinvestment (*OVER__LABOR*) and

underinvestment (*UNDER_LABOR*) based on the sign of abnormal net hiring. In column 1 of Table 6, I adopt the positive abnormal net hiring (*OVER_LABOR*) as the measure of overinvestment in labor and re-estimate Equation 5 based on the subsample. I find that firms with higher real earnings smoothing (higher real earnings management) tend to have less (more) labor overinvestment and therefore enjoy higher (lower) levels of labor investment efficiency. In column 2, I use the negative abnormal net hiring (*UNDER_LABOR*) as the dependent variable and re-estimate the baseline regression model. I find firms with higher real earnings smoothing (higher real earnings management) tend to have less (more) labor underinvestment. This suggests that firms engaging in more real earnings smoothing (real earnings management) have smaller (larger) deviations between actual and expected net hiring in terms of underinvestment in labor. Given adverse selection tends to lead to underinvestment when firms are financially constraint and moral hazard tends to lead to overinvestment due to managerial private incentives when firms have excess cash flows (Biddle et al., 2009; Hope and Thomas, 2008), the results collectively suggest that real earnings smoothing improves labor investment efficiency by reducing adverse selection as well as moral hazard whereas real earnings management impairs labor investment efficiency.

In column 3 and 4, I further decompose labor overinvestment into over-hiring (*OVERHIRING*) and under-firing (*UNDERFIRING*) based on the actual net hiring and expected amount. I follow Jung et al. (2014) and define over-hiring as actual net hiring exceeds the expected amount when expected net hiring is positive and under-firing as actual net hiring exceeds the expected amount when expected net hiring is negative. In the same vein, I decompose labor underinvestment into under-hiring (*UNDERHIRING*) and over-firing (*OVERFIRING*) in column 5 and 6. Under-hiring happens if actual net hiring is less than the expected amount when the expected amount if positive whereas over-firing happens if actual net hiring is less than the

expected amount when the expected amount if negative. I re-estimate Equation 5 for each subsample and find that the results of subsample regressions are consistent with the results in column 1 and 2, suggesting that real earnings smoothing reduce all kinds of labor investment inefficiency and facilitate firms to have levels of labor investment that are closer to the levels justified by firms' economic fundamentals. In contrast, the results in Table 6 again suggest that real earnings management activities generally deteriorate labor investment efficiency in the subsample analysis, reflecting the notion that real earnings management and real earnings smoothing are two distinctive accounting practices and have different implications for firms' labor investment.

TABLE 6

The Effect of Real Earnings Smoothing and Real Earnings Management on Overinvestment and Underinvestment in Labor

	OVERINVEST	*UNDERINVEST*	*OVERINVEST*		*UNDERINVEST*	
	(1) *OVER_LABOR*	*(2)* *UNDER_LABOR*	*(3)* *OVERHIRING*	*(4)* *UNDERFIRING*	*(5)* *UNDERHIRING*	*(6)* *OVERFIRING*
RES_COMBINED$_{it-1}$	-0.0116**	0.0118***	-0.0095*	-0.0120*	0.0121***	0.0094***
	(-2.50)	(7.34)	(-1.78)	(-1.77)	(6.91)	(2.69)
REM_COMBINED$_{it-1}$	0.0272***	-0.0080***	0.0388***	0.0038	-0.0056***	-0.0092**
	(4.88)	(-4.19)	(6.21)	(0.60)	(-2.69)	(-2.19)
MTB$_{it-1}$	0.0032***	0.0004	0.0030***	0.0013	0.0007**	-0.0006
	(4.16)	(1.40)	(3.17)	(1.17)	(2.52)	(-1.00)
SIZE$_{it-1}$	-0.0102	0.0132***	-0.0460***	0.0016	-0.0005	-0.0726***
	(-0.95)	(3.41)	(-3.58)	(0.07)	(-0.11)	(-6.32)
LIQ$_{it-1}$	0.0159***	-0.0039***	0.0123***	0.0147*	-0.0051***	-0.0053***
	(7.65)	(-7.56)	(5.72)	(1.77)	(-9.62)	(-2.58)
LEV$_{it-1}$	0.0223**	-0.0185***	0.0242**	0.0096	-0.0252***	-0.0116
	(2.24)	(-4.55)	(1.98)	(0.57)	(-5.30)	(-1.45)
DIVD$_{it-1}$	-0.0146**	0.0017	-0.0141**	-0.0037	0.0006	0.0042
	(-2.56)	(0.99)	(-2.34)	(-0.26)	(0.39)	(0.71)
TANGIBLES$_{it-1}$	-0.0672***	0.0181***	-0.1016***	0.0371	0.0099	0.0573***
	(-3.81)	(2.73)	(-4.86)	(1.08)	(1.38)	(3.90)
LOSS$_{it-1}$	-0.0059	-0.0374***	0.0110	0.0119	-0.0331***	-0.0105**
	(-0.93)	(-18.26)	(1.38)	(1.13)	(-14.65)	(-2.20)
LABINT$_{it-1}$	-0.7867***	-0.0323	-0.8236***	-0.6813***	-0.0363	-0.3157**

	(-3.81)	(-0.75)	(-3.33)	(-2.68)	(-0.87)	(-2.10)
INVEST$_{it}$	0.0014*	-0.0001***	0.0041***	0.0005***	-0.0001***	0.0002
	(1.90)	(-7.63)	(12.31)	(2.76)	(-6.00)	(0.76)
SD_CFO$_{it-1}$	0.1848***	-0.1621***	0.1393**	0.3027***	-0.1975***	-0.1206***
	(3.66)	(-7.51)	(2.37)	(4.65)	(-7.02)	(-3.96)
SD_SALES$_{it-1}$	0.0519**	-0.0268***	0.0457**	0.0411	-0.0263***	-0.0118
	(2.42)	(-3.56)	(2.00)	(1.36)	(-3.10)	(-0.81)
SD_NETHIRE$_{it-1}$	0.1129***	-0.0557***	0.1067***	0.0806***	-0.0560***	-0.0487***
	(8.62)	(-11.53)	(6.75)	(3.82)	(-10.20)	(-5.51)
UNION$_{it-1}$	-0.1165	0.0014	-0.0997	-0.0539	0.0124	-0.0389
	(-1.39)	(0.05)	(-1.05)	(-0.27)	(0.47)	(-0.55)
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
N	16,651	30,110	13,440	3,210	24,752	5,359
Adjusted R2	0.105	0.154	0.169	0.099	0.163	0.094

This table presents the results from regressing labor overinvestment (*OVER_LABOR*) and labor underinvestment (*UNDER_LABOR*) on real earnings smoothing (*RES_COMBINED*) and real earnings management (*REM_COMBINED*) over the period between 1995 and 2016. Column 1 shows the results of regressing labor overinvestment (*OVER_LABOR*) on real earnings smoothing (*RES_COMBINED*) and real earnings management (*REM_COMBINED*). Column 2 shows the results of regressing labor underinvestment (*UNDER_LABOR*) on real earnings smoothing (*RES_COMBINED*) and real earnings management (*REM_COMBINED*). Column 2 to 6 present the results of estimating the model on various subsets of the sample over the period between 1995 and 2016. Overhiring (*OVERHIRING*) is actual net hiring that exceeds the expected amount, when expected net hiring is positive (Column 3). Underfiring (*UNDERFIRING*) is the actual net hiring that exceeds the expected amount when expected net hiring is negative (Column 4). Underhiring (*UNDERHIRING*) is actual net hiring that is less than the expected amount, when the expected amount if positive (Column 5). Overfiring (*OVERFIRING*) is the actual net hiring that is less than the expected amount when the expected amount is negative (Column 6).

4.6 The Role of Financial Constraints and Financial Loss

As explained earlier, moral hazard and adverse selection are the two primary imperfections in the market that make firms depart from the optimal investment level. Given the existence of fixed components in labor costs, labor investments also face substantial adjustment costs and firms require external capital to finance their labor investments. Therefore, the capital market imperfections stemming from information asymmetry also influence firms' efficiency in making employment decisions. In this section, I study the role of financial constraints on the relation between real earnings smoothing and labor investment efficiency. I expect that more financially constrained firms are less able to invest efficiently in labor. However, if the documented informational effect of real earnings smoothing on labor investment occurs through financing channel, the informational effect of real earnings smoothing should be stronger for firms with high levels of financial constraints because the managers of financially constrained firms may have stronger incentives to engage in real earnings smoothing to provide private information to reduce the information asymmetries between their firms and external funding providers.

To substantiate this conjecture, I use four text-based financial constraints proxies from Hoberg and Maksimovic (2015), including delay investment constraint (*DELAYCON*), equity-focused constraint (*EQUITY_DELAYCON*), debt-focused constraint (*DEBT_DELAYCON*) and private-placement-focused constraint (*PRIV_DELAYCON*)[28]. The results reported in column 1, 2 and 4 of Table 7 show that

[28] The measures of the firm's financial constraints from Hoberg and Maksimovic (2015) are based on analysis of the Management's Discussion and Analysis (MD&A) section in 10-Ks for the period 1997-2009. The key subsection of MD&A which is also used by Kaplan and Zingales (1997), contains a firm's remarks concerning its financial liquidity and its intentions regarding future capital market interactions.

the coefficients on the interaction terms between real earnings smoothing and delay investment constraints (*DELAYCON*), equity-focused constraints (*EQUITY_DELAYCON*) and private-placement-focused constraints (*PRIV_DELAYCON*) are negative and statistically significant. The results show that the informational effect of real earnings smoothing on labor investment efficiency is amplified for the firms with higher levels of financial constraints and managers of financially constrained firms may have stronger incentives to engage in real earnings smoothing to provide private information to external funding providers for financing benefits. I also noticed that the relations between abnormal net hiring (*AB_NETHIRE*) and stand-alone delay investment constraints (*DELAYCON*), equity-focused constraints (*EQUITY_DELAYCON*) and private-placement-focused constraints (*PRIV_DELAYCON*) are positive and statistically significant, which suggests that financial constraints per se have a negative effect on labor investment efficiency and firms with financial constraints are less likely to invest in labor efficiently. Notably, the coefficient on the interaction term between real earnings smoothing and debt-focused constraint (*DEBT_DELAYCON*) is positive and statistically significant. This result partially echoes the finding of Amiram and Owens (2018) that the garbling effect of earnings smoothing dominate debt contract design and associate with a higher cost of debt when managers' private benefits consumption threat is high. Moreover, this result is also in line with the negative correlation between delay investment constraints (*DELAYCON*) and other financial constraint proxies in Hoberg and Maksimovic (2015). Hoberg and Maksimovic (2015) find that equity market and debt market constraints are different in terms of constraints origins and show that asymmetric information is likely a strong driver of financial constraints among firms attempting to issue equity, but not for debt market constrained firms. The results reflect their findings and show that financially constrained firms attempting to issue equity have stronger incentives to engage real earnings smoothing to reduce the information asymmetry to

obtain financing benefits whereas debt-focused constrained firms may use real earnings smoothing as an earnings manipulation tool.

In addition to financial constraints, I also examine the effect of loss-making on the relationship between real earnings smoothing and labor investment efficiency. Similar to financial constraints, I expect that firms with loss are less able to invest efficiently in labor as lower profitability may face lower financial resources and higher financing costs. Hence, the managers of loss-making firm may have stronger incentives to engage in real earnings smoothing to signal their firms' prospect in the future. The results are consistent with my expectation and show that loss per se has a negative effect on labor investment efficiency whereas the coefficient on the interaction term between real earnings smoothing and loss is positive and statistically significant, suggesting loss-making firms adopt real earnings smoothing as tool to lower the information asymmetries between their firms and outsiders, and hence lower suboptimal investment in labor.

TABLE 7

The Role of Financial Constraints on the Relationship between Real Earnings Smoothing and Labor Investment Efficiency

	(1) ***AB_ NETHIRE***	*(2)* ***AB_ NETHIRE***	*(3)* ***AB_ NETHIRE***	*(4)* ***AB_ NETHIRE***	*(4)* ***AB_ NETHIRE***
RES_COMBINED$_{it-1}$	-0.0138***	-0.0139***	-0.0128***	-0.0144***	-0.0078***
	(-4.82)	(-4.71)	(-4.70)	(-4.85)	(-4.09)
INTERACTION$_{it-1}$	-0.0695**	-0.0690**	0.0987**	-0.1232***	-0.0074**
	(-2.41)	(-2.38)	(2.27)	(-3.48)	(-2.30)
DELAYCON$_{it-1}$	0.1337***				
	(2.96)				
EQUITY_DELAYCON$_{it-1}$		0.1418***			
		(3.16)			
DEBT_DELAYCON$_{it-1}$			-0.1147		
			(-1.63)		
PRIV_DELAYCON$_{it-1}$				0.2274***	
				(4.11)	
REM_COMBINED$_{it-1}$	0.0164***	0.0165***	0.0159***	0.0166***	0.0096***
	(5.18)	(5.21)	(5.01)	(5.25)	(4.89)
MTB$_{it-1}$	0.0013***	0.0012***	0.0013***	0.0012***	0.0011***
	(2.84)	(2.79)	(2.90)	(2.69)	(4.01)
SIZE$_{it-1}$	-0.0131**	-0.0135**	-0.0115*	-0.0140**	-0.0117***
	(-2.17)	(-2.21)	(-1.89)	(-2.28)	(-2.92)
LIQ$_{it-1}$	0.0071***	0.0071***	0.0073***	0.0070***	0.0064***

	(6.87)	(6.81)	(6.88)	(6.60)	(10.15)
LEV$_{it-1}$	0.0151***	0.0149**	0.0153***	0.0152***	0.0175***
	(2.60)	(2.56)	(2.61)	(2.61)	(4.62)
DIVD$_{it-1}$	-0.0119***	-0.0120***	-0.0124***	-0.0121***	-0.0112***
	(-3.85)	(-3.87)	(-3.98)	(-3.90)	(-5.64)
TANGIBLES$_{it-1}$	-0.0419***	-0.0414***	-0.0415***	-0.0405***	-0.0313***
	(-3.82)	(-3.77)	(-3.77)	(-3.68)	(-4.68)
LOSS$_{it-1}$	0.0170***	0.0167***	0.0178***	0.0167***	0.0292***
	(5.16)	(5.07)	(5.41)	(5.07)	(5.95)
LABINT$_{it-1}$	-0.2145***	-0.2135***	-0.2125***	-0.2114***	-0.1160**
	(-3.23)	(-3.23)	(-3.21)	(-3.22)	(-2.56)
INVEST$_{it}$	0.0002*	0.0002*	0.0002*	0.0002*	0.0002
	(1.87)	(1.87)	(1.86)	(1.87)	(1.59)
SD_CFO$_{it-1}$	0.2169***	0.2119***	0.2210***	0.2045***	0.1645***
	(6.81)	(6.57)	(6.92)	(6.32)	(8.33)
SD_SALES$_{it-1}$	0.0446***	0.0447***	0.0438***	0.0450***	0.0398***
	(3.92)	(3.92)	(3.85)	(3.95)	(5.38)
SD_NETHIRE$_{it-1}$	0.0752***	0.0751***	0.0748***	0.0746***	0.0683***
	(9.68)	(9.65)	(9.60)	(9.60)	(13.62)
UNION$_{it-1}$	-0.0914**	-0.0912**	-0.0934**	-0.0917**	-0.0420
	(-2.07)	(-2.06)	(-2.11)	(-2.07)	(-1.57)
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes
N	30,029	30,029	30,029	30,029	46,761
Adjusted R2	0.082	0.082	0.082	0.082	0.100

This table presents the results regarding the influence of financial constraints on the relation between abnormal net hiring (*AB_NETHIRE*) and real earnings smoothing (*RES_COMBINED*) over the sample period between 1995 and 2016. Column 1 shows the results regarding the influence of delay investment constraint (*DELAYCON*) on the relation between abnormal net hiring (*AB_NETHIRE*) and real earnings smoothing (*RES_COMBINED*). Column 2 shows the results regarding the influence of equity-focused constraint (*EQUITY_DELAYCON*) on the relation between abnormal net hiring (*AB_NETHIRE*) and real earnings smoothing (*RES_COMBINED*). Column 3 shows the results regarding the influence of debt-focused constraint (*DEBT_DELAYCON*) on the relation between abnormal net hiring (*AB_NETHIRE*) and real earnings smoothing (*RES_COMBINED*). Column 4 shows the results regarding the influence of private-placement-focused constraint (*PRIV_DELAYCON*) on the relation between abnormal net hiring (*AB_NETHIRE*) and real earnings smoothing (*RES_COMBINED*). Column 5 shows the results regarding the influence of making loss (*LOSS*) on the relation between abnormal net hiring (*AB_NETHIRE*) and real earnings smoothing (*RES_COMBINED*).

*, **, *** 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.

5 ROBUSTNESS TESTS

5.1 The Role of Non-labor Investment

In this section, I test the robustness of the main results. I first examine the role of other non-labor investments. In addition to corporate labor investment, real activities adjustments may also influence labor investment through other contemporaneous non-labor investments. It is likely that fast-growing firms tend to increase both physical and labor investments. In such a case, the relation between real earnings smoothing, real earnings management, and labor investment efficiency may be driven by the relation between real earnings smoothing, real earnings management with other contemporaneous non-labor investment. In order to rule out this possibility, I first include the non-labor investment efficiency using the absolute value of the abnormal non-labor investment as a control variable across all the labor investment efficiency regressions. Following Jung et al. (2014) and Ben-Nasr and Alshwer (2016), I further address this concern by examining the impact of four types of non-labor investment: capital expenditures, research and development expenditures, advertising expenditures and acquisition expenditures. I split the sample into three sub-sample: (1) firms with a positive relationship between labor and non-labor investment (an increase/decrease in labor investment is accompanied by an increase/decrease in non-labor investment); (2) firms with a negative relationship between labor and non-labor investment (an increase/decrease in labor investment is accompanied by a decrease/increase); (3) firms with zero or missing non-labor investment reported. Table 8 presents the results for the subsamples based on the relation between net hiring and other specific types of investment. If the main results are driven by other contemporaneous non-labor investment, I would observe the

results to be concentrated in the subsamples with a positive relationship between net hiring and other non-labor investments. However, I find the estimated coefficients for real earnings smoothing across all the subsample regressions remain negative and statistically significant while the estimated coefficients for real earnings management generally remain positive and statistically significant in Table 8. Overall, this confirms that the results are not driven by the relation between real earnings smoothing, real earnings management with other contemporaneous non-labor investment.

TABLE 8
The Effect of Other Investments on the Association between Real Earnings Smoothing, Real Earnings Management and Abnormal Net Hiring

Panel A: Capital Expenditures

	POSITIVE	***NEGATIVE***	***ZERO OR NOT REPORTED***
	(1) AB_NETHIRE	***(2) AB_NETHIRE***	***(3) AB_NETHIRE***
RES_COMBINEDit-1	-0.0132***	-0.0073**	-0.0114**
	(-4.95)	(-2.25)	(-2.23)
REM_COMBINEDit-1	0.0151***	0.0203***	0.0160
	(4.51)	(5.31)	(1.44)
Controls	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes
N	27,943	16,234	2,584
Adjusted R2	0.115	0.123	0.247

Panel B: Research and Development Expenditures

	POSITIVE	***NEGATIVE***	***ZERO OR NOT REPORTED***
	(4) AB_NETHIRE	***(5) AB_NETHIRE***	***(6) AB_NETHIRE***
RES_COMBINEDit-1	-0.0073**	-0.0098***	-0.0131***
	(-2.42)	(-4.11)	(-3.90)
REM_COMBINEDit-1	0.0153***	0.0098***	0.0151***
	(3.53)	(2.74)	(4.06)
Controls	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes
N	14,355	10,492	21,914
Adjusted R2	0.125	0.132	0.086

Panel C: Advertising Expenditures

	POSITIVE	***NEGATIVE***	***ZERO OR NOT REPORTED***
	(7) AB_NETHIRE	***(8) AB_NETHIRE***	***(9) AB_NETHIRE***
RES_COMBINEDit-1	-0.0119**	-0.0105***	-0.0100***
	(-2.17)	(-3.66)	(-3.88)
REM_COMBINEDit-1	0.0189***	0.0080**	0.0145***
	(3.32)	(2.24)	(4.30)
Controls	Yes	Yes	Yes

Panel D: Acquisition Expenditures

	POSITIVE	***NEGATIVE***	***ZERO OR NOT REPORTED***
	(10) AB_NETHIRE	***(10) AB_NETHIRE***	***(12) AB_NETHIRE***
RES_COMBINEDit-1	-0.0132**	-0.0075*	-0.0110***
	(-2.35)	(-1.67)	(-5.27)
REM_COMBINEDit-1	0.0369***	0.0018	0.0088***
	(4.64)	(0.30)	(3.67)
Controls	Yes	Yes	Yes

Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
N	9,762	7,195	29,804	11,466	5,229	30,066
Adjusted R2	0.157	0.126	0.086	0.227	0.151	0.106

This table presents the results of estimating the effect of other investments on the association between real earnings adjustments (*RES_COMBINED, REM_COMBINED*) and abnormal net hiring (*AB_NETHIRE*).

*, **, *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels.
All test statistics and significance level are calculated based on the standard error adjusted by a one-dimensional cluster at the firm level.

5.2 Change Analysis

Despite examining the role of other non-labor investments and incorporating an extensive list of control variables, I cannot rule out the possibility that the results suffer from endogeneity. A common empirical strategy to address endogeneity is to employ an instrumental variable that is correlated with a firm's real earnings adjustments but is exogenous to the firm's labor investment. It is challenging to find a truly exogenous instrumental variable for real earnings adjustments. In order to mitigate the unobservable omitted variables that can potentially drive the results, I use change analysis to examine the influence of real earnings adjustments on labor investment efficiency. In Table 9, I find the coefficient on the change in lagged year real earnings smoothing is significant and negative whereas the coefficient on the change in lagged year real earnings management is significant and positive. The results of the change analysis are consistent with the main results and indicate that the marginal effect of an increase in real earnings smoothing can reduce abnormal net hiring whereas the marginal effect of an increase in real earnings management increases abnormal net hiring.

TABLE 9
Change Analysis: The Effect of Real Earnings Adjustment on Abnormal Net Hiring

	(1) *AB_NETHIRE_CHANGE*
RES_COMBINED_CHANGE$_{it-1}$	-0.0056**
	(-2.30)
REM_COMBINED_CHANGE$_{it-1}$	0.0110**
	(2.28)
MTB_CHANGE$_{it-1}$	0.0011***
	(3.11)
SIZE_CHANGE$_{it-1}$	-0.0713***
	(-4.14)
LIQ_CHANGE$_{it-1}$	0.0089***
	(7.06)
LEV_CHANGE$_{it-1}$	0.0176**
	(2.32)
DIVD_CHANGE$_{it-1}$	0.0125**
	(2.57)
TANGIBLES_CHANGE$_{it-1}$	-0.0346
	(-1.47)
LOSS_CHANGE$_{it-1}$	0.0013
	(0.47)
LABINT_CHANGE$_{it-1}$	-0.2651
	(-0.96)
INVEST_CHANGE$_{it}$	0.0003***
	(3.45)
SD_CFO_CHANGE$_{it-1}$	0.0610*
	(1.86)
SD_SALES_CHANGE$_{it-1}$	-0.0337***
	(-2.87)
SD_NETHIRE_CHANGE$_{it-1}$	-0.2199***
	(-19.60)
UNION_CHANGE$_{it-1}$	-0.0658*
	(-1.76)
Industry Fixed Effect	Yes
Year Fixed Effect	Yes
N	35,657
Adjusted R2	0.055

This table presents the results of change analysis. Column 1 shows the results regressing change of abnormal net hiring (*AB_NETHIRE_CHANGE*) on the change of combined measure of real earnings management (*RES_COMBINED_CHANGE*), change of real earnings smoothing (*REM_COMBINED_CHANGE*) and change in control variables.

*, **, *** 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.

5.3 Alternative Proxies for Labor Investment Efficiency

I then adopt several alternative labor investment efficiency proxies to ensure the robustness of the main results. First, I follow Cella (2009) to use the difference between a firm's observed value of labor investment and the industry-median value of net hiring. Therefore, if a firm's net hiring deviates far from its industry peers, the firm has a high level of abnormal net hiring. Results are shown in Table 10 column 1. Second, I use the absolute value of the difference between the observed value for labor investment and the residuals from the regression of the observed value of labor investment on sales growth as the alternative labor investment efficiency. This approach is in line with Biddle et al. (2009) to estimate the optimal level of capital expenditure. Results are shown in Table 10 column 2. Third, to control for the effect of other non-labor investment and dynamics in economic environment on change of employees, I also augment Equation 1 with several additional variables including capital investment (*CAPX*), R&D expenditures (*XRD*), acquisitions expenses (*AQC*), industry unionization level (*UNION*), macroeconomic conditions (*GDP*) and lagged net hiring. I estimate the augmented Equation 1 and find that the main results remain robust to this alternative labor investment efficiency. Results are shown in Table 10 column 3. Fourth, I also use the Pinnuck and Lillis (2007) model with both year and industry fixed effect to estimate the abnormal net hiring and I find the results still hold. Overall, the main results are robust across various alternative labor investment efficiency proxies.

TABLE 10
The Effect of Real Earnings Management and Real Smoothness on Alternative Abnormal Net Hiring

	Cella (2009)	Biddle (2009)	Augmented Pinnuck and Lillis (2007)	Pinnuck and Lillis (2007) with Industry and Year Fixed Effect
	(1) ALTERNATIVE AB_NETHIRE1	***(2) ALTERNATIVE AB_NETHIRE2***	***(3) ALTERNATIVE AB_NETHIRE3***	***(4) ALTERNATIVE AB_NETHIRE4***
RES_COMBINED$_{it-1}$	-0.0084***	-0.0102***	-0.0077***	-0.0115***
	(-3.59)	(-4.72)	(-3.89)	(-5.53)
REM_COMBINED$_{it-1}$	0.0120***	0.0125***	0.0089***	0.0136***
	(4.06)	(5.00)	(3.70)	(5.40)
MTB$_{it-1}$	0.0028***	0.0017***	0.0016***	0.0013***
	(6.40)	(4.48)	(4.68)	(3.76)
SIZE$_{it-1}$	-0.0198***	-0.0211***	-0.0256***	-0.0137***
	(-3.60)	(-4.12)	(-5.42)	(-2.79)
LIQ$_{it-1}$	0.0070***	0.0066***	0.0065***	0.0074***
	(6.40)	(6.89)	(8.11)	(8.79)
LEV$_{it-1}$	0.0045	0.0200***	0.0086*	0.0177***
	(0.82)	(3.70)	(1.89)	(3.63)
DIVD$_{it-1}$	-0.0245***	-0.0158***	-0.0155***	-0.0118***
	(-8.76)	(-6.28)	(-6.63)	(-4.80)
TANGIBLES$_{it-1}$	-0.0433***	-0.0308***	-0.0158**	-0.0368***
	(-4.65)	(-3.48)	(-1.99)	(-4.48)
LOSS$_{it-1}$	0.0184***	0.0222***	0.0147***	0.0188***

	(6.14)	(8.08)	(5.75)	(7.01)
LABINT$_{it-1}$	-0.2713***	-0.1710***	-0.0861*	-0.1674***
	(-4.17)	(-3.30)	(-1.67)	(-2.81)
INVEST$_{it}$	0.0002	0.0003*	0.0002*	0.0003
	(1.13)	(1.89)	(1.70)	(1.64)
SD_CFO$_{it-1}$	0.2020***	0.2515***	0.2118***	0.2072***
	(7.21)	(8.38)	(8.25)	(7.63)
SD_SALES$_{it-1}$	0.0534***	0.0351***	0.0416***	0.0417***
	(5.37)	(3.51)	(4.64)	(4.38)
SD_NETHIRE$_{it-1}$	0.0792***	0.0810***	0.0730***	0.0768***
	(10.97)	(11.54)	(11.85)	(11.79)
UNION$_{it-1}$	-0.0602	-0.0486	-0.0505	-0.0598*
	(-1.60)	(-1.41)	(-1.54)	(-1.80)
Industry Fixed Effect	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes
N	46,761	46,761	46,761	46,761
Adjusted R2	0.076	0.097	0.089	0.087

This table presents the results from regressing alternative measures of abnormal net hiring on real earnings smoothing (*RES_COMBINED*) and real earnings management (*REM_COMBINED*) over the period between 1995 and 2016. Columns 1 shows the results of regression using the alternative abnormal net hiring is based on Cella (2009). Column 2 shows the results of regression using the alternative abnormal net hiring is based on Biddle (2009). Column 3 shows the results of regression using the alternative abnormal net hiring is based on augmented Pinnuck and Lillis (2007). Column4 shows the results of regression using the alternative abnormal net hiring based on Pinnuck and Lillis (2007) with both year and industry fixed effect.

*, **, *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels.
All test statistics and significance level are calculated based on the standard error adjusted by a one-dimensional cluster at the firm level.

5.4 Alternative Channels and Potential Mechanical Relationship

So far, the robustness tests confirm that the main results are not driven by the relation between real earnings adjustment and other contemporaneous non-labor investment and are robust to various alternative proxies for labor investment efficiency. The results show that real earnings management is positively associated with abnormal net hiring (i.e., lower labor investment efficiency) whereas real earnings smoothing is negatively associated with abnormal net hiring, indicating that real earnings smoothing mitigating market frictions that stem from information asymmetry between managers and outside capital suppliers whereas real earnings management has the opposite effect.

However, a potential alternative channel may exist if earnings manipulation via real activities has an immediate consequence on labor investment and, as a result, a mechanical relationship may exist between real earnings management and labor investment. By the definition of three measures of real earnings management[29], abnormal cash flow from operations (*REM_ABCFO*) can be the result of firms temporarily boosting sales volumes by offering more lenient credit terms and price discounts to boost current period earnings; abnormal production costs (*REM_PROD*) can be the results of firms reducing the cost of goods sold by overproducing to increase earnings; and discretionary expenses (*REM_DEXP*) can be the result of firms lowering their discretionary expenses (e.g., R&D expenditure, advertising expenditure, and SG&A expenses) to increase earnings. Among three measures of real earnings management, boosting current period earnings via abnormal cash flow

[29] Abnormal levels of cash flow from operations (*REM_ABCFO*), production costs (*REM_PROD*) and discretionary expenses (*REM_DEXP*).

from operations (*REM_ABCFO*) by offering more lenient credit terms and price discounts, or via discretionary expenses (*REM_DEXP*) by reducing discretionary expenses can be less relevant to labor investment and employment decisions. However, real earnings management via overproduction can be highly associated with labor investment and may have a more direct influence on a firm's hiring and firing. In fact, I find that both the coefficient and significance level of *REM_PROD* is the largest among three forms of real earnings management for labor investment efficiency in the column 3 of Table 4. Firms can overproduce to spread their fixed overhead costs over more units and therefore reduce fixed costs per unit. As long as the reduction in fixed costs per unit is not offset by any increases in marginal cost per unit, the total cost per unit decreases, which further leads to lower cost of goods sold (*COGS*) but higher operating margins and earnings.

One potential alternative channel could be that firms engaging real earnings management via overproduction may require more labor force to deliver overproduction, therefore resulting in the actual net hiring exceeds the expected amount (i.e., labor overinvestment). Alternatively, real earnings management overproduction can also incur high production costs and further contribute to higher annual production costs relative to sales, and lower cash flows from operation, which constrains a firm's financial ability and operational flexibility to invest in labor efficiently and leads to labor underinvestment[30]. In the cases above, the consequence of real earnings management via overproduction directly influence labor investment efficiency instead of via the financing frictions, hence information asymmetry between managers and outside capital suppliers lose their relevance for labor investment.

One of the consequences of overproduction can be an abnormal inventory increase. To substantiate this potential channel, I follow Hamm et al. (2018) who

[30] In untabulated results, I find real earnings management via overproduction is positively associated with both labor over- and underinvestment.

examine the influence of labor union on inventory stockpiling and adopt two abnormal inventory measures in addition to the overproduction proxy (*REM_PROD*): (1). the abnormal portion of inventory relative to its 3-digit industry-year median value (*AB_INVENTORY1*); (2). the abnormal inventory level calculated as residual from the cross-sectional inventory holdings expectation model (*AB_INVENTORY2*). I estimate model below for every 3-digit industry and year with a minimum of 10 observation:

$$INVT_{it}/AT_{it-1} = \beta_1(1/AT_{it-1}) + \beta_2(\Delta SALE_{it}/AT_{it-1}) + \beta_3(\Delta SALE_{it-1}/AT_{it-1}) + \beta_4([INVT - SALE]_{it-1}/AT_{it-1}) + \beta_5([INVT\text{-}SALE]_{it-1}/AT_{it-1}) + \varepsilon_{it} \quad (8)$$

In the tests for both abnormal inventory measures, I find that overproduction (abnormal inventory stockpiling) is positively associated with abnormal net hiring. The results suggest that real earnings management via overproduction (inventory stockpiling) can have direct influence on abnormal net hiring. I provide the results in Appendix B-3.

Even though real earnings management may have direct consequences for labor investment, it does not preclude that real earnings adjustments influence labor investment efficiency via the market friction stemming from the information asymmetry between managers and outside capital suppliers because these two channels do not have to be mutually exclusive. First, abnormal cash flow from operations (*REM_ABCFO*) by temporarily boosting sales volumes owing to more lenient credit terms and price discounts, and lowering discretionary expenses (*REM_DEXP*) (e.g., R&D expenditure, advertising expenditure, and SG&A expenses) are less associated with direct change in labor force, which largely precludes the possibility that real earnings management via abnormal cash flow and discretionary expenditure have a direct influence on labor investment. In column 2 and 4 of Table 4, the results indicate that *REM_ABCFO* and *REM_DEXP* are still significant and positively associated with

abnormal net hiring, indicating that information asymmetry still can be the channel via which real earnings adjustments influence labor investment efficiency. Second, to preclude the possibility that real earnings management directly influences labor investment, I replace the real earnings smoothing with two accrual-based earnings smoothing because accrual-based earnings smoothing does not manipulate real transactions to distort earnings and therefore does not have immediate real consequences on labor investment. Following Tucker and Zarowin (2006), the first earnings smoothing measure, *ES_ACCTZ*, is the negative of the correlation between the change in discretionary accruals (*DAP*) and the pre-managed earnings (*PDI = NI – DAP*) as calculated in Tucker and Zarowin (2006). The second measure of earnings smoothing is *ES_ACCFR* which is the volatility of income with respect to the volatility of cash flows, calculated at the annual level over rolling five-year windows from *t-5* to *t-1* (Francis et al., 2004; Gao and Zhang, 2015; McInnis, 2010). The more smoothing indicates more variability of cash flows with respect to the variability of income. Hence the higher ratio would signify a smoother income stream. The results in Table 11 show that two accrual-based earnings smoothing are negatively associated with abnormal net hiring, which supports the notions that it is earnings smoothing that reduces information asymmetry and also precludes the possibility that the claimed relationship is solely driven by the immediate consequences of real earnings management. Third, in order to control for the direct influence of real earnings management and other omitted variables on labor investment. I also include prior year's change of employee (*EMP_CH*) as an additional control. After the inclusion of employee change, I find the results are still similar. I report the results in the next section (Section 5.5: Additional Control Variables).

Overall, the association between real earnings management and labor investment efficiency can be also partially driven by the real consequences of real earnings management via overproduction on corporate labor investment in addition

to information asymmetry channels. The results of robustness tests show that these two channels are not mutually exclusive and the direct consequence of overproduction does not preclude the information asymmetry channels via which real earnings adjustments relates to labor investment efficiency.

Table 11
The Effect of Accrual-Based Earnings Smoothing on Labor Investment Efficiency

	(1) *AB_NETHIRE*	*(2)* *AB_NETHIRE*
ES_ACCTZ$_{it-1}$	-0.0091***	
	(-3.30)	
ES_ACCFR$_{it-1}$		-0.0039***
		(-6.02)
REM_COMBINED$_{it-1}$	0.0142***	0.0148***
	(5.62)	(5.80)
MTB$_{it-1}$	0.0013***	0.0013***
	(3.68)	(3.69)
SIZE$_{it-1}$	-0.0130***	-0.0133***
	(-2.62)	(-2.68)
LIQ$_{it-1}$	0.0077***	0.0077***
	(9.18)	(9.16)
LEV$_{it-1}$	0.0201***	0.0196***
	(4.08)	(3.97)
DIVD$_{it-1}$	-0.0126***	-0.0122***
	(-5.09)	(-4.94)
TANGIBLES$_{it-1}$	-0.0366***	-0.0378***
	(-4.36)	(-4.52)
LOSS$_{it-1}$	0.0197***	0.0181***
	(7.38)	(6.73)
LABINT$_{it-1}$	-0.1840***	-0.1822***
	(-3.05)	(-2.98)
INVEST$_{it}$	0.0003	0.0003
	(1.63)	(1.63)
SD_CFO$_{it-1}$	0.2182***	0.2303***
	(7.91)	(8.25)
SD_SALES$_{it-1}$	0.0399***	0.0378***
	(4.12)	(3.90)
SD_NETHIRE$_{it-1}$	0.0787***	0.0785***
	(11.89)	(11.84)
UNION$_{it-1}$	-0.0507	-0.0510
	(-1.52)	(-1.53)
Industry Fixed Effect	Yes	Yes
Year Fixed Effect	Yes	Yes
N	46,761	46,761
Adjusted R2	8.4%	8.4%

This table presents the results from regressing abnormal net hiring on accrual-based earnings smoothing and other control variables. *ES_ACCTZ,* is the negative of the correlation between the change in discretionary accruals and the pre-managed earnings as calculated in Tucker and Zarowin (2006). *ES_ACCFR* is the volatility of income with respect to the volatility of cash flows, calculated at the annual level over rolling five-year windows from t-5 to t-1 (Francis et al., 2004; Gao and Zhang, 2015; McInnis, 2010).

*, **, *** 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.

5.5 Additional Control Variables

I further test if the main results are robust by considering several additional control variables for the baseline regression model. First, as mentioned in the last section, I include prior year's change of employee (*EMP_CH*) as an additional control for the direct influence of real earnings management and other omitted variables on labor investment. I find the results are similar after the inclusion of employee change and the results are shown in column 1 of Table 12. Second, Jung et al. (2014) find that high earnings quality improves labor investment efficiency. Therefore, I first control for earnings quality (*FRQ*) as calculated in Dechow and Dichev (2002), a measure of accruals quality determined by the extent to which working capital accruals map into operating cash flow realizations. Specifically, the model of Dechow and Dichev (2002) is a regression of working capital accruals on on-year-lagged, current and one-year-ahead cash flows from operations, the change in revenue and property, plant and equipment. The residuals from the model provide an inverse measure of accounting quality based on the portion of current accruals that do not map into operating cashflow realizations. The *FRQ* is defined as the standard deviation of the residuals from of the model for firm I over the years t-5 to t-1. I multiply *FRQ* by -1 so that it increases with accounting quality. Results showed in Table 12 column 2. Consistent with Jung et al. (2014), I find high earnings quality reduces abnormal net hiring and therefore facilitates more efficient labor investment. The main results still hold after the inclusion of earnings quality as an additional control variable. I also use the absolute value of discretionary accrual (*AB_DISC*) that is estimated by using the performance-adjusted modified Jones model suggested in Kothari et al.

(2005) as the alternative for earnings quality. In untabulated results, I find similar results.

Third, I add managerial ability (*MABILITY*) as an additional control to the primary model because managerial ability can potentially affect both accounting choices and labor investment. The managerial ability proxy is from Demerjian et al. (2012) and I obtain the managerial ability data from Demerjian personal website. Results in the column 3 of Table 12 show that our results remain qualitatively similar after include manager ability. Fourth, I add institutional ownership (*INSOWN*) as additional control and I did not include institutional ownership in the primary model to avoid additional sample attrition. Fifth, I further control for the operating cycle (*OPERCYC*) to take the potential influence of the operating cycle on firms' investment. Relevant results for including *INSOWN* and *OPERCYC* are shown in Table 12 column 4 and 5. Finally, Table 12 column 6 shows the results with all the additional control variables included. Table 11 reveals that the main results are persistent across all columns, ensuring that the main results are robust for considering a variety of additional controls.

Taken together, the robustness tests above confirm the main results that real earnings smoothing activities effectively reduce abnormal net hiring and increase labor investment efficiency whereas real earnings management activities deteriorate labor investment efficiency.

Table 12

Robustness Tests for Additional Control Variables

	(1) *AB_NETHIRE*	*(2)* *AB_NETHIRE*	*(3)* *AB_NETHIRE*	*(4)* *AB_NETHIRE*	*(5)* *AB_NETHIRE*	*(6)* *AB_NETHIRE*
$RES\_COMBINED_{it-1}$	-0.0113***	-0.0092***	-0.0089***	-0.0090***	-0.0091***	-0.0075***
	(-5.44)	(-4.46)	(-4.19)	(-4.24)	(-4.25)	(-3.53)
$REM\_COMBINED_{it-1}$	0.0133***	0.0150***	0.0129***	0.0137***	0.0142***	0.0141***
	(5.30)	(5.93)	(4.42)	(4.69)	(4.85)	(4.86)
MTB_{it-1}	0.0013***	0.0013***	0.0016***	0.0016***	0.0016***	0.0015***
	(3.57)	(3.70)	(3.70)	(3.59)	(3.63)	(3.50)
$SIZE_{it-1}$	-0.0153***	-0.0117**	-0.0087	-0.0043	-0.0093*	-0.0042
	(-3.06)	(-2.35)	(-1.55)	(-0.68)	(-1.67)	(-0.64)
LIQ_{it-1}	0.0075***	0.0077***	0.0063***	0.0064***	0.0063***	0.0065***
	(8.96)	(9.17)	(7.85)	(7.91)	(7.81)	(8.01)
LEV_{it-1}	0.0190***	0.0153***	0.0061	0.0064	0.0058	0.0027
	(3.85)	(3.15)	(1.07)	(1.13)	(1.01)	(0.48)
$DIVD_{it-1}$	-0.0118***	-0.0121***	-0.0120***	-0.0128***	-0.0119***	-0.0124***
	(-4.77)	(-4.88)	(-4.49)	(-4.70)	(-4.46)	(-4.58)
$TANGIBLES_{it-1}$	-0.0390***	-0.0380***	-0.0406***	-0.0402***	-0.0346***	-0.0369***
	(-4.65)	(-4.55)	(-4.51)	(-4.44)	(-3.74)	(-3.98)
$LOSS_{it-1}$	0.0193***	0.0167***	0.0178***	0.0179***	0.0179***	0.0163***
	(7.11)	(6.16)	(6.23)	(6.25)	(6.22)	(5.66)
$LABINT_{it-1}$	-0.1647***	-0.1818***	-0.2248**	-0.2290**	-0.2216**	-0.2192**
	(-2.79)	(-3.01)	(-2.28)	(-2.31)	(-2.25)	(-2.20)
$INVEST_{it}$	0.0003	0.0003	0.0033***	0.0033***	0.0033***	0.0033***

	(1.64)	(1.63)	(5.73)	(5.74)	(5.77)	(5.77)
SD_CFO$_{it-1}$	0.2018***	0.1787***	0.0755**	0.0719**	0.0714**	0.0478
	(7.37)	(6.48)	(2.52)	(2.39)	(2.40)	(1.60)
SD_SALES$_{it-1}$	0.0429***	0.0381***	0.0380***	0.0369***	0.0422***	0.0399***
	(4.45)	(3.97)	(3.59)	(3.51)	(3.99)	(3.80)
SD_NETHIRE$_{it-1}$	0.0785***	0.0784***	0.0712***	0.0713***	0.0711***	0.0703***
	(11.90)	(11.89)	(8.93)	(8.95)	(9.03)	(8.89)
UNION$_{it-1}$	-0.0473	-0.0520	-0.0391	-0.0381	-0.0380	-0.0344
	(-1.41)	(-1.56)	(-1.08)	(-1.05)	(-1.05)	(-0.95)
EMP_CH$_{it-1}$	0.0018***					0.0015**
	(2.73)					(2.10)
FRQ$_{it-1}$		0.0679***				0.0627***
		(5.30)				(3.87)
MABILITY$_{it-1}$			-0.0186			-0.0263**
			(-1.57)			(-2.16)
INSOWN$_{it-1}$				-0.0075*		-0.0059
				(-1.79)		(-1.34)
OPERCYC$_{it-1}$					0.0058*	0.0059*
					(1.78)	(1.79)
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
N	46,761	46,761	35,508	35,508	35,508	35,508
Adjusted R2	0.087	0.085	0.137	0.137	0.137	0.140

This table presents the results from regressing abnormal net hiring on real earnings management (*REM_COMBINED*) and real earnings smoothing (*RES_COMBINED*) including additional control variables over the period between 1995 and 2016.

*, **, *** 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.

6 CONCLUSION

In this paper, I investigate the influence of real earnings management and real earnings smoothing on corporate labor investment efficiency. On the one hand, previous accounting studies have largely focused on accrual-based earnings adjustments and paid little attention to real earnings adjustments albeit these are more pervasive in practice (Khurana et al., 2017; Lambert, 1984). On the other hand, previous financial literature on market frictions and investment efficiency mainly focuses on capital investment efficiency, overlooking the significance and importance of labor adjustments costs. We, therefore, contribute to both streams of literature on real earnings adjustments and investment efficiency by extending accrual-based to real activity-based earnings adjustments, as well as extending capital investment efficiency to labor investment efficiency.

Using a sample of 46,761 U.S. firm-year observations that represent more than 5,600 individual firms over the period of 1995 to 2016, I provide strong evidence that real earnings smoothing is significantly associated with lower abnormal net hiring, suggesting that real earnings smoothing improves labor investment efficiency. I further find that the positive relation between real earnings smoothing and labor investment efficiency is primarily driven by the informational component rather than the garbling component of real earnings smoothing. In contrast to real earnings smoothing, I find that the real earnings management activities significantly hamper corporate labor investment efficiency. The results indicate that these two vital types of real earnings adjustments are two distinctive accounting choices.

In additional analyses, I find that the effect of real earnings smoothing in diminishing abnormal net hiring holds for both labor overinvestment and

underinvestment regardless of the period of expected expansion and expected contraction. I also investigate the effect of financial constraints on the relationship between real earnings smoothing and labor investment efficiency and show that the informational effect of real earnings smoothing on labor investment efficiency is more pronounced for the firms with higher levels of financial constraints. Particularly, I find that financially constrained firms with equity-based financing incentives have stronger incentives to engage real earnings smoothing to lower the information asymmetry between themselves and outside capital suppliers for financing purposes whereas debt-focused constrained firms may use real earnings smoothing as an earnings manipulation tool and lead to a deterioration in labor investment efficiency. Finally, the results are robust to a battery of sensitivity checks and continue to hold when I consider the possible interrelationship between labor and other investments and control for other potential determinants of labor investment.

Taken together, this paper provides insights into the adverse effect of real earnings management but positive effect of real earnings smoothing on labor investment efficiency, highlighting that distinctive real activities adjustments can have different consequences and implications for corporate employment decisions and investment policies. The sign reversal between real earnings smoothing and real earnings management may be of interest to both scholars and practitioners and warrants further research in this area.

CHAPTER 6

DISCUSSION AND CONCLUSION

6.1 Summary of Findings

6.1.1 CSR and Earnings Management

This first study of my Ph.D. (i.e., Chapter 3) extends the literature on CSR by investigating how firms practicing CSR respond differently from other firms in their financial reporting in the context of changing regulatory regimes by considering the passage of SOX in 2002. The prior literature provide mixed findings on the relationship between CSR and financial reporting quality with some literature supporting the transparent hypothesis (Hong and Andersen, 2011; Kim et al., 2012) and some studies supporting the opportunistic use of CSR from agency cost perspective (Chih et al., 2008; Prior et al., 2008). The paper does not aim to declare a victor in this long-standing debate. The study examines the relationship of CSR with accrual-based earnings management and real activities manipulation in the context of SOX. The study uses 15,844 firm-year observations over the period of 1993 to 2015 and generates several findings. First, the study finds that firms with higher CSR engagement are more likely to conduct aggressive accrual-based earnings management prior to the passage of SOX whereas the passage of SOX significantly lowers the aggressiveness of accrual-based earnings management. Moreover, the findings of the study also show that the relationship between CSR and accrual-based earnings management is moderated by the manager-shareholder incentive alignment. Particularly, firms practicing CSR with low alignment are more likely to engage in accrual-based earnings management and therefore receive more constraining effect

by regulatory scrutiny imposed by the passage of SOX. In terms of real activities manipulation, the study finds that firms with better CSR performance are less likely to engage in real earnings management strategy in the pre- and post-SOX period. The findings indicate that when facing the trade-off between accrual-based earnings management and real earnings management, firms with higher CSR engagement are more likely to engage in the earnings management that is less costly. Overall, the findings suggest socially responsible firms present more transparent financial reporting practices in the post-SOX period.

6.1.2 Employee-Friendly Treatment and Labor Investment Efficiency

In the second study of my Ph.D. (i.e., Chapter 4), I examine the influence of employee treatment on labor investment efficiency and its implications for firm performance. This study uses a large sample of U.S. firms over the period of 1995 to 2015 and provides several main findings. The first finding is 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. I find employee-friendly treatment reduces both overinvestment and underinvestment, primarily via effective hiring rather than retention. The second finding of the study is that labor investment efficiency is associated with improved labor productivity, return on assets and production efficiency, and employee-friendly policies contribute to both return on assets and production efficiency. I further follow Lins et al (2017) and use the 2008-2009 financial crisis as an external shock and apply DID method, the finding of the study shows that employee-friendly firms have higher labor investment efficiency in the post-financial crisis period, but experience more inefficient labor

investment during the crisis. The findings are robust to a variety of sensitivity tests and continue to hold when I adopt instrumental variables estimation, PSM, alternative measures for both employee treatment and labor investment efficiency, or include additional control variables. I have followed previous research in the selection of sensitivity tests but I additionally use firm-fixed effects, rather than the more usual industry fixed effects. The use of non-labor social dimensions as a placebo test also confirms employee-friendly treatment as a plausible indicator of labor investment efficiency as I do not find any significant results on other non-labor social dimensions.

The findings of the study suggest that employee treatment policies have influential implications for employment decisions and the allocation of resources, which highlights the importance of employee-friendly treatment in contributing to firms' investment behavior, efficiency and value creation. Therefore, in a broad sense, the study also speaks to the literature about stakeholder relationship, employee welfare and corporate investment policies, and relevant legislation regarding employment policies.

6.1.3 Real Earnings Adjustments and Labor Investment Efficiency

In the third study of my Ph.D. (i.e., Chapter 5), I investigate the impact of real earnings management and real earnings smoothing on corporate employment decisions. The study uses a large sample of U.S. firms from 1995 to 2016 and suggests that real earnings management is significantly associated with lower labor investment efficiency (i.e., higher deviations of labor investment from the level justified by economic fundamentals) whereas real earnings smoothing significantly improves labor investment efficiency. The findings are consistent with the notion that real

earnings smoothing alleviates market frictions that stem from information asymmetry between managers and outside capital suppliers while real earnings management has the opposite effect. The findings also indicate that the positive impact of real earnings smoothing on labor investment efficiency is mainly driven by the informational component rather than the garbling component of real earnings smoothing. In addition, the study finds that financially constrained firms with equity-based financing incentives are more likely to engage real earnings smoothing to lower the information asymmetry to obtain financing benefits whereas debt-focused constrained firms potentially adopt real earnings smoothing as an earnings manipulation tool.

Overall, the sign reversal between real earnings management and real earnings smoothing for labor investment efficiency indicates distinctive implications of these two real earnings adjustments to capital market participants. By investigating the influence of real earnings adjustment on labor investment efficiency, my study responds to the important but under-explored areas of real earnings adjustments (Khurana et al., 2017; Lambert, 1984) and labor investment (Benmelech et al., 2011; Campello et al., 2010; Jung et al., 2014; Matsa, 2018).

6.2 Suggestions for Future Research

Taken together, these studies investigate the interplay between CSR, financial reporting and corporate decision-making in labor investment. The findings as to the influence of CSR on financial reporting quality, the influence of employee-friendly policies and real earnings adjustments on labor investment efficiency contribute to the literature over the implications of stakeholder relationship and accounting information for firms' decision-making and capital market participants.

The studies included in this thesis have highlighted several important research fields that research can potentially pursue in the future. As technology continues reshaping modern business environment, human capital can be one of the most important sources for a firm's competitive advantage and success. Previous studies in labor economics have already shown that labor has a fixed, or quasi-fixed cost component and labor frictions exist and related labor costs can be substantial, corporate labor investment and human capital development is important for firm survival and development. The fact that firms need external capital to finance their labor payments supports the notion that financial market imperfections (i.e., market friction, information asymmetry) can have a considerable impact on corporate employment decisions. Prior literature largely focuses on capital investment instead of labor investment and therefore little is known about the role that financial reporting behavior plays in affecting labor investment and its propagation. Hence, future research can also continue to seek the influence of accounting information, financial reporting environment on corporate employment decision-making and the relevant implications for capital market participants. Moreover, apart from the conventional hiring strategy, whereby each individual employee and their employers agree to an employment contract, firms may also obtain their human capital through alternative channels. For instance, acquisitions can be one of the alternatives to normal recruiting particularly when job seekers possess proprietary information (Chen et al., 2017; Paige Ouimet, 2016). As the global economy is becoming more knowledge-based, it is also interesting to explore the interplay between skilled labor, trade secret protection, corporate decision-making, and the implications of new technology application (e.g., robots at work, artificial intelligence) on firm performance and capital market. For instance, one of my future studies investigates the impact of trade secrets protection on labor investment decisions. By exploiting the staggered adoption of the Inevitable Disclosure Doctrine (IDD) by the U.S. state courts as an exogenous shock

that significantly reduces employee mobility, we employ a difference-in-differences (DiD) approach and find that the adoption of the IDD, on average, leads to higher deviation from the optimal employment level explained by the underlying economics (i.e., lower labor investment efficiency) for firms headquartered in that state, whilst the rejection of the previously adopted IDD results in lower deviation from the optimal employment level (i.e., higher labor investment efficiency). Further analyses show that the impact of the IDD adoption on labor investment decisions is primarily driven by firms' overinvestment of labor, suggesting that firms strategically engage in building precautionary human capital reserves in response to the reduced talent mobility and consequently higher labor adjustment costs. The cross-sectional analyses show that the impact of the IDD adoptions on labor investment decisions is more pronounced for (1) firms in high-skill industries and (2) firms facing high levels of product market competition. Overall, my findings indicate that the trade secrets protection environment can be an influential determinant for labor investment practices and have implications for both policymakers and industry practitioners.

Furthermore, given a large number of studies have substantially established the prominence of CSR and stakeholder relations in today's business operation, investigating the influence of stakeholder relation on capital market and corporate decision-making also can be increasingly important (Buchanan et al., 2018; Lins et al., 2017). In particular, a large number of CSR programs are employee-related and the influence of employee-related dimension of CSR still can be a fruitful area for CSR research (Flammer and Luo, 2017; Matsa, 2018; Servaes and Tamayo, 2013). Given human capital can act strategically by choosing where to work and whether to quit their employment and join new employers, investigating the factors that facilitate the interest alignment between employees and employers can be an interesting research area. In addition to the burgeoning literature on pecuniary incentives (e.g., executives

compensation, employee stock option), future research can investigate the implications of relationship-based incentives (e.g., non-wage compensation) for firm performance.

Finally, institutional investors and various other stakeholders have also pay particular attention to climate-change risk and certain capital market participants also take firms' environmental performance, for instance, carbon emissions into their investment considerations (Eccles et al., 2014). While a certain number of accounting and finance studies suggest that capital markets use environmental disclosure in assessing firms' environmental risk exposure (Barth and McNichols, 1994; Cormier and Magnan, 1997; Matsumura et al., 2014), there is still little research regarding the association between carbon emissions/environment policies, their disclosures and the relevant implications for capital market participants. Given the heightened interest and importance, I believe focusing on corporate environmental policies and green investment would also be a fruitful area for future empirical research.

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APPENDICES

Appendix A (Chapter 4: Do Employee-Friendly Firms Invest More Efficiently? Evidence from Employment Decisions)

Variable	Appendix 1: Description (COMPUSTAT data items in parentheses)
Model (1) Variables:	
NET_HIRE_{it}	Percentage change in the number of employees (EMP) from year t-1 to year t for firm i.
$SALESGROWTH_{it}$	Percentage change in sales (REVT) in year t for firm i.
ROA_{it}	Return on assets (NI / lag(AT)) in year t for firm i.
ΔROA_{it}	Change in return on assets in year t for firm.
$RETURN_{it}$	Total stock return during fiscal year t for firm i.
$SIZE_{it-1}$	Natural log of market value (CSHO* PRCC_F) at the end of fiscal year t-1 for firm i.
$SIZE\_P_{it-1}$	Percentile rank of $SIZE_{it-1}$
LIQ_{it-1}	Quick ratio ((CHE + RECT) / LCT) at the end of year t -1 for firm i.
ΔLIQ_{it-1}	Percentage change in the quick ratio in year t for firm i.
LEV_{it-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.
$LOSSBIN_{it-1}$	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_TREAT_{it}	Employee treatment score from KLD database.
MTB_{it-1}	Market-to-book ratio (CSHO * PRCC_F / SEQ) in year t-1 for firm i.
$DIVD_{it-1}$	Indicator variable coded as 1 if the firm paid dividends (DVPSPS_F) in year t-1.
$TANGIBLES_{it-1}$	Property, plant and equipment (PPENT) at the end of year t-1, divided by total assets at year t-1, for firm i.
$LOSS_{it-1}$	Indicator variable coded as 1 if firm I had negative ROA for year t-1.
$LABINT_{it-1}$	Labor intensity, measured as the number of employees divided by total assets at the end of year t-1 for firm i.

INVEST$_{it}$	Abnormal other (nonlabor) investments, defined as the absolute magnitude of the residual from the following model: INVESTit = β0 + β1SALESGROWTHit-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_CFO$_{it-1}$	Standard deviation of firm i's cash flows from operation (OANCF) from year t-5 to t-1.
SD_SALES$_{it-1}$	Standard deviation of firm i's sales from year t-5 to t-1.
SD_NETHIRE$_{it-1}$	Standard deviation of firm i's change in the number of employees from year t-5 to t-1.
UNION$_{it-1}$	Industry-level rate of labor unionization for year t-1.

Model (3) Variables:

SALES$_{it}$	Employee productivity, measured as the natural logarithm of sales (REVT) divided by the number of employee (EMP).
PRO_EFF$_{it}$	Firm-level production efficiency is firm-level production efficiency (Charnes et al. 1978; Demerjian et al. 2012), which measures the efficiency of a firm relative to the most efficient firm in the same industry estimated by data envelope analysis (DEA). DEA calculates a firm's production efficiency and uses an optimization procedure to maximize the ratio of outputs to inputs.
GOVERNANCE$_{it-1}$	Corporate governance score from KLD database.

Other Variables:

BEST100$_{it}$	Indicator variable coded as 1 if the firm is listed in Fortune magazine's list of the "100 best companies to work for" between 1995 and 2012.
ENVIRONMENT$_{it-1}$	Environment score from KLD database.
COMMUNITY$_{it-1}$	Community score from KLD database.
EMP_RELATION$_{it-1}$	Employee relation score from KLD database.
DIVERSITY$_{it-1}$	Diversity score from KLD database.
PRODUCT$_{it-1}$	Product score from KLD database.
HUMAN_RIGHTS$_{it-1}$	Human rights score from KLD database.
AB_DISC$_{it-1}$	Discretionary accrual is estimated by using the performance-adjusted modified Jones model suggested in Kothari et al. (2005). I 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. I further multiply *AB_DISC* by -1 so that large value of *AB_DISC* indicates higher-quality of financial reporting.

DD_DISC$_{it-1}$	Discretionary accrual is estimated by using the Dechow and Dichiev (2002) model as modified by McNichols (2002) and Francis et al. (2005). I estimate the model for every industry classified by two-digit SIC code for each year and capture the residuals. I then compute the standard deviation of firm i's residuals over the years t-5 to t-1. I further multiply that standard deviation by -1 so that large value indicates higher-quality of financial reporting.
INST_INVESTOR$_{it-1}$	Institutional shareholders at the end of year t-1 for firm i.

Appendix 2: Employee treatment categories (KLD database)

Category	Definition
Strengths	
Union relations strength	The company has taken exceptional steps to treat its unionized workforce fairly.
Cash profit sharing	The company has a cash profit-sharing program through which it has recently made distributions to a majority of its work force.
Employee involvement	The company strongly encourages worker involvement and/or ownership through stock options available to majority of its employees; gain sharing, stock ownership, sharing of financial information, or participation in management decision making.
Retirement benefits strength	The company has a notably strong retirement benefits program.
Work/life benefits	The company has outstanding employee benefits or other programs addressing work/family concerns (e.g., childcare, elder care, or flextime).
Concerns	
Union relations concern	The company has a history of notably poor union relations.
Health and safety concern	The company recently has either paid substantial fines or civil penalties for willful violations of employee health and safety standards, or has been otherwise involved in major health and safety controversies.
Workforce reductions	The company has made significant reductions in its workforce in recent years.
Retirement benefits concern	The company has either a substantially underfunded defined benefit pension plan, or an inadequate retirement benefits program.
Other concern	The company is involved in an employee relations controversy that is not covered by other KLD ratings.

Appendix 3, Panel A: 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
SALESGROWTHit	96,221	0.187	0.078	0.634	-0.032	0.233
SALESGROWTHit-1	96,221	0.256	0.092	0.812	-0.019	0.266
ΔROAit	96,221	0.004	0.006	0.190	-0.038	0.044
ΔROAit-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
ΔLIQit-1	96,221	0.243	-0.000	1.182	-0.208	0.256
ΔLIQit	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, and the values for the first and the third quartile for all the variables in Equation 1.

Appendix 3, Panel B: Regression Results
(Dependent Variable = *NET_HIRE*)

	(1) ***Expected Sign***	*(2)* ***Coefficient***
$SALESGROWTH_{it}$	+	0.2157***
		(46.87)
$SALESGROWTH_{it-1}$	+	0.0255***
		(10.66)
ROA_{it}	+	0.1474***
		(17.68)
ΔROA_{it}	-	-0.2384***
		(-23.52)
ΔROA_{it-1}	+	0.0407***
		(4.95)
$RETURN_{it}$	+	0.0414***
		(22.94)
$SIZE\_P_{it-1}$	+	0.0478***
		(10.85)
LIQ_{it-1}	+	0.0069***
		(10.76)
ΔLIQ_{it}	+/-	-0.0089***
		(-4.33)
ΔLIQ_{it-1}	+	0.0225***
		(14.63)
LEV_{it-1}	+/-	-0.0101*
		(-1.91)
$LOSSBIN1_{it-1}$	-	-0.0230***
		(-2.96)
$LOSSBIN2_{it-1}$	-	-0.0386***
		(-5.37)
$LOSSBIN3_{it-1}$	-	-0.0312***
		(-3.75)
$LOSSBIN4_{it-1}$	-	-0.0262***
		(-3.16)
$LOSSBIN5_{it-1}$	-	-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.

Appendix 4: The Effect of Employee Treatment on Abnormal Net Hiring and the Effect of Employee Treatment and Abnormal Net Hiring on Employee Productivity, Profitability and Production Efficiency – GMM Estimation

	First Stage	*Second Stage*	*First Stage*	*Second Stage*	*First Stage*	*Second Stage*	*First Stage*	*Second Stage*
	(1) EMP_ TREAT	*(1) AB_ NETHIRE*	*(2) EMP_ TREAT*	*(2) SALES*	*(3) EMP_ TREAT*	*(3) ROA*	*(4) EMP_ TREAT*	*(4) PRO_EFF*
EMP_TREAT		-0.0203***		-0.0136		0.0032*		0.0343***
		(-2.60)		(-0.83)		(1.71)		(5.19)
AB_NETHIRE				-0.1079***		-0.0367***		-0.0132*
				(-3.74)		(-3.80)		(-1.68)
EMP_TREAT_STATE	0.7252***		0.6935***		0.6935***		0.6088***	
	(11.52)		(13.12)		(13.12)		(8.28)	
EMP_TREAT_IND	0.8701***		0.8279***		0.8279***		0.8477***	
	(13.21)		(15.30)		(15.30)		(14.90)	
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	18,428	18,428	13,565	13,565	13,565	13,565	12,064	12,064
Adjusted R2	51.2%	35.6%	54.8%	94.0%	54.8%	65.5%	54.8%	73.9%
First-stage F-statistic	23.96		36.70		36.70		25.95	
First stage Cragg-Donald F-test statistics	777.64		1045.47		1045.47		776.20	

First-stage Cragg and Donald Test	(p-value < 0.001)	(p-value < 0.001)	(p-value < 0.001)	(p-value < 0.001)	
Overidentification Test		(p-value = 0.555)	(p-value = 0.324)	(p-value = 0.425)	(p-value = 0.649)

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 GMM 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 GMM estimation results for Model 3 of the study to test the impact of employee treatment (*EMP_TREAT*) and abnormal net hiring (*AB_NETHIRE*) on employee productivity, profitability and production efficiency (*SALES, ROA and PRO_EFF*).

*, **, *** 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 on Abnormal Net Hiring and the Effect of Employee Treatment and Abnormal Net Hiring on Employee Productivity, Profitability and Production Efficiency – LIML Estimation

	First Stage	*Second Stage*	*First Stage*	*Second Stage*	*First Stage*	*Second Stage*	*First Stage*	*Second Stage*
	(1) EMP_ TREAT	*(1) AB_ NETHIRE*	*(2) EMP_ TREAT*	*(2) SALES*	*(3) EMP_ TREAT*	*(3) ROA*	*(4) EMP_ TREAT*	*(4) PRO_EFF*
EMP_TREAT		-0.0207***		-0.0177		0.0029*		0.0340***
		(-2.64)		(-1.05)		(1.72)		(5.12)
AB_NETHIRE				-0.1161***		-0.0363***		-0.0131*
				(-3.87)		(-3.75)		(-1.67)
EMP_TREAT_STATE	0.7252***		0.6935***		0.6935***		0.6088***	
	(11.52)		(13.12)		(13.12)		(8.28)	
EMP_TREAT_IND	0.8701***		0.8279***		0.8279***		0.8477***	
	(13.21)		(15.30)		(15.30)		(14.90)	
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	18,428	18,428	13,565	13,565	13,565	13,565	12,064	12,064
Adjusted R2	51.2%	35.6%	54.8%	94.0%	54.8%	65.5%	54.4%	73.9%
First-stage F-statistic	23.96		36.70		36.70		25.95	
First stage Cragg-Donald F-test statistics	777.64		1045.47		1045.47		776.20	

First-stage Cragg and Donald Test	(p-value < 0.001)	(p-value < 0.001)	(p-value < 0.001)	(p-value < 0.001)	
Overidentification Test	(p-value = 0.555)	(p-value = 0.324)	(p-value = 0.425)	(p-value = 0.649)	

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 LIML 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 LIML estimation results for Model 3 of the study to test the impact of employee treatment (*EMP_TREAT*) and abnormal net hiring (*AB_NETHIRE*) on employee productivity, profitability and production efficiency (*SALES, ROA and PRO_EFF*).

*, **, *** 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: Alternative Indicators of Employee Treatment: ASSET4

	AB_NETHIRE
$ASSET4_{it}$	-0.0001***
	(-2.68)
MTB_{it-1}	0.0014**
	(2.24)
$SIZE_{it-1}$	-0.3326***
	(-3.63)
LIQ_{it-1}	0.0179*
	(1.66)
LEV_{it-1}	0.0569**
	(2.31)
$DIVD_{it-1}$	0.0106
	(0.86)
$TANGIBLES_{it-1}$	-0.0328
	(-0.55)
$LOSS_{it-1}$	-0.0174**
	(-2.21)
$LABINT_{it-1}$	-0.5691
	(-0.27)
$INVEST_{it}$	0.3449***
	(6.14)
SD_CFO_{it-1}	-0.1346
	(-1.29)
SD_SALES_{it-1}	0.0127
	(0.42)
$SD\_NETHIRE_{it-1}$	-0.0805***
	(-3.55)
$UNION_{it-1}$	0.0430
	(0.91)
Firm Fixed Effect	Yes
Year Fixed Effect	Yes
N	4,814
Adjusted R2	20.3%

This table presents the results from regressing abnormal net hiring on alternative employee treatment measured as ASSET4 database 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.

Appendix 7: The Effect of Employee Treatment on Abnormal Net Hiring for Considering Governance Proxies and Earnings Quality

	(1) ***AB_ NETHIRE***	*(2)* ***AB_ NETHIRE***	*(3)* ***AB_ NETHIRE***	*(4)* ***AB_ NETHIRE***
EMP_TREAT$_{it}$	-0.0066***	-0.0066***	-0.0060***	-0.0066***
	(-3.22)	(-3.16)	(-2.75)	(-3.17)
MTB$_{it-1}$	0.0003	0.0003	0.0002	0.0003
	(0.51)	(0.50)	(0.41)	(0.49)
SIZE$_{it-1}$	-0.0961***	-0.0867***	-0.0724***	-0.0931***
	(-3.44)	(-3.12)	(-2.59)	(-3.28)
LIQ$_{it-1}$	0.0091***	0.0091***	0.0082***	0.0093***
	(4.69)	(4.67)	(4.06)	(4.71)
LEV$_{it-1}$	0.0340***	0.0351***	0.0337***	0.0341***
	(3.14)	(3.26)	(3.02)	(3.14)
DIVD$_{it-1}$	0.0066	0.0076	0.0084	0.0068
	(1.08)	(1.24)	(1.31)	(1.11)
TANGIBLES$_{it-1}$	-0.0604**	-0.0670**	-0.0751**	-0.0671**
	(-2.13)	(-2.31)	(-2.56)	(-2.30)
LOSS$_{it-1}$	-0.0032	-0.0039	-0.0026	-0.0033
	(-0.74)	(-0.90)	(-0.58)	(-0.76)
LABINT$_{it-1}$	-1.9282**	-1.8715**	-1.7725*	-1.9059**
	(-2.09)	(-2.03)	(-1.96)	(-2.04)
INVEST$_{it}$	0.3255***	0.3174***	0.3179***	0.3177***
	(5.45)	(5.31)	(5.13)	(5.26)
SD_CFO$_{it-1}$	0.0226	0.0078	-0.0052	0.0094
	(0.35)	(0.12)	(-0.08)	(0.14)
SD_SALES$_{it-1}$	0.0118	0.0155	0.0083	0.0139
	(0.61)	(0.79)	(0.41)	(0.71)
SD_NETHIRE$_{it-1}$	-0.1507***	-0.1547***	-0.1534***	-0.1519***
	(-8.28)	(-8.20)	(-7.97)	(-8.06)
UNION$_{it-1}$	0.0373	0.0427	0.0574	0.0447
	(0.96)	(1.09)	(1.43)	(1.15)
GOVERNANCE$_{it-1}$	-0.0011			-0.0004
	(-0.50)			(-0.18)
INST_INVESTOR$_{it-1}$	0.0464***			0.0446**
	(2.68)			(2.52)
AB_DISC$_{it-1}$		-0.1069***		-0.1120***
		(-3.80)		(-3.98)
DD_DISC$_{it-1}$			-0.0020**	
			(-1.98)	
Firm Fixed Effect	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes
N	20,296	20,178	19,065	19,893

Adjusted R2	25.8%	25.6%	24.8%	26.0%

This table presents the results from regressing abnormal net hiring on employee treatment and additional control variables over the period between 1995 and 2015.

*, **, *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels.

Appendix B (Chapter 5: The Effect of Real Earnings Adjustments on Corporate Labor Investment)

Variable	Appendix 1: Description (COMPUSTAT data items in parentheses)
Pinnuck and Lillies (2007) Variables:	
NET_HIRE_{it}	Percentage change in the number of employees (*EMP*) from year t-1 to year t for firm i.
$SALESGROWTH_{it}$	Percentage change in sales (*REVT*) in year t for firm i.
ROA_{it}	Return on assets (NI / lag(AT)) in year t for firm i.
ΔROA_{it}	Change in return on assets in year t for firm.
$RETURN_{it}$	Total stock return during fiscal year t for firm i.
$SIZE_{it-1}$	Natural log of market value (*CSHO* PRCC_F*) at the end of fiscal year t-1 for firm i.
$SIZE\_P_{it-1}$	Percentile rank of $SIZE_{it-1}$
LIQ_{it-1}	Quick ratio ((*CHE* + *RECT) / LCT*) at the end of year t -1 for firm i.
ΔLIQ_{it-1}	Percentage change in the quick ratio in year t for firm i.
LEV_{it-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.
$LOSSBIN_{it-1}$	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.
Baseline Variables:	
REM_ABCFO_{it-1}	Negative one times the level of abnormal cash flows from operations following Roychowdhury (2006).
REM_PROD_{it-1}	Level of abnormal production costs, where production costs are defined as the sum of cost of goods sold and the change in inventories following Roychowdhury (2006).
REM_DEXP_{it-1}	Negative one times the level of abnormal discretionary expenses, where discretionary expenses are the sum of R&D expenses, advertising expenses and SG&A expenses following Roychowdhury (2006).
$REM\_COMBINED_{it-1}$	Sum of real earnings management proxies, measured as *RM_ABCFO* + *RM_PROD* + *RM_DEXP*; Higher values indicate more real earnings management.
RES_DEXP_{it-1}	A measure of real smoothing based on managerial discretion over the level of expense.
RES_PROD_{it-1}	A measure of real smoothing based on managerial discretion over the level of production costs.
$RES\_COMBINED_{it-1}$	Sum of *ES_DEXP* and *ES_PROD.*
MTB_{it-1}	Market-to-book ratio (*CSHO * PRCC_F/SEQ*) in year t-1.

$DIVD_{it-1}$	Indicator variable coded as 1 if the firm paid dividends (*DVPSPS_F*) in year t-1.
$TANGIBLES_{it-1}$	Property, plant and equipment (*PPENT*) at the end of year t-1, divided by total assets at year t-1, for firm i.
$LOSS_{it-1}$	Indicator variable coded as 1 if firm I had negative *ROA* for year t-1.
$LABINT_{it-1}$	Labor intensity, measured as the number of employees divided by total assets at the end of year t-1 for firm i.
$INVEST_{it}$	Abnormal other (nonlabor) investments, defined as the absolute magnitude of the residual from the following model: $INVEST_{it} = \beta 0 + \beta 1 SALESGROWTH_{it-1} + \varepsilon_{it}$, 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*) multiplied by 100 and scaled by lagged total assets.
SD_CFO_{it-1}	Standard deviation of firm i's cash flows from operation (*OANCF*) from year t-5 to t-1.
SD_SALES_{it-1}	Standard deviation of firm i's sales from year t-5 to t-1.
$SD\_NETHIRE_{it-1}$	Standard deviation of firm i's change in the number of employees from year t-5 to t-1.
$UNION_{it-1}$	Industry-level rate of labor unionization for year t-1.

Other Variables:

$DELAYCON_{it-1}$	Stand-along delay investment constraints from Hoberg and Maksimovic (2015).
$EQUITY\_DELAYCON_{it-1}$	Equity-focused constraints from Hoberg and Maksimovic (2015).
$DEBT\_DELAYCONI_{it-1}$	Debt-focused constraints from Hoberg and Maksimovic (2015).
$PRIV\_DELAYCON_{it-1}$	Private-placement-focused constraints from Hoberg and Maksimovic (2015).
ES_ACCTZ_{it-1}	Discretionary accrual smoothing, following Tucker and Zarowin (2006).
ES_ACCFR_{it-1}	Total accrual smoothing, following Francis et al (2004) and McInnis (2010).
FRQ_{it-1}	Discretionary accrual is estimated by using the performance-adjusted modified Jones model suggested in Kothari et al. (2005). I 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. I further multiply *AB_DISC* by -1 so that large value of *AB_DISC* indicates higher-quality of financial reporting.

DD_DISC$_{it-1}$	Discretionary accrual is estimated by using the Dechow and Dichiev (2002) model as modified by McNichols (2002) and Francis et al (2005). I estimate the model for every industry classified by two-digit SIC code for each year and capture the residuals. I then compute the standard deviation of firm i's residuals over the years t-5 to t-1. I further multiply that standard deviation by -1 so that large value indicates higher-quality of financial reporting.
INST_INVESTOR$_{it-1}$	Institutional shareholders at the end of year t-1 for firm i.
OPERACYC$_{it-1}$	The log of receivable to sales plus inventory to *COGS* multiplied by 360.

Appendix 2: The Effect of Real Earnings Smoothing on Stock Price Crash Risk

(Replication of Khurana et al (2018))

	Expected Sign	***(1) NCSKEW Coefficient (t-stat)***	***(2) DUVOL Coefficient (t-stat)***
RES_COMBINED$_{it-1}$	+	0.0305***	0.0196***
		(3.69)	(3.75)
DTURNit-1	+	0.0698	0.0215
		(1.26)	(0.61)
NCSKEW$_{it-1}$	+	0.0267***	0.0149***
		(4.48)	(4.03)
SIGMA$_{it-1}$	+	0.5428***	0.2335***
		(5.74)	(4.73)
RET$_{it-1}$	+	0.0630***	0.0330***
		(6.97)	(6.86)
SIZE$_{it-1}$	+	0.0615***	0.0353***
		(20.17)	(18.72)
MTB$_{it-1}$	+	0.0135***	0.0085***
		(9.41)	(9.52)
ROA$_{it-1}$	+/-	-0.1278***	-0.0993***
		(-3.93)	(-5.19)
LEV$_{it-1}$	-	-0.0767***	-0.0474***
		(-3.69)	(-3.68)
ABACC$_{it-1}$	+	-0.1463***	-0.0941***
		(-2.69)	(-2.88)
Industry Fixed Effect		Yes	Yes
Year Fixed Effect		Yes	Yes
N		32,510	32,510
Adjusted R2		4.2%	3.9%

This table presents the results from the replication of Khurana et al (2018). Following Kim et al (2011), two stock price crash risk measures are used. *NCSKEW* is the first measure for crash risk, which is the negative skewness of firm-specific weekly returns over the fiscal year. *DUVOL* is the second measure of crash risk, which is the log of the ratio of the standard deviations of firm-specific weekly returns on the down weeks (weeks with firm-specific weekly returns below the mean over the fiscal year) to the standard deviation on the up weeks (weeks with firm-specific weekly returns above the mean over the fiscal year). *DTURN* is the average monthly share turnover over the current fiscal year, minus the average monthly share turnover over the previous fiscal year, where monthly share turnover is calculated as the monthly trading volume divided by total number of shares outstanding during the month. *SIGMA* is the standard deviation of the firm-specific weekly return. *RET* is the mean of firm-specific weekly returns over the fiscal year period, times 100. Size is natural log of total assets. *MTB* is market value of equity divided by book value of equity. *LEV* is the total long-term debts divided by total assets. *ROA* is income before extraordinary items divided by lagged total assets. *ABACC* is absolute value of discretionary accruals, where discretionary accruals are residuals obtained by estimating the modified Jones (1991) model in Kothari et al (2005) in the cross section by 2-digit SIC year.

*, **, *** 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 3: The Effect of Abnormal Inventory Stockpiling on Labor Investment Efficiency

	(1) AB_NETHIRE	(2) AB_NETHIRE
$AB\_INVENTORY1_{it-1}$	0.1053***	
	(6.65)	
$AB\_INVENTORY2_{it-1}$		0.1657***
		(5.91)
$RES\_COMBINED_{it-1}$	-0.0120***	-0.0110***
	(-5.74)	(-5.29)
MTB_{it-1}	0.0011***	0.0011***
	(3.09)	(3.21)
$SIZE_{it-1}$	-0.0017	-0.0128***
	(-0.33)	(-2.58)
LIQ_{it-1}	0.0087***	0.0077***
	(9.93)	(9.12)
LEV_{it-1}	0.0204***	0.0215***
	(4.10)	(4.30)
$DIVD_{it-1}$	-0.0109***	-0.0108***
	(-4.37)	(-4.35)
$TANGIBLES_{it-1}$	-0.0226***	-0.0353***
	(-2.63)	(-4.22)
$LOSS_{it-1}$	0.0228***	0.0203***
	(8.38)	(7.51)
$LABINT_{it-1}$	-0.1248**	-0.1211**
	(-2.23)	(-2.20)
$INVEST_{it}$	0.0003*	0.0003*
	(1.66)	(1.65)
SD_CFO_{it-1}	0.1816***	0.1822***
	(6.79)	(6.82)
SD_SALES_{it-1}	0.0539***	0.0528***
	(5.58)	(5.50)
$SD\_NETHIRE_{it-1}$	0.0810***	0.0788***
	(12.26)	(11.88)
$UNION_{it-1}$	-0.0499	-0.0465
	(-1.49)	(-1.39)
Industry Fixed Effect	Yes	Yes
Year Fixed Effect	Yes	Yes
N	46,761	46,761
Adjusted R2	8.6%	8.6%

This table presents the results from regressing abnormal net hiring on abnormal inventory and other control variables. *AB_INVENTORY1* is the abnormal portion of inventory relative to its 3-digit industry-year median value. *AB_INVENTORY*2 the abnormal inventory level calculated as residual from the cross-sectional inventory holdings expectation model in Hamm et al (2018).

*, **, *** 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.