Failure To Jettison: The Cost of Labor on the Path to Recovery*

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Abstract

We study how workforce composition and labor cost affect the recovery of financially distressed firms. Exploiting China's 2008 Labor Contract Law (LCL) as a laboratory, which increases the cost for a firm to lay off its workers, we show that post LCL, financially distressed firms decelerate the layoff rate of less skilled employees and avoid mass layoffs. The inability to offload low-quality labor is particularly pronounced among distressed firms located in regions with stringent law enforcement, employer-friendly courts, or having more labor unrest. Non-SOE firms suffer more than their SOE counterparts. Following an increase in the cost to restructure their workforce, distressed firms with an ex-ante larger share of less skilled employees experience a higher cost of debt financing and lower ROA growth; they speed up assets sales and cut wages to a greater extent. Consequently, these firms take longer to recover, have a significantly lower survival rate, and are more likely to turn into zombie firms. They also suffer from productivity setbacks. The delay in financial recovery exacerbates the departure of highly skilled workers and allows more resources to be sunk into distressed firms. A larger share of distressed firms crowds out resource allocation to non-distressed local firms, who become more financially constrained and whose productivity deteriorates. Our findings identify the mechanism by which the cost of labor can hinder a firm's ability to emerge from financial distress and highlight an unintended consequence of labor protection regulations.

Keywords: Financial distress; Distress recovery; Zombie firms; Labor composition; Labor law; China

JEL Code: J21, J68, G33, G32

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1. Introduction

Zombie firms – firms under financial distress whose operating cash flows persistently fall below their interest payments (Hu and Varas 2021) – are detrimental to the real economy growth. Despite being less productive and profitable (Caballero et al. 2008), they crowd out their healthy counterparts and distort resource allocation (Banerjee and Hofmann 2018; Acharya et al. 2019). Nevertheless, zombies are prevalent in both developed and emerging economies, and have been on the rise in the wake of the Great Financial Crisis (Banerjee and Hofmann 2018; McGowan et al. 2018; Altman et al. 2024). How to expedite the recovery from financial distress and safeguard firms against slipping into zombies has thus attracted increasing attention from researchers and policymakers.

In this paper, we study the impact of labor costs on the effectiveness of restructuring and the pace of recovery for financially distressed firms. We exploit the enactment of China's Labor Contract Law in a difference-in-differences specification to estimate how firms can effectively restructure their labor force and emerge from financial distress.

China provides a unique setting to investigate these issues for several reasons. First, while the conventional approach identifies distressed firms by inferring their financial health based on information from accounting statements (e.g., Altman 1968) and more recently, from credit default swap (CDS) prices or loan covenant violations (e.g., Brown and Matsa 2016; Falato and Liang 2016), we determine whether a firm slides into financial distress based on actual incidences of bank loan defaults (Fan et al. 2013). Given that China's credit market is dominated by the traditional banking system, and bank loans remain the primary source of external financing for Chinese firms, the China Securities Regulatory Commission (CSRC) mandates disclosure on past-

due loans by listed companies. Consequently, selection bias regarding both the choice of external financing and the disclosure of past-due debt is less of a concern.

Second, China experienced a regulatory shock to the cost of turning over labor. In 2008, China enacted its Labor Contract Law (LCL), specifying detailed conditions about when firms can lay off their employees and extending the situations when firms should pay financial compensation for dismissal. The 2008 LCL came at the time of heightened labor disputes and unrests following China's entry to the WTO. Its primary objective was to provide substantial protection to employees. As such, we can examine how employment decisions differ between financially distressed firms and healthy ones when confronted with elevated displacement costs and more stringent layoff requirements.

Third, the CSRC mandates disclosure on workforce composition in financial statements of Chinese listed firms, which contains firm-level aggregational information for various employee traits, such as education, job specialty, age, and professional titles. This allows us to better capture the quality and composition of a firm's labor force and investigate how workforce structure affects firm recovery from financial distress.

We manually collect information on past-due loans and employment data of Chinese listed firms. We then examine how employment decisions of financially distressed firms differ from healthy ones when facing more stringent labor protection regulations. We find that distressed firms decelerate layoff rate following the increase in the costs of turning over workers. Prior to the 2008 LCL, the employment growth in distressed firms is 5.7 percentage points lower than that of non-distressed firms. Post LCL, the gap shrinks to 0.3 percentage points; the difference is both statistically insignificant and economically negligible. Distressed firms are also less likely to incur

mass layoffs. This suggests that stronger labor protection limits the adoption of layoffs as a resolution to financial distress.

Importantly, the effect of labor protection on employment decision of distressed firms is predominantly driven by their inability to displace less skilled employees – i.e., those lacking adequate technical skillsets or advanced degrees such as colleague education. Consequently, the constraints imposed by labor-friendly regulations disproportionately affect the ability to restructure the workforce, concentrating on off-loading low-quality workers.

There are significant distributional effects as firms located in regions with more frequent labor unrest, stronger law enforcement, or employer-friendly local courts slow down their layoff rate to a larger extent. In addition, non-state-owned enterprises (non-SOEs) that previously were less concerned about contributing to local employment are affected more than their SOE counterparts.

Since employees constitute a non-trivial component of a firm's operating costs, the constraints imposed upon firm's ability to restructure workforce and cut less skilled labor directly result in poor performance. Consistent with this rationale, we show that post LCL, financially distressed firms experience a significant decline in ROA growth and have a higher cost of debt financing. Instead, they speed up asset sales and wage cuts in an attempt to secure cash flows to service debt. The effect is particularly pronounced among distressed firms with an ex-ante larger share of low-quality workers.

The decline in profitability, rising financing costs, and fire-sales of assets ultimately lead to a prolonged path to recover from financial distress. Corroborating with the above evidence, we show that distressed firms exposed to the heightened labor regulation are more likely to remain in distress than those that do not. They also experience a delay in recovery time and a decline in firm

productivity. Post LCL, distressed firms have a 64.5% lower hazard rate of survival and require an additional 2.749 years to emerge from financial distress.

Further analysis reveals that following the labor-friendly regulations, distressed firms with a larger share of low-quality labor have a lower hazard rate of recovery and a higher likelihood of turning into zombies. Specifically, prior to LCL, a one-standard-deviation increase in the firm's low-quality labor intensity is associated with a 4.53% lower hazard rate of survival, a 1.43 times higher hazard rate of turning into a zombie, and 0.117 extra years to resolve distress. Post LCL, however, the same one-standard-deviation increase is associated with a 28.5% lower hazard rate of survival, a 6.06 times higher hazard rate of turning into a zombie, and 0.661 extra years for a firm to recover. There is a shift in workforce composition arising from the prolonged process of recovery: the longer a firm remains in financial distress, the higher the rate of departures by its highly skilled employees. Arguably, the loss of talent further exacerbates the firm's financial challenges and hinders its ability to recover.

Taken together, our evidence suggests that the rising cost to restructure workforce, brought about by more stringent labor protection, impedes firms' ability and speed to emerge from financial distress, ultimately affecting their long-term performance and viability.

Our analysis controls for a host of firm-specific time-varying characteristics and firm fixed effects, which help to track the same firm's employment strategy over time. We saturate our regression models with industry × year fixed effects and province × year fixed effects, which compare across firms in the same industry and the same province at the same time. The inclusion of these fixed effects helps disentangle the effect of labor cost from the influence of various industry- and province-specific shocks and firm characteristics, as well as macroeconomic conditions. We also construct matched samples using various matching techniques. These tests

allow us to narrow the comparison of hiring decisions among firms with similar characteristics. Our dynamic analysis indicates that the pretreatment differences of observed and unobserved firm characteristics cannot explain our findings, as distressed firms did not already experience changes in their employment decisions before the 2008 LCL. Lastly, we show that major concurrent events, such as the global financial crisis, the enactment of the 2007 bankruptcy law, and the 2009-2010 economic stimulus plan, are unlikely the primary driver for our findings.

In the last step of our analysis, we investigate the impact of distressed firms, particularly those whose workforce is dominated by less skilled employees, on their local non-distressed counterparts. Exploiting province-year level variation, we find that the presence of a larger share of distressed firms crowds out subsidy and bank loan allocations to local healthy incumbents. These firms also become more financially constrained and suffer productivity setbacks. Our findings suggest that distressed firms divert resources away from healthy local firms, hindering their growth and performance.

Our paper is related to the large literature exploring the real effects of labor protection and regulations. Labor regulations negatively affect growth at both firm level and country level (Bai et al. 2020; Besley and Burgess 2004; Botero et al. 2004; Simintzi et al. 2015), crowd out external financing, and increase the cost of capital (Chen et al. 2011; Simintzi et al. 2015; Alimov 2015; Serfling 2016). Firms choose their optimal financial position ex-ante in response to the increase in labor's bargaining power (Agrawal and Matsa 2013; Lin et al. 2018; Woods et al. 2019). Labor protection also influences workforce restructuring, resulting in inefficient cost reduction decisions (Dessaint 2017).

We add to this line of literature by exploring ex-post consequences of labor protection regulations. Most of the existing studies focus on the costs surrounding bankruptcy. We instead

consider the stage of financial distress, which can last for years prior to actual bankruptcy filings. This is particularly meaningful for many emerging markets, as the bankruptcy process remains mostly inefficient. We provide evidence that enhanced labor protection distorts firms' firing decisions and reduces firms' ability to recover from financial distress. This distortion is mainly driven by firms' limited flexibility in offloading low-quality employees. While labor regulations deem to protect less skilled employees, as high-quality ones have ample outside options, the inability for firms to recover from financial distress and the accelerated loss of skilled employees in these firms undermine the effect and social benefit of labor protection.

Our paper also contributes to the literature studying financial distress and resolutions in emerging markets. Claessens et al. (2003) document frequent use of out-of-court agreement in East Asia countries during the crisis period 1997-1998. Li and Ponticelli (2022) present stylized facts about bankruptcy cases in China and find a positive impact of judicial efficiency on bankruptcy resolution and local economy. Fan et al. (2013) show that institution and firm ownership structure matter to the recovery of financially distressed firms when creditor protection is weak. Gu et al. (2020) find that SOEs in China adopted sticky labor policies and argue that political incentives shape firms' employment decisions. Leveraging the increase in labor cost resulting from the regulations prescribed by the 2008 LCL, our findings suggest that a firm's ability to effectively restructure its workforce plays a crucial role in facilitating recovery from financial distress and preventing it from slipping into the zombie state. As such, we uncover an unintended consequence of labor protection laws.

The rest of the paper is organized as follows. Section 2 discusses the institutional background. Section 3 introduces our data sources and sample construction. Sections 4 through 6 present the empirical results. Section 7 concludes. Variable definitions are in the Appendix.

2. Institutional Background

2.1 Financial Distress in China

Chinese firms, including large and industrial firms, rely heavily on the traditional banking sector for external financing (Chang et al. 2014). Traditionally, China's banking system is dominated by state-owned banks, whose lending behavior is heavily influenced by local and central governments (Cull and Xu 2005). This has resulted in a large number of non-performing loans (Bailey et al. 2011).

While state-owned enterprises (SOEs) have easier access to bank loans due to ownership discrimination (Allen et al. 2005), they also bear policy burdens, such as maintaining local employment and ensuring social stability (Lin et al. 1998), which can lead to reduced profitability and greater vulnerability to financial distress. Private enterprises face greater difficulties in obtaining external financing, and their financing costs are higher and their financing conditions more stringent, which in turn increases the difficulty of repayment. Moreover, it is difficult for private enterprises to obtain long-term loans, often forcing them to fund long-term projects through rolling over short-term loans (Brandt and Li 2003; Chang et al. 2014). In the case of a credit crunch, this type of financing can easily lead to a break in capital supply, which in turn leads to financial distress.

China's bankruptcy law is weakly enforced, which has led to a lack of effective market exit mechanisms for financially distressed firms. In 1986, China passed the Enterprise Bankruptcy Law, but it was difficult to adapt the law to market requirements as the economy and society developed. In 2006, a revised version of the law came into force, but it was not effectively implemented due to judicial inefficiency (Fan et al. 2013; Li and Ponticelli 2022). According to statistics from the

China Law Yearbook (1993-2001), only 7% of bankruptcy applications were accepted by the courts (Fan et al. 2013).

Government intervention has exacerbated the problem by making it more difficult for troubled firms to exit the market, resulting in a greater prevalence of zombie firms. To prevent the negative impact of enterprise bankruptcy on social stability, the government provides financial support through subsidies and bank loans, enabling these firms to continue operating and avoid retirement (Bhattacharjee and Han 2014). The government also often intervenes in bankruptcy procedures to prevent bankrupt enterprises from being liquidated (Hotchkiss et al. 2023).

2.2 The 2008 Labor Contract Law

Two primary sources of employment law in China are instituted by the central government – the Labor Law (1995) and the Labor Contract Law (2008). The 1995 Labor Law defines the rights and obligations of both parties in labor contracts and protects the legitimate rights and interests of workers, while the 2008 Labor Contract Law was adopted to ensure efficient implementation of the employment rules and principles mentioned in the labor law.

On July 5, 1994, the Standing Committee of the National People's Congress of China promulgated the Labor Law, which took effect on January 1, 1995. The law was enacted during China's transition from a centrally planned economy to a market-oriented economy and aimed to facilitate the establishment of a labor market mechanism and the effective reallocation of human resources. The 1995 Labor Law was a significant milestone in China's labor legislation, as it introduced a comprehensive legal framework for labor relations and provided a foundation for future labor reforms.

However, despite its stringent provisions, the law faced significant challenges in implementation and enforcement. This is partly due to the emergence of new forms of flexible

labor relations in China's active labor market after the turn of the century, which were not covered by the standard relations defined in the 1995 Labor Law. As a result, these new forms of labor relations have been left unprotected. The weak enforcement and limited applicability of the 1995 Labor Law led to the enactment of the 2008 Labor Contract Law, which aimed to enhance the labor contract system and strengthen the enforcement of the 1995 Law.

On June 29, 2007, the National People's Congress of China approved the Labor Contract Law (LCL), which came into effect on January 1, 2008. The LCL introduced several key provisions, including written labor contracts, probation periods, labor dispute resolution, layoff and termination, and collective bargaining, to better protect the rights and interests of employees in the context of China's rapid economic development and increasing labor market flexibility.

The 2008 LCL has two distinct characteristics. First, its enforcement is much tighter than the previous labor regulatory regime, imposing severe penalties on firms' misbehaviors that violate the legal responsibilities prescribed by the Law. As a result, both the fraction of workers receiving a formal contract and employer compliance with payments into social insurance funds have substantially increased (Gallagher et al. 2015; Li and Freeman 2015).

Second, the 2008 LCL introduced stricter requirements for layoffs and terminations, including the need for a valid reason and a mandatory severance payment. The LCL prohibits employers from terminating employees during certain protected periods, such as pregnancy, illness, or military service. While employees may resign with 30 days' notice, there are limited grounds for employers to terminate employees before their contract expires. Employers must notify the labor union of the reasons for the dismissal before terminating a worker, and the circumstances surrounding the termination will determine its legitimacy.

The law also expanded the application of severance payment to flexible-term labor contracts and broadened the range of financial compensations. Employers are required to provide financial compensation to employees in the vast majority of termination cases.[2] The law's regulations on unfixed-term labor contracts and financial compensation have significantly increased the cost of terminating employment contracts in China, where the majority of labor contracts signed between employers and employees are fixed-term contracts with a term of less than one year.

In contrast to many other countries, such as the United States and Australia, where medium-small firms are exempted from regulations on dismissal protection, the 2008 LCL in China offers a high degree of protection for workers' job security that applies to all firms, without discrimination between large and medium-small firms. This is significant because medium and small firms contribute to the vast majority of total employment and economic growth in China (Gibb and Li, 2003; Allen et al. 2005, 2008, 2011). As a result, terminating an employee in China has become more difficult and often more expensive than in many other countries.

According to the Organization for Economic Cooperation and Development (OECD), China's employment protection regarding individual and collective dismissals in 2008 – at the beginning of the LCL – was rated at 2.96. This placed China 7th out of 41 countries assessed. By 2011, China's employment protection rating had increased to 3.01, elevating its ranking to 4th globally. In contrast, both Canada and the United States have more lenient employment protection,

[2] An employer is required to make severance payment to employees upon termination for: (1) termination by mutual agreement and the proposal is put forward by the employer; (2) termination upon 30 days' notice (according to Article 40 of the LCL); (3) termination upon bankruptcy/license revoking/permanent dissolution of the company; (4) termination in a mass layoff; and (5) termination upon the expiration of the labor contract, except where the employer offers the employee a renewed contract on equal or better terms than the expired contract, but the employee refuses to accept it.

with Canada scoring 1.5 and the US scoring even lower at 1.17. These rankings place both countries among the bottom five in terms of stringency of employment protection.

3. Data and Methodology

3.1 Sample Construction

We compile a sample of 2,228 non-financial firms (22,485 firm-year observations) publicly listed on the main board of the Shanghai and Shenzhen Stock Exchanges from the China Stock Market and Accounting Research (CSMAR) database. The sample begins in 2001, when information on employment composition becomes more complete, and ends in 2014, which allows for a balanced comparison centered around the 2008 LCL.

To ensure that the results for employment are not driven by other major restructuring decisions, we exclude firm-year observations with corporate control transfers using transaction information from CSMAR's Shareholding Change Database. We further exclude observations with fewer than 50 employees and observations with missing information on key variables. The final sample consists of 1,911 firms and 11,396 firm-year observations.

Following Fan et al. (2013), we identify financially distressed firms using actual bank loan default events. We manually collect information on firms' default events from the footnotes in their financial reports. We construct *Distress*, a dummy variable set to one if the firm defaults on its short-term or long-term loans, and zero otherwise. In our sample, 789 firm-year observations are distressed firms. In the robust tests, we also consider alternative ways to measure financial distress.

Information on labor force composition is hand-collected from the RESSET database, which contains firm-level aggregate data on employees in Chinese firms, including information

on education, functional departments, professional titles, and age. We measure the quality of an employee by two dimensions: their education and technical skill set. An employee is considered low quality if they are less educated (i.e., if they do not have a college degree) or if their job is not related to technology, R&D, or financial services. A high-quality employee either holds at least a college degree or possesses technical skills in areas such as technology, R&D, or financial services.

For our baseline analysis, we consider two main proxies to capture a firm's employment decisions. First, we define *Employment Growth* as the year-over-year percentage change in the number of employees. We calculate this variable for three distinct categories: the total number of employees, the number of low-quality employees, and the number of high-quality employees. The classification of employee quality is based on their education and technical skillsets, as described above.

Second, to better capture a firm downsizing its workforce, we employ a variation of *Employment Growth*, loosely labeling it as *Layoff Rate*. Specifically, *Layoff Rate* is set to *Employment Growth* if it is negative and is set to zero otherwise. For ease of interpretation, we then multiply the variable by -1. Consequently, a higher value of *Layoff Rate* indicates a larger year-over-year percentage decrease in the number of employees.[3] We construct this variable in terms of laying off total employees, low-quality employees, and high-quality employees, respectively.

3.2 Methodology

To examine how financially distressed firms adjust their employment strategies in response to an increase in the cost of labor dismissal, we perform our empirical analysis in a difference-in-differences setting, estimating the following regression specification:

[3] Put differently, our definition of layoff broadly captures a firm's downsizing its workforce, which may include both voluntary dismissal and involuntary termination.

$$y_{i,t} = \beta_0 + \beta_1 Post_t \times Distress_{i,t} + \beta_2 Distress_{i,t} + \boldsymbol{\gamma X_{i,t}} + \alpha_i + \theta_{p,t} + \phi_{c,t} + \epsilon_{i,t}$$

where $y_{i,t}$ is firm i's hiring decisions during year t, which are *Employment Growth* and *Layoff Rate*, respectively. As described in the previous section, we consider a firm's employment growth rate and layoff rate for its total employees, low-quality employees, and high-quality employees. We classify employee quality based on education and technical skills.

$Post_t$ is a dummy variable set to one if the year is equal or greater than 2008 – the enactment of the LCL – and zero otherwise. Vector $\boldsymbol{X_{i,t}}$ includes controls for time-varying firm characteristics, such as firm size (*Size*, calculated as the natural logarithm of total assets of a firm), financial leverage (*Leverage*, calculated as total liabilities divided by total assets), cash flows (*Cash Flow*, calculated as net operating cash flows scaled by total assets), tangible assets (*Tangible*, calculated as tangible assets scaled by total assets), state ownership (*SOE*, an indicator variable for state ownership), growth opportunities (*Market to Book*, calculated as market value of equity divided by book value of equity), and government subsidies (*Subsidy*, calculated as the amount of government subsidies scaled by total assets).

Lastly, we control for a host of fixed effects, including firm fixed effects (α_i), province × year fixed effects ($\theta_{p,t}$), and industry × year fixed effects ($\phi_{c,t}$). Firm fixed effects capture the time-invariant characteristics that may drive both a firm's distress stage and employment strategy. We include industry × year and province × year fixed effects to further purge confounding effects arising from time-varying industry and geographic dynamics. This helps narrow down our comparison to all firms in the same industry and province at the same time. Standard errors are clustered at the firm level.

3.3 Summary Statistics

Panel A of Table 1 reports the distributions of our sample firms (first two columns) and financially distressed firms (last two columns) across industries. Consistent with the prior literature, the machinery sector has the highest percentage of distressed firms (14.58%), followed by real estate (9.76%), and the gas and chemistry industry (8.24%). Panel B presents the time distributions. There are significant variations in distressed firms across time, with a larger fraction of such firms during the 2004-2009 period.

Panel C reports firm characteristics at firm-year level. Around 6.9% of firm-years observations are financially distressed firms. The employment growth rate of an average firm is 3.1%. The growth rate of low-quality employees, measured by education and technical skills, is 2.2% and 2.7%, respectively, whereas the growth rate of high-quality employees averages 9.3% and 1.7%. An average sample firm pays an annual wage of 82,867 RMB per worker and employs 4,882 workers, with less educated employees accounting for 78.8% and less skilled employees accounting for 82.5% of its workforce. It has total assets of 8.696 billion RMBs, a leverage ratio of 48.9% and a market-to-book ratio of 3.308. State-owned firms account for 45.5% of the sample.

Panel A of Table 2 compares employment and firm characteristics between distressed and non-distressed firms. As expected, distressed firms have significantly lower employment growth rates and higher layoff rates. Compared to healthy firms, they tend to be smaller in size, have a higher leverage ratio, and are less likely to be state-owned.

In Panel B of Table 2, we compare employment decisions of sample firms before and after the implementation of the 2008 LCL. Prior to the LCL, distressed firms have an average employment growth of -5.8% and lay off 10.1% of its workforce. Post LCL, however, the average employment growth rate averages -0.8% and layoff rate drops to 6.3%, both of which are significantly lower in magnitude than those prior to the implementation of the LCL. This suggests

that while distressed firms can substantially downsize their labor force during the pre-LCL period, their capacity to do so has been considerably restricted post LCL. By contrast, non-distressed firms have seen their workforce grow by 4.1% after the LCL, a notable increase from the 2.3% growth rate before the law. This indicates that on average, non-distressed firms have been expanding their workforce during both periods, with a more pronounced growth in the post-LCL period.

4. Employment Reaction by Financially Distressed Firms

4.1 Baseline Results

Table 3 examines how financially distressed firms alter their employment decisions in response to the elevated labor protection brought about by the 2008 LCL. Column 1 of Panel A reports the OLS estimates for the growth rate of total number employees. The positive and significant coefficient for the interaction term *Distress* × *Post* suggests that strengthening labor protection is associated with a 5.4-percentage-point increase in employment growth for distressed firms. The coefficient associated with the dummy variable *Distress* indicates that prior to the enactment of the 2008 LCL, the employment growth of distressed firms is 5.7 percentage points lower than that of non-distressed firms.[4] However, the sum of the coefficients associated with the interaction term *Distress* × *Post* and dummy variable *Distress* implies that the hiring rate gap between the two types of firms shrinks significantly post LCL; distressed firms' employment growth is only 0.3 percentage points lower than that of non-distressed firms, and the difference is not statistically significant.[5]

[4] As Table 2 Panel B indicates, the employment growth rate among distressed firms averages -6% over the pre-LCL 2001-2007 period. It is 2.3% for non-distressed firms. Post LCL, the employment growth rate among non-distressed firms averages 4.1% over the 2008-2014 period, whereas for distressed firms the average is -1%.
[5] The *p*-value for the *F*-statistics testing the sum of coefficients for *Distress* × *Post* and *Post* is 0.8285.

In columns 2-5 of Panel B, we consider the employment growth of low-quality workers and high-quality workers. We measure labor quality using education (columns 2-3) and technical skills (columns 4-5), respectively. It is evident that the higher employment growth among distressed firms relative to healthy firms that we observe in column 1 is primarily driven by the growth of low-quality employees (columns 2 and 4). By contrast, the coefficient estimates associated with the interaction term *Distress* × *Post* are statistically insignificant for the growth of high-quality employees (columns 3 and 5).

This effect persists even after controlling for a range of time-varying firm-level determinants as well as firm-, industry × year- and province × year fixed effects. The inclusion of firm fixed effects allows us to capture within-firm variation for those firms that experience financial distress. The industry-year and province-year fixed effects account for any industrial or provincial variations over time that may have affected firms' employment decisions.

In Panel B, we repeat our baseline regressions, replacing *Employment Growth* with *Layoff Rate*. The results in column 1 imply that following a regulation-induced increase in the cost of terminating labor, financially distressed firms experience a 3.5-percentage-point decrease in layoff rate. Prior to the LCL, the layoff rate of distressed firms is 3.3 percentage points higher than that of healthy firms. Post LCL, however, the layoff rate of distressed firms is 0.2 percentage points lower than the non-distressed firms; this difference is both economically negligible and statistically insignificant.[6]

Columns 2-5 of Panel B confirm the findings in Panel A. The decline in laying off workers is driven by the firm's inability to terminate less skilled employees, as the coefficient estimates for the interaction term (*Distress* × *Post*) are not statistically significant for high-quality labor.

[6] The *p*-value for the *F*-statistics testing the sum of coefficients for *Distress* × *Post* and *Post* is 0.8642.

Lastly, one may wonder whether the changing difference in the rate of dismissing workers between distressed and non-distressed firms captures a general trend to alter workforce composition over time. While industry × year fixed effects and province × year fixed effects in our regression control for unobserved heterogeneity in employment growth across industries and locations over time, in Panel C, we also consider mass layoffs. Substantial downsizing of the workforce is a common cost-saving measure employed by firms grappling with financial distress. We thus define *Mass Layoff* as an indicator variable for when the layoff rate exceeds 50% of the firm's workforce.

The results in Panel C of Table 3 suggest that following more stringent labor regulation, financially distressed firms are less likely to undertake sizable reductions in their workforce. This is especially the case for less skilled labor.

Overall, the results in Table 3 suggest that, following labor-friendly regulations, financially distressed firms tend to retain a relatively larger fraction of less skilled employees rather than high-quality workers. Given that these firms are in dire need to cut costs and swiftly turn their operations and productivity around, labor protection regulations exacerbate workforce frictions, potentially hindering the firms' ability to emerge from financial distress.

4.2 Cross-sectional Tests

We explore cross-sectional variation in our baseline findings to further shed light on the motivators of employment adjustment decision by financially distressed firms in relation to the intensified labor regulation.

4.2.1 State Ownership

We first consider the impact of ownerships on the sensitivity of employment decision to labor regulations. Traditionally, state-owned firms bear policy burdens, shoulder welfare

obligations and help maintain social stability. They tend to have sticky labor policies (Gu et al. 2020) and thus may not swiftly respond to the changing landscape of labor protection. Non-SOEs, on the other hand, are less subject to government influence to limit layoffs when sales decline. For this reason, we expect that non-SOEs that are previously less concerned about maintaining local employment should have a more pronounced reaction to the regulation-induced increase in the cost of displacing labor than their SOE counterparts.

We split the sample into SOEs and non-SOEs and repeat the baseline regressions for the two subsamples. Table 4 Panel A reports the results. We observe that the increase in the cost of displacing labor due to the LCL enactment is associated with a 5.3-percentage-points increase in employment growth rate of financially distressed SOEs (column 1), but a larger – 6.6-percentage-points – increase in that for financially distressed non-SOEs (column 2).

The difference is more evident when we explicitly consider layoffs. Column 3 indicates that financially distressed SOEs do not react differently than non-distressed SOEs to the LCL, as the coefficient estimate associated with the interaction term is statistically insignificant. By contrast, the LCL enactment has a profound impact on non-SOEs. Column 4 suggests that the layoff rate of financially distressed non-SOEs is 3.8 percentage points higher than healthy non-SOEs prior to the LCL. Post LCL, however, the former is 0.9 percentage point *lower* than the latter.

Consistent with our conjecture, results in Table 4 Panel A suggest that non-SOEs experience a significant and sharp decrease in layoff rate, while the effect for SOE firms is insignificant and much smaller in magnitude.

4.2.2 Local Legal Environment

The real impact of labor regulation may vary depending on how effectively it can be enforced. We postulate that provinces with a better legal environment and more efficient

enforcement are capable of a more rigorous implementation of the labor law. Consequently, the effect of the LCL on distressed firms' employment decisions should be more pronounced in these provinces.

From the China Market Index Database, we extract the "index for the development of market-oriented intermediaries and of the legal system and environment" for the years of 2001-2014. This index is constructed for each province each year and is closely linked to the legal enforcement aspect of local institutional quality. Specifically, it evaluates the quality of the local legal system and environment based on three aspects: the degree of development of local market-oriented intermediaries and organizations, such as lawyers, accountants, technical services, and industry associations; the fairness and effectiveness of law enforcement by local public prosecutors and agencies in protecting the legitimate rights and interests of businesses; and the level of intellectual property protection.

We split the sample based on the province-year median and repeat our baseline tests. Panel B of Table 4 shows that, corroborating our conjecture, the impact of labor regulations on employment decisions is more pronounced among firms located in regions with a strong legal environment and high enforcement efficiency (columns 2 and 4). In contrast, the 2008 LCL does not appear to affect employment decisions of distressed firms located in provinces with a weak local legal environment and inefficient enforcement (columns 1 and 3).

4.2.3 Local Labor Unrest

The frequency of local labor unrest also influences the extent to which labor regulation impacts firm employment decisions. Since worker strikes render local labor with a stronger bargaining power and create significant social turmoil, they hinder firms' ability to displace

workers. This implies that firms located in regions with more frequent worker strikes de-escalate layoffs to a greater extent.

We collect data on worker strikes at provincial level from 2011 to 2014 from China Labor Bulletin and calculate the number of strikes in each province over the two-year period.[7] A province has more frequent labor unrest if the number of strikes in the province falls above the sample median. We then split the sample based on whether a firm is headquartered in a province with more local strikes and re-estimate the baseline specifications. From Panel C of Table 4, we observe that the reduced flexibility in downsizing workforce, especially less skilled workers, is more pronounced for firms located in provinces with more labor unrest (columns 1 and 3).

4.2.4 Employer-friendly Courts

Lastly, we postulate that the impact of labor regulation on employment decisions is more pronounced in regions with ex-ante more employer-friendly local courts. Prior to China's adoption of the LCL, employers face less pressure to lay off workers if local courts are more likely to rule in their favor in labor dispute cases. These firms thus should exhibit more pronounced reactions when facing a rise in hurdle to displace labor.

We collect information on court cases with respect to labor disputes during the pre-LCL period of 2001-2007 from the China Economic and Social Big Data Research Platform.[8] For each province-year, we calculate the win-rate for employers (i.e., the fraction of labor dispute cases that are ruled in favor of employers). We then classify a province to have employer-friendly courts if the employer win-rate from its local courts during the 2001-2007 period falls above the sample median.

[7] Data on local worker strikes has been available since 2011.
[8] See, in Chinese, https://data.cnki.net/.

We split the sample based on whether a firm is headquartered in a province with ex-ante employer-friendly local courts. Panel D of Table 4 reports the baseline regression estimates for each subsample. Consistent with our conjecture, the 2008 LCL has a significantly larger impact on firms that previously had access to local courts that could easily help them offload labor. Specifically, firms in provinces with ex-ante more employer-friendly local courts experience a greater increase in employment growth and, correspondingly, a larger decrease in layoff rates.[9]

4.3 Robustness

4.3.1 Alternative Measures of Financial Distress

In this subsection, we consider several alternative measures for financial distress. We first redefine the variable of interest, *Distress*, using the amount of overdue loans instead of a dummy variable indicating default event to capture the extent of financial distress. Second, we define a firm as financially distressed if it has incurred a significant amount of debt default. *Distress* is set to one if the ratio of a firm's defaulted loans over its total liabilities falls above the sample median. Lastly, we capture financial distress with the likelihood of bankruptcy, which is calculated as a dummy variable set to one if the firm's Altman's (1968) Z-score falls below the industry's bottom quartile for two consecutive years and zero otherwise.

In Panels A through C of Table 5, we replicate our baseline specifications with these alternative proxies for financial distress. We continue to find that strengthened labor protection is associated with a sharp increase in employment growth and decrease in layoff rates for financially

[9] The results in Table 4, with the exception of those in Panel D, may potentially be influenced by variations in subsample sizes. To ensure that the LCL's impact on employment decisions for non-SOEs and for firms headquartered in regions characterized by higher levels of labor unrest or a more effective legal environment is not attributable to a larger sample size, which could enhance the statistical power of the test, we replicate the analysis in Panels A through C of Table 4 using a propensity-score-matched sample. Untabulated regression analyses reveal that these findings remain invariant when employing more balanced subsample sizes. These results are available upon request.

distressed firms. In addition, the impact of labor regulations has mainly resulted from the retention of low-quality employees for these firms.

4.3.2 Dynamic Analysis

A potential threat to our identification is that the estimated differential effects on distressed firms and healthy firms may come from the pretreatment differences in the characteristics of these firms. For this reason, we perform a dynamic analysis to examine whether the two types of firms already behaved differently in their employment decisions prior to the LCL enactment. We include in the estimation, respectively, the indicator variables for year 2006, 2007, 2008, 2009 and years after 2009, where year 2008 is the year when China adopted the LCL. We then interact these year dummies with variable *Distress*.

Table 6 provides evidence that corporate employment decisions did not exhibit different trends already before the LCL. Specifically, the coefficients on the interaction terms between pre-event year dummies and *Distress* are not statistically different from zero, suggesting no difference in employment rates between the treated and control groups across years before China adopted the LCL in 2008. The differential employment growth and layoff rates between the two groups only occur after the LCL enactment.

Overall, the evidence suggests that the timing of the event fully supports the causal interpretation of the empirical evidence, and that our results are not explained by the pretreatment differences of firm characteristics.

4.3.3 Placebo Tests

To further mitigate the concern that omitted variables drive the differential employment decisions between distressed and non-distressed firms, we conduct a placebo test to help detect misspecification of the difference-in-differences estimates by randomly assigning the enactment

of LCL to firms. Following Li et al. (2016), we use the fraction of distress firms (6.9%) to randomly draw firms without replacement within each sample year and designate them as distressed firms. The rest of the firms in that year are considered as non-distressed firms. The pseudo distress sample contains a total of 789 firms.[10] We then interact a dummy variable for pseudo distressed firms with *Post* and re-estimate the regressions in column 1 of Table 2 Panels A and B. We repeat this placebo test 500 times. Given the random data generating process, the interaction term in the placebo test should have no significant estimate.

Figure 1 presents the distribution of the estimates from the 500 runs along with the actual estimate for employment growth (Panel A) and layoff rate (Panel B). It is evident that the distribution of estimates from random assignment is centered around zero and the true estimate mostly is located outside the distribution. Table 7 Panel A presents the distribution of the coefficient estimate from the tests based on the 500 simulated pseudo-distress assignments (columns 2 through 7) and the corresponding *T*-statistics (in the parenthesis) in comparison with the coefficient for the interaction term (*Distress* × *Post*) based on the actual distressed firms (column 1). Both the mean and median of the coefficient estimates from random assignments are significantly smaller in magnitude than those estimated using the actual assignment date (column 1). Moreover, the table shows that most of the placebo estimates are statistically insignificant. Taken together, these results suggest that the effect of 2008 LCL on firm employment decisions is unlikely driven by unobserved factors.

Alternatively, we follow Hoberg and Moon (2017) and perform a placebo test to examine whether firms behave divergently in placebo years prior to the actual implementation of the LCL. We re-estimate column 1 of Table 3 Panels A and B, considering three years before the actual

[10] Specifically, the number of pseudo distressed firms in each year is 29, 43, 50, 72, 106, 77, 67, 77, 66, 43, 42, 41, 41, and 35, respectively, for the 2001-2014 period.

event year to account for the possibility the treatment effect may manifest gradually in the data. Specifically, *Pseudo Post* is a dummy variable set to one if the year is equal or greater than 2005 and zero otherwise. Panel B of Table 7 shows that none of the interaction terms between the pseudo post dummy and the dummy for distressed firms are significant. This provides additional evidence that non-parallel trends cannot explain our findings.

4.3.4 Matched Samples and Other Sample Restrictions

The results so far indicate that distressed firms slow down layoffs in response to an increase in the cost to restructure their workforce to a greater extent than non-distressed firms. To mitigate the potential confounding effects driven by unobserved firm-specific, industry-specific, and region-specific dynamics, we control for firm fixed effects, industry × year fixed effects and province × year fixed effects. To further alleviate the concern that observable differences across distressed and non-distressed firms explain the differences in their employment decisions, we form matched samples and re-estimate our baseline results in Panels A and B of Table 3.

In Panel A of Table 8, we apply the propensity score matching (PSM) method to form a matched control group. Specifically, for each distressed firm, we use the same set of control variables as in Table 3 and perform one-to-one nearest neighbor matching without replacement to select one non-distressed firm from the same industry and province. In Panel B of Table 8, we construct the control sample using coarsened exact matching (CEM), which can improve the estimation of causal effects by reducing the imbalance in covariates between treated and control groups. In Panel C, we use an entropy-balanced matching approach to form a comparable control group, balancing with respect to the first three moments of observable firm characteristics across firms in the treated group and control group. This newly balanced data structure ensures that the

features of distressed and non-distressed firms are similar in terms of mean, standard deviation, and skewness (Hainmueller 2012).

Table 8 reports the regression results based on these matched samples. When we closely match firms that are in the stage of financial distress to those that are not, we continue to find that financially distressed firms decelerate the layoff rate of less skilled employees following an increase in labor protection.[11]

Lastly, in untabluated regressions, we exclude firm-year observations involving mergers and acquisitions (M&As) and repeat our baseline analysis. We do so to ensure that our findings are unlikely driven by corporate events such as M&As that also significantly impact employment decisions. Our findings are robust to excluding other corporate restructuring events.

4.3.5 Other Concurrent Events

It is plausible that other major concurrent events, rather than the 2008 LCL, drive the observed relationship between financial distress and employment decisions. Two prominent events are the 2008-2009 global financial crisis, which resulted in a substantial increase in corporate bankruptcies and triggered mass layoffs, and China's enactment of the Enterprise Bankruptcy Law in 2007, which aimed to improve bankruptcy outcomes and provide a unified legal framework for insolvency resolution.[12] One of the prominent changes brought about by the 2007 bankruptcy law is the strengthening of creditor rights' protection, granting secured creditors priority over any workers' compensation claims. It is thus possible that the employment decisions we document

[11] Since we select the matched firms from our control group of firms that have never entered financial distress during the sample period, in this set of the analysis, the main effect of *Distress* is absorbed in the presence of firm fixed effects.

[12] China approved the Enterprise Bankruptcy Law in 2006, which became effective on June 1, 2007. This law replaces the 1986 Bankruptcy Law – which focused exclusively on addressing insolvency of SOEs – as well as all other local insolvency legislation. The 2007 bankruptcy law adopts internationally recognized regulatory and judicial procedures and applies to all firms in mainland China. It sets out a hierarchy of debts to determine the priority of repayment of in liquidation, introduces a reorganization procedure that largely resembles Chapter 11 of the US Bankruptcy Code, and lays out unified rules for liquidation. For detailed descriptions, see Li and Ponticelli (2022) and Hotchkiss et al. (2023).

capture distressed firms' reactions to the 2008-2009 financial crisis or to the enactment of the 2007 bankruptcy law, rather than the 2008 LCL.

These concerns, however, are less pertinent in the context of our analysis. Financial crises typically have a disproportional impact on distressed firms compared to healthy firms, and the 2007 bankruptcy law's prioritization of creditor rights would make it more costly for distressed firms to guard workers compensation claims, both of which would lead to more substantial workforce downsizing. Instead, we find that distressed firms decelerate layoff rates, indicating that neither the 2008-2009 financial crisis nor the enactment of the 2007 bankruptcy law is likely to be the primary driver of our results. Our cross-sectional tests help further alleviate these concerns, as it is difficult to argue that the 2008-2009 financial crisis or the 2007 bankruptcy law enactment alone would explain the differential effect on employment and layoff decisions among firms located in provinces with varying legal environments, worker strike frequencies, and employer-friendly local courts.

Nevertheless, in this subsection, we first perform a validation test on the impact of the financial crisis, leveraging China being an export-oriented economy at the time (Guo and N'Diaye 2011). The 2008-2009 global financial crisis had a significant impact on Chinese exports due to the recession in many of China's major trading partners, such as the United States and Europe. This led to decreased demand for Chinese goods, increased trade disputes, and protectionist measures against Chinese exports. According to the World Bank, China's export growth slowed down significantly in 2008 and even turned negative in 2009. If the financial crisis, rather than the 2008 LCL, explains our findings, we should expect that our results are more pronounced among firms that were previously export-dependent compared to those that operate mostly domestically.

This is because export-dependent firms are more vulnerable to the external economic shocks brought about by the financial crisis than firms that primarily serve the domestic market.

To identify export-dependent firms, we collect information from the "Notes to Operating Income" section of a firm's annual reports. Since this information becomes available in the CSMAR database starting in 2003, we classify a firm as (ex-ante) export-dependent if it reports overseas revenue during the pre-LCL 2003-2007 period. We then split the sample into export-dependent firms and domestically operating firms and re-estimate our baseline regressions.

Panel A of Table 9 shows no evidence that our results are driven by export-dependent firms. We also obtain consistent results when we match each export-dependent firm with a domestically operating firm. Consequently, the 2008-2009 global financial crisis alone is unlikely to explain our findings.

Next, we consider the potential impact of the 2007 bankruptcy law. If the enactment of the 2007 bankruptcy law, rather than the 2008 LCL, explains our findings, distressed firms near the stage of bankruptcy would be most affected by the law and thus have the most pronounced change in their employment decisions.

Following Altman (2013), we identify a distressed firm as being headed for bankruptcy if its Altman Z-score value is close to or below 1.8. We then re-estimate the main regression model among distressed firms, replacing the *Distress* variable with *Near Bankruptcy*, a dummy variable set to one if a distressed firm's Z-score does not exceed 1.8, and zero otherwise.

Panel B of Table 9 reveals that neither the coefficient for the interaction term *Near Bankruptcy* × *Post*, nor the one associated with variable *Near Bankruptcy*, is statistically significant. This indicates that distressed firms approaching the stage of bankruptcy, and therefore more exposed to the enactment of the 2007 bankruptcy law, do not exhibit significantly different

employment and layoff decisions compared to those that are not immediately affected by the passage of the bankruptcy law. As such, our results are unlikely explained by the 2007 bankruptcy law. [13]

Lastly, one may wonder whether the Chinese government's 2009-2010 economic stimulus plan, implemented in response to the global financial crisis, could explain our findings. The plan entailed a substantial increase in government spending, amounting to 4 trillion RMB over two years, and incorporated a set of credit expansion policies. It is possible that these credit expansions trickled down to firms, easing their financial constraints and subsequently boosting their hiring rates. Distressed firms, in particular, may have adjusted their employment strategies to a greater extent compared to their non-distressed counterparts, as they would have experienced a more significant reduction in financial constraints.

To mitigate such a concern, our regression model controls for industry × year fixed effects and province × year fixed effects, which takes into account sector-specific and region-specific time-varying shocks. In addition, Cong et al. (2019) find that the stimulus-driven credit expansion disproportionately favored state-owned firms, which implies that the effect should be stronger among SOEs compared to their non-SOE counterparts. By contrast, we show in Panel A of Table 4 that post LCL, non-SOEs increase employment and slow down layoffs to a greater extent than SOEs. This suggests that the 2009-2010 economic stimulus plan is unlikely the primary driver for our baseline findings.

[13] The lack of employment reaction among financially distressed firms to the enactment of the 2007 bankruptcy law also corroborates the prior evidence on the friction affecting the effective legal reform of bankruptcy resolution. In fact, Hotchkiss et al. (2023) show that the introduction of the new bankruptcy law was not followed by major changes in the number of bankruptcy cases accepted by Chinese courts. Jiang (2014) finds that the number of bankruptcy filings actually declined in the years following the enactment of the new law.

5. The Consequences of Ineffective Workforce Restructure

In this section, we investigate the real consequences that firms face when they are constrained from laying off workers during phases of financial distress, and how these consequences vary depending on their pre-existing labor force characteristics.

To capture labor heterogeneity across firms, we follow Dewenter and Malatesta (2001) and calculate a firm's low-quality labor intensity for each year as the natural logarithm of the ratio of the number of less skilled employees (i.e., those without college degrees or with limited technical skillsets) to sales. We classify a firm as (ex-ante) low-quality labor-intensive if the median value of each measure of its low-quality labor-intensity over the pre-LCL period of 2001-2007 falls above the sample mean, respectively.

We first compare the access to cheap credit and operating performance between distressed firms and healthy firms following the increase in the cost of turning over workers. In Panel A of Table 10, we consider the cost of debt financing, calculated as interest expenses divided by total interest-bearing debts. In Panel B, we consider the change in profitability, calculated as the difference in ROA between years $t-1$ and t (Fan et al. 2013).

We observe that following the intensified labor regulation, financially distressed firms pay one-percentage-point more in debt financing in debt financing than non-distressed firms (column 1 of Panel A), accounting for 16.13% (= 0.010/0.062) of the sample mean. These firms also experience a 1.1-percentage-point lower performance growth (column 1 of Panel B).

In columns 2 through 5, we divide the sample based on whether a firm had a high proportion of low-quality labor prior to the LCL enactment.[14] The results show that the increase in debt financing costs and decrease in profitability experienced by distressed firms after the LCL

[14] Due to missing values when calculating labor-intensity measures, the size of the combined sample in columns 2 and 3 and in columns 4-5 is smaller than that of the full sample.

are primarily driven by those with a pre-existing large share of less skilled workers (columns 2 and 4 of both panels). For instance, column 4 indicates that post LCL, distressed firms with a larger share of low-quality employees exhibit a 1.6-percentage-point increase in the cost of debt (Panel A) and a two-percentage-point drop in ROA growth (Panel B). The higher cost of debt, in turn, may help explain why distressed firms with a larger share of low-quality employees become less profitable after the strengthening of labor protection. In contrast, the LCL enactment does not lead to a significant difference in debt financing cost or performance change between non-distressed firms and distressed firms with ex-ante low level of poorly skilled labor (columns 3 and 5).

Since labor costs constitute a significant component of a firm's operating expenses, distressed firms that are constrained from effectively restructuring their workforce may resort to alternative measures to ensure their survival. In Panels C and D, we consider wage cuts and asset sales, respectively. The results show that distressed firms do not substantially cut wages or sell assets compared to non-distressed firms (column 1) post LCL, unless they have a larger share of less skilled employees (columns 2 and 4 of both panels), whom the labor protection law disproportionately hinders the firms' ability to displace.

6. Survivals of Financial Distressed Firms

6.1 Likelihood of Recovery vs. Becoming a Zombie

So far, we have shown that distressed firms experience higher debt financing costs and lower profitability when it becomes costly for them to displace less skilled employees. These firms may resort to wage cuts and asset sales, both of which can further impede their ability to emerge from financial distress. In this section, we restrict the sample to distress events and explicitly examine how firms' ability to recover is affected by labor protection reforms.

We track each distress event to determine whether the firm recovers by the end of the sample period in 2014.[15] For each incidence in which a firm successfully emerges from financial distress, we measure the duration of its distressed state. We then distinguish between two groups: the affected group, which comprises distressed events that either recovered after 2008 or remained distressed beyond 2014, and the control group, which includes distressed events that recovered before 2008.

We first estimate the proportion of firms remaining in financial distress up until a given time and plot the real survival curves using the Kaplan-Meier method, a non-parametric approach that estimates a survivor function without covariates and compute the conditional survival probability. Figure 2 presents the plot based on Kaplan-Meier survival estimates for distressed firm's rate of recovering from financial distress. It captures the evolution of recovering rate over the life circle of a distress event. Throughout the entire distress period, the solid line for distressed firms affected by the labor regulations is above the dashed line for control firms that became distressed and recovered before the LCL. This suggests that at any given time, affected firms have a higher rate of remaining in distress than control firms.

Next, we examine the effect of labor protection law on the probability of emerging from financial distress, taking into account other factors that could potentially affect the probability of recovery at a given time. We estimate Cox's proportional hazard model for the survival analysis.[16] The dependent variables are, respectively, the hazard rate of recovering from financial distress and hazard rate of turning into a zombie firm. Similar to Álvarez et al. (2023), we classify a firm to be

[15] We consider a firm to have emerged from distress when it no longer carries defaulted loans. Note that this approach allows for a firm to enter and exit financial distress multiple times throughout the sample period. For example, if we observe defaulted loans in years 1 and 2, no defaulted loans in years 3 through 5, and then defaulted loans again in year 6, we treat these as two separate distress events. Estimating survival analysis at firm level instead of distress event level produces similar findings.

[16] Using Weibull regression specification produces consistent estimates. For brevity, the results are not tabulated but available upon request.

a zombie if it is at least eight years old, has an interest coverage ratio less than one for two consecutive years and has received new bank loans. Our variables of interest are *Post* (re-defined as a dummy variable set to one if a distress event is affected by the 2008 LCL and zero otherwise) and its interaction with our proxies for ex-ante labor intensity. We include the same set of control variables (size, leverage, growth opportunities, cash flows, tangible assets, state ownership, and government subsidies) as in our baseline regression, as well as industry and recovery-year fixed effects.[17]

Table 11 present the results from Cox regression estimating the hazard ratio of recovering from financial distress (columns 1-3) and the hazard ratio of turning into a zombie firm (columns 4-6).[18] All the coefficients are reported in the non-exponentiated form. The results indicate that post LCL, financially distressed firms have 64.5% (= 1- exp(-1.035)) lower hazard rate of survival (column 1) and 1.2 times (= exp(0.183)) higher hazard rate of becoming zombies (column 4). The lower survival rate and higher propensity of slipping into zombies are particularly pronounced among firms with a workforce comprised mostly by less skilled workers (columns 2-3 and 5-6), as the coefficients associated with the interaction terms *Post* × *Low-quality Labor Intensity* are negative and significant.

In terms of economic significance, before the LCL enactment, a one-standard-deviation increase in ex-ante low-quality labor intensity is associated with a 4.53% (= 1- exp(-0.040 × 1.16)) lower hazard rate of survival and a 1.43 times (= exp(0.306 × 1.16)) higher hazard rate of turning into a zombie. Post LCL, the same one-standard-deviation increase in low-quality labor intensity

[17] For a distress event in which the firm remains distressed beyond 2014, we set the recovery year to 2015.
[18] To avoid mechanical correlation, we remove distress incidences where a firm begins defaulting on loans and becomes a zombie firm at the same time.

is associated with a 28.5% (= 1- exp(-0.289 × 1.16)) lower hazard rate of survival and a 6.06 times (= exp(1.553 × 1.16)) higher hazard rate of turning into a zombie.

To summarize, the results show that distressed firms affected by the labor protection law have a lower hazard rate of recovery and a higher hazard rate of becoming zombie firms compared to distressed firms not exposed to the LCL. This effect is particularly pronounced for firms with a larger share of low-quality labor, reducing their ability to resolve financial distress to a greater extent.

6.2 Recovery Time and Productivity

Next, we examine whether it takes longer for firms to recover from distress following an increase in the cost of displacing workers. We replace the hazard ratio of recovery with *Recovery Time*, defined as the number of years that a firm remains in distress.

Columns 1-3 of Table 12 present the OLS regression estimates. The results indicate that following the implementation of the labor protection law, firms require an additional 2.749 years to recover from financial distress (column 1). This prolonged time to recover brought about by the labor-friendly regulation is particularly pronounced among firms with ex-ante a large labor force with less skilled employees (columns 2-3).

In terms of economic magnitude, column 2 indicates that prior to the enactment of the 2008 LCL, a one-standard-deviation increase in low-quality labor intensity is associated with 0.117 (= 0.101 × 1.16) extra years to emerge from distress. After the LCL, the same one-standard-deviation increase is associated with 0.661 (= 0.57 × 1.16) extra years for a firm to recover, accounting for 18.36% (= 0.661/3.6) of the sample mean.

Finally, we consider how the implementation of the 2008 LCL affects the productivity of distressed firms. We first follow Giannetti et al. (2015) and compute a firm's total factor

productivity (*TFP*). Table 12 reveals that the enactment of the 2008 LCL alone does not alter distressed firms' productivity (column 4). However, distressed firms with a pre-existing larger share of less skilled labor are associated with lower productivity after being exposed to stronger labor protection regulations (columns 5-6).

There is evidence to suggest that labor productivity contributes to the decline in a distressed firm's total factor productivity that we document above. Following Tate and Yang (2015), we calculate labor productivity (*Labor Productivity*) by dividing a firm's sales by the number of employees. For this set of analyses, we control for, additionally, capital intensity, defined as the natural logarithm of assets per employee (Koch and McGrath 1996). The results presented in columns 7-9 of Table 12 indicate that, following an increase in the cost of workforce restructuring, distressed firms with a larger ex-ante share of less skilled labor experience a significant deterioration in labor productivity.

Overall, it appears that after a rise in the cost of displacing workers, firms with a larger share of low-quality labor take significantly longer to emerge from financial distress. Moreover, these firms exhibit lower productivity, which may further contribute to their prolonged recovery time.

6.3 Delay in Recovery, Workforce Composition, and Government Subsidy Allocation

Lu, Yang, and Zhang (2024) demonstrate that firms replace high-skilled workers with low-skilled ones when facing adverse financial shocks, as high-skilled workers require a higher wage premium. Baghai et al. (2021) find that talented employees tend to leave when their firms approach bankruptcy. In the context of our analysis, when distressed firms are unable to easily offload less skilled employees, they experience deteriorating profits and are compelled to accelerate asset sales and cut wages. This may lead to the departure of highly skilled workers. Consequently, a delay in

recovery may also affect the labor composition of these firms. We postulate that the longer a firm remains in financial distress, the higher the probability that it will experience a loss of talent.

To examine this turnover effect on high-quality workers, we first regress the percentage change in high-quality employees during the distress period on *Recovery Time*. The unit of observations is a default event. Consistent with our conjecture, columns 1-2 of Panel A of Table 13 show that the length of time a firm remains in financial distress is associated with a significant decline in high-quality labor.

Next, we estimate a dynamic specification, considering dummies for years that a firm in the stage of financial distress – that is, indicator variables for *2nd Year in Distress*, *3rd Year in Distress*, and *4th Year and Beyond in Distress*. We then calculate the fraction of high-quality employees to total employees, and to low-quality employees in each year. For this set of analysis, the unit of observations is a firm-year. Columns 3-6 of Panel A in Table 13 reveal that the longer a firm stays in financial distress, the lower the fraction of high-quality employees remaining in the firm. Furthermore, the coefficient estimate tends to be larger in magnitude for later years in the distress stage.

Overall, the results in Panel A of Table 13 offer evidence consistent with the argument that a delay in financial recovery accelerates the loss of talent for distressed firms, further hindering their recovery. Our findings also complement prior evidence documenting the reduced ability of financially distressed firms to retain highly talented workers (e.g., Baghai et al. 2021).

A delay in recovery not only exacerbates the frictions in workforce composition, but also consumes more social resources. In Panel B of Table 13, we assess the extent of government subsidies directed during the period of financial distress. We calculate the total amount of government subsidies received by a firm during the stage of financial distress, and scale it by the

total assets at the beginning of the distress period. Alternatively, we compute the natural logarithm of one plus the total amount of government subsidies.

In a framework similar to the one in Panel A, we regress the two government subsidy variables on *Recovery Time* and report the results in columns 1 and 3 of Panel B. We then explore the dynamics in government subsidy allocation using a firm-year panel and include dummies for the years that a firm is in the stage of financial distress (columns 2 and 4 of Panel B).

Panel B in Table 13 suggests that the longer a firm stays in financial distress, the more government subsidies it absorbs. Again, columns 2 and 4 show that the coefficient estimate tends to be larger in magnitude for later years in the distress stage. We interpret this as evidence that a delay in distress recovery exacerbates the extent of resources sunk into distressed firms.

6.4 Spillover in Non-Distressed Firms: Province-Level Evidence

In this section, we study the impact of distressed firms on healthy local incumbents. For each province-year, we calculate the proportion of distressed firms relative to non-distressed firms, as well as the proportion of low-quality-labor-intensive distressed firms relative to non-distressed ones, weighted by *Recovery Time*.[19] This approach allows us to capture both the number of local distressed firms and the duration of their distress, to which healthy firms are exposed.

We first investigate the potential existence of a crowding-out effect in the context of government subsidies and compute the fraction of government subsidies allocated to non-distressed firms within a given province-year. By consuming a larger share of subsidies, distressed firms may crowd out resources that would otherwise be deployed to their healthy counterparts by the government.

[19] For firms with a distressed duration greater than 3, the distressed duration is capped at 3; otherwise, the original value is retained.

We also assess the extent to which healthy local incumbents access bank financing, considering new bank loans that they borrow each year. For each firm, we calculate new bank loans as the change in the sum of short-term loans, long-term loans, and current portion of long-term loans due from year $t-1$ to year t, scaled by the total assets in year $t-1$. We then average it across non-distressed firms in each province and year.

To estimate the spillover effect, we regress government subsidies and new bank loans on the proportions of distressed firms and low-quality-labor-intensive distressed firms, respectively. We control for time-varying provincial factors that may affect government subsidies and bank loan financing received by local non-distressed firms. These characteristics include economic indicators such as GDP growth, consumer price index (*CPI*), and fixed assets investment (defined as fixed assets investment scaled by GDP). Additionally, we account for the quality of the local labor pool and institutions. To measure the quality of the local labor pool, we calculate the proportion of college graduates in the local urban labor force. We capture the quality and development of local institutions using the provincial marketization index developed by Fan et al. (2019). This well-known index system tracks and ranks the relative marketization process in all provinces, autonomous regions, and municipalities across mainland China over time. Lastly, we add province fixed effects to absorb the impact from time-invariant provincial characteristics and year fixed effects to control for economic conditions.

In Panel A of Table 13, we observe that local healthy firms receive smaller government subsidies (column 1) and fewer new bank loans (column 4) when there is a larger fraction of firms in the same province experiencing financial distress. Importantly, columns 2-3 and 5-6 suggest that the presence of a higher percentage of low-quality labor-intensive distressed firms contributes to the decline in subsidies and bank loans distributed to non-distressed local peers. Combining

these findings with the results in Table 12, which show that firms absorb more government subsidies when remaining longer under financial distress, there is evidence of a crowding-out effect on financial resource allocation.

Nevertheless, healthy firms securing fewer financing resources in regions with larger shares of distressed firms does not necessarily imply that the crowding-out effect is inefficient. Healthy firms may rely less on subsidies and bank loan financing than their distressed local counterparts. Allocating more subsidies and bank loans to distressed firms may not distort resource allocation if the performance of non-distressed firms is not compromised.

To evaluate the real effects on local healthy firms, we construct Lamont et al.'s (2001) KZ-index to measure the financial constraints of non-distressed firms. We then average the KZ index across all non-distressed firms in a province and in a year. A higher value of *Financial Constraint* indicates that, on average, local non-distressed firms are more financially constrained. We also compute the average total factor productivity of non-distressed firms.

Panel B of Table 14 reveals that non-distressed firms become more financially constrained when there is a larger share of regional peers under financial distress (column 1), particularly when there is a higher proportion of distressed firms that are low-quality labor-intensive (columns 2-3). Moreover, these firms also experience a decline in productivity (columns 4-6). Arguably, the insufficient allocation of financing and credit resulting from the crowding-out effect hinders the performance of non-distressed firms.

These results are consistent with the prior studies documenting the resources sunk in zombie firms constrain the growth and productivity of healthy incumbent firms (e.g., Banerjee and Hofmann 2018; McGown et al. 2018). Our findings also complement the findings of Li and

Ponticelli (2022), who show that cities experience an increase in performance of local firms once they adopt a more effective bankruptcy court.

7. Conclusion

In this paper, we study how the cost of labor and workforce composition affect the recovery of financially distressed firms. We use China's 2008 Labor Contract Law as a laboratory, which increases the cost for a firm to lay off its employees and to effectively restructure its labor force.

We find that distressed firms decelerate the layoff rate of low-quality employees post LCL. The inability to offload low-quality labor is particularly pronounced among distressed firms located in regions with stringent law enforcement, employer-friendly courts, or having more labor unrest. Non-SOE firms suffer more than their SOE counterparts.

Following an increase in the cost to restructure their workforce, distressed firms with a pre-existing larger share of low-quality employees experience a decline in performance and a higher cost of debt financing; they increase sales of assets and cut wages to a greater extent. Consequently, these firms have a lower probability of survival and a higher likelihood of becoming zombies. They also take longer to recover from financial distress. The prolonged recovery process exacerbates the departure of high-quality workers and allows more resources to be sunk into distressed firms. The presence of a larger share of distressed firms, particularly those whose workforce is dominated by less skilled employees, crowds out subsidy and bank loan allocation to local healthy incumbents. These non-distressed firms also become more financially constrained and suffer productivity setbacks. Our findings identify the mechanism by which the cost of labor can hinder a firm's ability to emerge from financial distress and highlight an unintended consequence of labor protection regulations.

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Appendix: Variable Definitions

Variable	Definition and Data Source
Asset Sales	Asset sales scaled by total assets at the beginning of the year. Asset sales is defined as net cash received from disposal of fixed assets, intangible assets, subsidiaries, other business units and other long-term assets. The value is coded as missing if the raw value is negative. Source: CSMAR database.
Cash Flow	Net operating cash flow scaled by total assets at the beginning of the year. Winsorized at the 1% and 99% levels. Source: CSMAR database.
Cost of Debt	Interest expenses divided by the average of interest-bearing debt at the beginning and the end of the year. Interest-bearing debt is defined as the sum of short-term loans, long-term loans, the current portion of non-current liabilities, bonds payable, and long-term payables. Winsorized at the 1% and 99% levels. Source: CSMAR database.
Distress	A dummy variable set to one if a firm defaults on its bank loans in a year and zero otherwise. Source: Manual Collection.
Employment Growth	Year-over-year percentage change in the number of employees. This variable is set to be missing if the value equals or exceeds 100%. Source: CSMAR database.
Employment Growth of Low-quality Employees	Year-over-year percentage change in the number of low-quality employees. Low-quality employees are those without a college degree or without technical skills in areas such as technology, R&D, or financial services. This variable is set to be missing if the value equals or exceeds 100%. Sources: CSMAR and RESSET databases.
Employment Growth High-quality Employees	Year-over-year percentage change in the number of high-quality employees. High-quality employees are those holding at least a college degree or possessing technical skills in areas such as technology, R&D, or financial services. This variable is set to be missing if the value equals or exceeds 100%. Source: CSMAR and RESSET databases.
Fraction of High-quality Employees to All Employees (Low-quality Employees)	The number of high-quality employees divided by total number of employees (the number of low-quality employees). High-quality (low-quality) employees are those with (without) a college degree or technical skills in areas such as technology, R&D, or financial services. Winsorized at the 1% and 99% levels. Source: CSMAR database.
Labor Intensity	The median value of labor intensity by year for the period of 2001-2007. Labor intensity by year is calculated as the natural logarithm of total employee number over sales. Winsorized at the 1% and 99% levels. Source: CSMAR database.

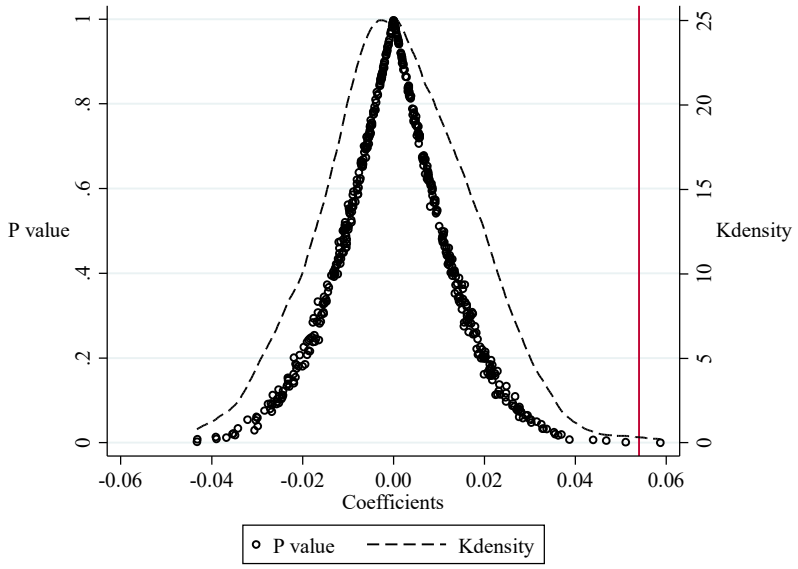
Labor Productivity	A firm's sales (in million RMB) divided by the number of employees. Winsorized at the 1% and 99% levels. Source: CSMAR database.
Layoff Rate	Year-over-year percentage decrease in the number of employees. This variable is set to *Employment Growth* if the growth is negative, and to zero if the growth is positive. We then multiply it by -1. Source: CSMAR database.
Layoff Rate of Low-quality Employees	Year-by-year percentage decrease in the number of low-quality employees. This variable is set to *Employment Growth of Low-quality Employees* if the growth is negative and, to zero if the growth is positive. We then multiply it by -1. Low-quality employees are those without a college degree or without technical skills in areas such as technology, R&D, or financial services. Source: CSMAR and RESSET databases.
Layoff Rate of High-quality Employees	Year-over-year percentage decrease in the number of high-quality employees. This variable is set to *Employment Growth of High-quality Employees* if the growth is negative, and to zero if the growth is positive. We then multiply it by -1. High-quality employees are those holding at least a college degree or possessing technical skills in areas such as technology, R&D, or financial services. Source: CSMAR and RESSET databases.
Leverage	Total liabilities divided by total assets. Winsorized at the 1% and 99% levels. Source: CSMAR database.
Low-quality Labor Intensity	The median value of low-quality labor intensity by year over the period of 2001-2007. Low-quality labor intensity by year is calculated as the natural logarithm of the number in low-quality employees over sales. Low-quality employees are those without a college degree or without technical skills in areas such as technology, R&D, or financial services. Winsorized at the 1% and 99% levels. Source: CSMAR and RESSET databases.
Market to Book	Market value of equity divided by book value of equity. We censor this variable if it is above 10 or below zero. Source: CSMAR database.
Marketization	The Fan et al.'s provincial index of marketization. *Source:* China Market Index Database.
Mass Layoff	A dummy variable set to one if the layoff rate exceeds 50% of the firm's workforce, and zero otherwise. Source: CSMAR database.
Near Bankruptcy	A dummy variable set to one if a distressed firm's Altman Z-score equals or is less than 1.8, and zero otherwise.
Post	A dummy variable set to one if the year is equal or greater than 2008 – the enactment of the LCL – and zero otherwise.
ROA Growth	The change of ROA, defined as the difference between ROA in year t and ROA in year $t-1$. ROA is calculated as operating profit minus investment income, scaled by total assets at the beginning of the year. Winsorized at the 1% and 99% levels. Source: CSMAR database.

Size	The natural logarithm of total assets. Winsorized at the 1% and 99% levels. Source: CSMAR database.
SOE	A dummy variable set to one if a firm is ultimately controlled by the state and the state, as the largest shareholder, owns more than 30% of shares. Source: CSMAR database.
Subsidy	Government subsidies received by the firm, divided by its total assets, and multiplied by 100. Winsorized at the 1% and 99% levels. Source: CSMAR and RESSET database.
Tangible	Tangible assets divided by total assets. Winsorized at the 1% and 99% levels. Source: CSMAR database.
TFP	The residual of regressing the natural logarithm of sales on the natural logarithm of total assets, the natural logarithm of the total number of employees, and the natural logarithm of cash payments for raw materials and service. Winsorized at the 1% and 99% levels. Source: CSMAR database.
Wage Growth	Year-over-year percentage change in the average wage of the employees. Winsorized at the 1% and 99% levels. Source: CSMAR database.
Zombie Firm	A dummy variable set to one if a firm is at least eight years old, has an interest coverage ratio less than one for two consecutive years and has received new bank loans, and zero otherwise. Interest coverage ratio is calculated as EBIT divided by interest expenses. Source: CSMAR database.

Figure 1: Distribution of Estimated Coefficients of Placebo Test

The figures show the cumulative distribution density of the estimated coefficients from 500 simulations randomly assigning distress status to firms.

Panel A: Employment Growth



Panel B: Layoff Rate

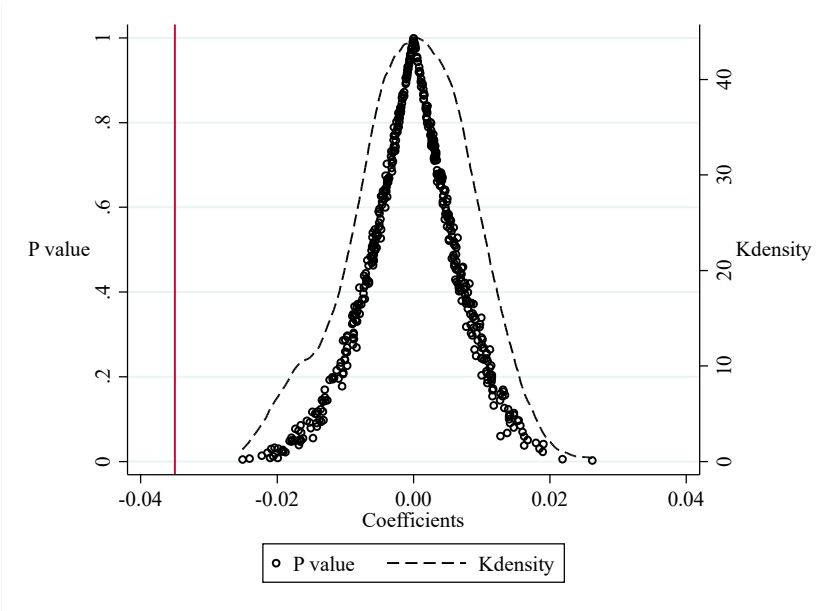


Figure 2: Survival of Financially Distressed Firms

This figure presents the plot based on Kaplan-Meier survival estimates for distressed firms' rate of recovering from financial distress during the sample period of 2001-2014. The sample consists of financially distressed firms. The *x*-axis indicates the number of years that a firm is in financial distress, while the *y*-axis reports the fraction of firms remaining in the distress stage. The dotted line represents the conditional survival probability for distressed firms prior to the implementation of the 2008 Labor Contract Law (LCL), and the solid line represents the conditional survival probability for distressed firms post LCL.

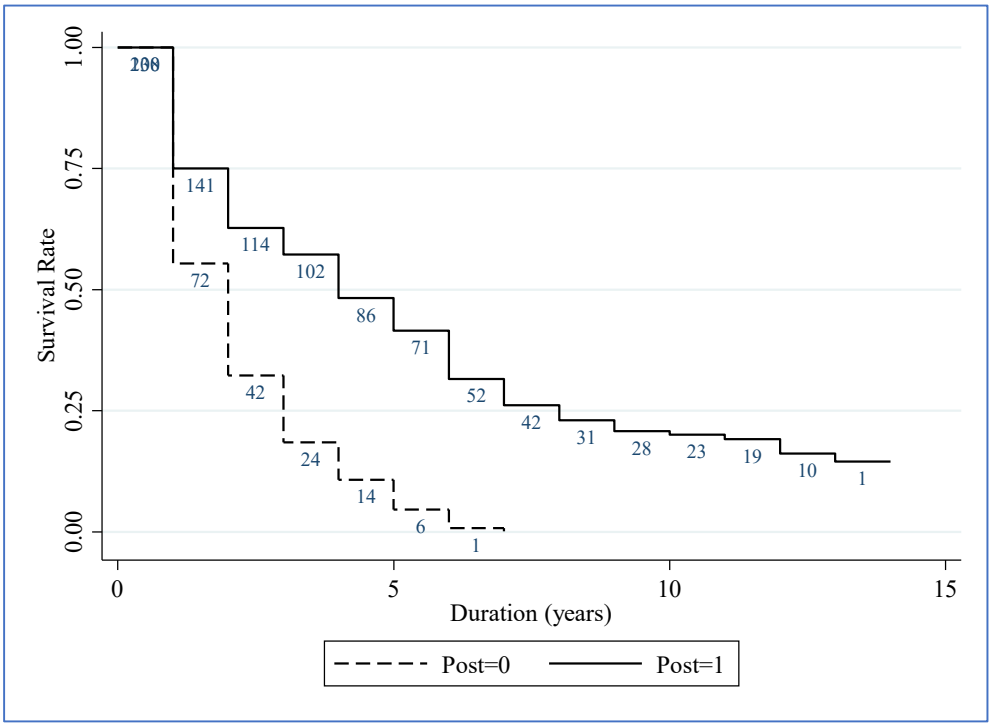


Table 1: Descriptive Statistics

This table presents the descriptive statistics for the variables of interest in our sample. The sample period is 2001-2014. The unit of observation is a firm-year. Panel A describes the industry distribution of all sample firms and financially distressed firms. Panel B describes year-by-year distribution of all firms and financially distressed firms. Panel C summarizes the main characteristics of sample firms. Variable definitions are in the Appendix.

Panel A: Sample Distribution by Industry

Industry	All Firms		Distressed Firms	
	# of observations	% of observations	# of observations	% of observations
Agriculture	182	1.60%	15	1.90%
Mining	414	3.63%	42	5.32%
Food	462	4.05%	42	5.32%
Apparel	229	2.01%	26	3.30%
Furniture	58	0.51%	3	0.38%
Printing	207	1.82%	9	1.14%
Gas and chemistry	904	7.93%	65	8.24%
Electronic	38	0.33%	0	0.00%
Metal	933	8.19%	58	7.35%
Machinery	1,962	17.22%	115	14.58%
Pharmaceutical products	750	6.58%	65	8.24%
Other manufacturing	52	0.46%	9	1.14%
Energy supply	680	5.97%	43	5.45%
Construction	312	2.74%	29	3.68%
Transportation	513	4.50%	5	0.63%
Information technology	1,313	11.52%	63	7.98%
Retail and wholesale	859	7.54%	57	7.22%
Real estate	808	7.09%	77	9.76%
Other Service	431	3.78%	40	5.07%
Media	118	1.04%	5	0.63%
Other	171	1.50%	21	2.66%
Total	11,396	100.00%	789	100.00%

Table 1 continued.

Panel B: Sample Distribution by Year

Year	All Firms		Distressed Firms	
	# of observations	% of observations	# of observations	% of observations
2001	235	2.06%	29	3.68%
2002	385	3.38%	43	5.45%
2003	453	3.98%	50	6.34%
2004	519	4.55%	72	9.13%
2005	647	5.68%	106	13.43%
2006	647	5.68%	77	9.76%
2007	659	5.78%	67	8.49%
2008	825	7.24%	77	9.76%
2009	935	8.20%	66	8.37%
2010	845	7.41%	43	5.45%
2011	879	7.71%	42	5.32%
2012	1,165	10.22%	41	5.20%
2013	1,557	13.66%	41	5.20%
2014	1,645	14.43%	35	4.44%
Total	11,396	100.00%	789	100.00%

Table 1 continued.

Panel C: Sample Characteristics

Variable	N	Mean	Std. Dev.
Distress	11,396	0.069	0.254
Employment Growth	11,396	0.031	0.192
Low-quality Employees (Education)	11,396	0.022	0.213
High-quality Employees (Education)	11,396	0.093	0.242
Low-quality Employees (Technical Skills)	11,321	0.027	0.219
High-quality Employees (Technical Skills)	9,997	0.017	0.304
Layoff Rate	11,396	0.047	0.107
Low-quality Employees (Education)	11,396	0.057	0.118
High-quality Employees (Education)	11,396	0.044	0.118
Low-quality Employees (Technical Skills)	11,393	0.058	0.124
High-quality Employees (Technical Skills)	10,383	0.089	0.196
Size	11,396	21.76	1.225
Leverage	11,396	0.489	0.199
Cash Flow	11,396	0.055	0.098
Tangible	11,396	0.272	0.181
SOE	11,396	0.455	0.498
Market to Book	11,396	3.308	2.306
Subsidy	11,396	0.407	0.696
Total Assets (in billion RMB)	11,396	8.696	20.905
# of Employees (in thousand)	11,396	4.882	9.202
% of Low-quality Employees (Education)	11,396	0.788	0.179
% of Low-quality Employees (Technical Skills)	11,394	0.825	0.159
Wage (in thousand RMB)	11,395	82.867	72.859

Table 2: Univariate Comparison

This table compares the main characteristics of firms that are financially distressed and firms that are not. The sample period is 2001-2014. The unit of observation is a firm-year. Panel A compares firm characteristics between distressed and non-distressed firms. Panel B compares employment growth and layoff rate of sample firms before and after the implementation of the 2008 Labor Contract Law. We classify the quality of labor based on an employee's education (i.e., college degree) and their technical skill set. The last column presents *T*-statistics testing the difference in means between distressed and non-distressed firms. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Panel A: Distressed and Non-Distressed Firms

	Distress = 0		Distress = 1		Difference
Variable	N	Mean	N	Mean	in Mean
Employment Growth	10,607	0.036	789	-0.036	0.072***
Low-quality Employees (Education)	10,607	0.026	789	-0.036	0.063***
High-quality Employees (Education)	10,607	0.1	789	-0.001	0.101***
Low-quality Employees (Technical Skills)	10,536	0.032	785	-0.041	0.073***
High-quality Employees (Technical Skills)	9,311	0.022	686	-0.057	0.079***
Layoff Rate	10,607	0.044	789	0.085	-0.041***
Low-quality Employees (Education)	10,607	0.054	789	0.091	-0.037***
High-quality Employees (Education)	10,607	0.041	789	0.095	-0.055***
Low-quality Employees (Technical Skills)	10,604	0.055	789	0.093	-0.038***
High-quality Employees (Technical Skills)	9,678	0.086	705	0.131	-0.045***
Size	10,607	21.794	789	21.293	0.502***
Leverage	10,607	0.479	789	0.617	-0.139***
Cash Flow	10,607	0.057	789	0.033	0.024***
Tangible	10,607	0.272	789	0.282	-0.01
SOE	10,607	0.459	789	0.408	0.051***
Market to Book	10,607	3.231	789	4.349	-1.118***
Subsidy	10,607	0.414	789	0.32	0.093***
Total Assets (in billion RMB)	10,607	8.988	789	4.771	4.218***
# of Employees (in thousand)	10,607	4.985	789	3.501	1.484***
% of Low-quality Employees (Education)	10,607	0.784	789	0.842	-0.057***
% of Low-quality Employees (Technical Skills)	10,605	0.824	789	0.851	-0.027***
Wage (in thousand RMB)	10,606	84.756	789	57.466	27.290***

Table 2 continued.

Panel B: Layoff Characteristics Before and After the 2008 Labor Contract Law

	Before LCL		After LCL		Difference
Variable	N	Mean	N	Mean	in Mean
Distressed Firms					
Employment Growth	444	-0.058	345	-0.008	-0.051***
Low-quality Employees (Education)	444	-0.058	345	-0.009	-0.049***
High-quality Employees (Education)	444	-0.029	345	0.035	-0.064***
Low-quality Employees (Technical Skills)	443	-0.063	342	-0.013	-0.050***
High-quality Employees (Technical Skills)	380	-0.08	306	-0.027	-0.053**
Layoff Rate	444	0.101	345	0.063	0.038***
Low-quality Employees (Education)	444	0.106	345	0.071	0.035***
High-quality Employees (Education)	444	0.115	345	0.069	0.046***
Low-quality Employees (Technical Skills)	444	0.109	345	0.073	0.037***
High-quality Employees (Technical Skills)	389	0.149	316	0.109	0.040**
Non-Distressed Firms					
Employment Growth	3,101	0.023	7,506	0.041	-0.018***
Low-quality Employees (Education)	3,101	0.016	7,506	0.031	-0.015***
High-quality Employees (Education)	3,101	0.091	7,506	0.104	-0.013**
Low-quality Employees (Technical Skills)	3,078	0.02	7,458	0.036	-0.016***
High-quality Employees (Technical Skills)	2,676	0.003	6,635	0.03	-0.027***
Layoff Rate	3,101	0.054	7,506	0.04	0.015***
Low-quality Employees (Education)	3,101	0.064	7,506	0.05	0.015***
High-quality Employees (Education)	3,101	0.053	7,506	0.035	0.018***
Low-quality Employees (Technical Skills)	3,100	0.065	7,504	0.051	0.014***
High-quality Employees (Technical Skills)	2,775	0.101	6,903	0.08	0.021***

Table 3: Employment Decision of Financially Distressed Firms

This table relates the effect of labor protection on the employment decisions of financially distressed firms. The sample period is 2001-2014. The unit of observations is a firm-year. The dependent variable is *Employment Growth* in Panel A, *Layoff Rate* in Panel B, and a dummy variable for large layoffs in Panel C. In all panels, we compute employment growth and layoff rate for all employees in column 1, for low-quality employees in columns 2 and 4, and for high-quality employees in columns 3 and 5. We classify labor quality based on employees' college education in columns 2-3, and technical skills in columns 4-5. Variable definitions are in the Appendix. All models include a constant and fixed effects as indicated on the table, but the coefficients are not reported. *T*-statistics computed with robust standard errors clustered at the firm level are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Employment Growth

Dependent Variable: *Employment Growth*					
Labor Quality Classification:		Education		Technical Skills	
	All Employees	Low-quality Employees	High-quality Employees	Low-quality Employees	High-quality Employees
	(1)	(2)	(3)	(4)	(5)
Distress × Post	0.054***	0.059***	0.034	0.057***	0.050
	(2.94)	(2.98)	(1.43)	(2.72)	(1.62)
Distress	-0.057***	-0.052***	-0.078***	-0.060***	-0.079***
	(-4.23)	(-3.71)	(-4.23)	(-3.91)	(-3.63)
Size	0.019***	0.016**	0.014*	0.020***	0.018
	(2.67)	(2.03)	(1.66)	(2.73)	(1.63)
Leverage	-0.135***	-0.121***	-0.194***	-0.130***	-0.159***
	(-5.35)	(-4.34)	(-6.31)	(-4.69)	(-4.00)
Cash Flow	0.115***	0.123***	0.089***	0.123***	0.071
	(4.45)	(4.19)	(2.74)	(4.07)	(1.60)
Tangible	-0.110***	-0.110***	-0.130***	-0.119***	-0.098**
	(-4.51)	(-4.04)	(-4.11)	(-4.41)	(-2.27)
SOE	-0.015	-0.011	-0.012	-0.014	0.037**
	(-1.46)	(-0.98)	(-0.92)	(-1.14)	(2.20)
Market to Book	0.006***	0.005**	0.008***	0.004**	0.007**
	(3.27)	(2.55)	(3.74)	(2.28)	(2.53)
Subsidy	-0.004	-0.006	0.006	-0.006	0.007
	(-0.94)	(-1.48)	(1.16)	(-1.45)	(1.17)
Firm FE	Yes	Yes	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes	Yes	Yes
Province x Year FE	Yes	Yes	Yes	Yes	Yes
Observations	11,213	11,213	11,213	11,141	9,803
R-squared	0.31	0.28	0.28	0.27	0.27

Table 3 continued.

Panel B: Layoff Rate

Dependent Variable: *Layoff Rate*					
Labor Quality Classification:		Education		Technical Skills	
	All Employees	Low-quality Employees	High-quality Employees	Low-quality Employees	High-quality Employees
	(1)	(2)	(3)	(4)	(5)
Distress × Post	-0.035***	-0.035***	-0.019	-0.036**	-0.029
	(-2.75)	(-2.72)	(-1.30)	(-2.55)	(-1.29)
Distress	0.033***	0.030***	0.038***	0.032***	0.036**
	(3.45)	(3.02)	(3.32)	(2.92)	(2.31)
Size	-0.016***	-0.015***	-0.010**	-0.015***	-0.009
	(-3.79)	(-3.35)	(-2.37)	(-3.43)	(-1.45)
Leverage	0.088***	0.090***	0.071***	0.082***	0.092***
	(6.10)	(5.72)	(4.47)	(5.05)	(3.79)
Cash Flow	-0.048***	-0.045***	-0.028*	-0.059***	-0.042
	(-3.48)	(-2.84)	(-1.91)	(-3.61)	(-1.60)
Tangible	0.020	0.018	0.024	0.020	0.013
	(1.32)	(1.12)	(1.53)	(1.24)	(0.47)
SOE	0.001	-0.004	0.003	-0.001	-0.019*
	(0.12)	(-0.68)	(0.41)	(-0.14)	(-1.86)
Market to Book	-0.000	-0.000	-0.000	0.000	-0.001
	(-0.02)	(-0.39)	(-0.20)	(0.23)	(-0.57)
Subsidy	0.001	0.003	-0.005**	0.003	-0.002
	(0.38)	(0.95)	(-2.04)	(1.07)	(-0.42)
Firm FE	Yes	Yes	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes	Yes	Yes
Province x Year FE	Yes	Yes	Yes	Yes	Yes
Observations	11,213	11,213	11,213	11,210	10,204
R-squared	0.30	0.29	0.29	0.27	0.28

Table 3 continued.

Panel C: Likelihood of Mass Layoffs

Dependent Variable: *Mass Layoff*					
Labor Quality Classification:		Education		Technical Skills	
	All Employees	Low-quality Employees	High-quality Employees	Low-quality Employees	High-quality Employees
	(3)	(1)	(2)	(3)	(1)
Distress × Post	-0.043***	-0.040***	-0.001	-0.040**	-0.031
	(-2.90)	(-2.59)	(-0.04)	(-2.35)	(-1.20)
Distress	0.030**	0.025**	0.033**	0.027**	0.031
	(2.50)	(2.01)	(2.24)	(2.04)	(1.64)
Size	-0.013***	-0.014***	-0.008	-0.012**	-0.006
	(-2.79)	(-2.91)	(-1.58)	(-2.51)	(-0.84)
Leverage	0.055***	0.070***	0.063***	0.056***	0.064**
	(3.18)	(3.53)	(3.38)	(2.75)	(2.10)
Cash Flow	-0.027	-0.008	-0.010	-0.030	-0.005
	(-1.64)	(-0.43)	(-0.61)	(-1.44)	(-0.14)
Tangible	0.021	0.027	0.013	0.009	0.000
	(1.16)	(1.38)	(0.77)	(0.46)	(0.01)
SOE	0.006	-0.001	0.003	0.002	-0.024*
	(0.84)	(-0.11)	(0.46)	(0.31)	(-1.86)
Market to Book	0.000	-0.001	0.001	0.001	-0.001
	(0.05)	(-0.54)	(0.96)	(0.79)	(-0.53)
Subsidy	-0.000	0.001	-0.002	0.002	-0.004
	(-0.11)	(0.26)	(-0.70)	(0.71)	(-0.80)
Firm FE	Yes	Yes	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes	Yes	Yes
Province x Year FE	Yes	Yes	Yes	Yes	Yes
Observations	11,213	11,213	11,213	11,210	10,204
R-squared	0.24	0.24	0.27	0.23	0.26

Table 4: Cross-Sectional Analyses

The sample period is 2001-2014. The unit of observation is a firm-year. For all panels, the dependent variable is *Employment Growth* in columns 1-2 and *Layoff Rate* in columns 3-4. In Panel A, we consider SOEs and non-SOE firms (measured in 2007). In Panel B, we split the sample based on whether a province-year has a strong legal environmental and high enforcement efficiency. In Panel C, we split the sample based on the frequency of local worker strikes. In Panel D, we split the sample based on the frequency of employers winning the labor dispute cases in local courts during the pre-LCL period of 2001-2007. Detailed definition of variables is in the Appendix. All models include a constant, control variables (*Size*, *Leverage*, *Cash Flow*, *Tangible*, *SOE*, *Market to Book*, *Subsidy*), and fixed effects as indicated on the table, but the coefficients are not reported. *T*-statistics computed with robust standard errors clustered at the firm level are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: SOEs versus Non-SOEs

Dependent Variable:	*Employment Growth*		*Layoff Rate*	
	SOEs	Non-SOEs	SOEs	Non-SOEs
	(1)	(2)	(3)	(4)
Distress × Post	0.053*	0.066**	-0.026	-0.047**
	(1.78)	(2.49)	(-1.60)	(-2.52)
Distress	-0.058***	-0.063***	0.033**	0.038**
	(-2.82)	(-3.05)	(2.49)	(2.57)
Control Variables	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes	Yes
Province x Year FE	Yes	Yes	Yes	Yes
Observations	4,481	5,394	4,481	5,394
R-squared	0.32	0.34	0.33	0.35

Panel B: Local Legal Environment

Dependent Variable:	*Employment Growth*		*Layoff Rate*	
	Weak	Strong	Weak	Strong
	(1)	(2)	(3)	(4)
Distress × Post	0.030	0.058***	-0.007	-0.048***
	(0.91)	(2.69)	(-0.33)	(-3.07)
Distress	-0.028	-0.066***	0.019	0.041***
	(-1.14)	(-4.03)	(1.25)	(3.45)
Control Variables	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes	Yes
Province x Year FE	Yes	Yes	Yes	Yes
Observations	2,410	8,636	2,410	8,636
R-squared	0.40	0.32	0.40	0.31

Table 4 continued.

Panel C: Local Labor Unrest

Dependent Variable:	*Employment Growth*		*Layoff Rate*	
	More	Less	More	Less
	(1)	(2)	(3)	(4)
Distress × Post	0.077***	0.020	-0.053***	-0.009
	(3.43)	(0.58)	(-3.48)	(-0.39)
Distress	-0.081***	-0.024	0.048***	0.018
	(-4.33)	(-1.14)	(3.69)	(1.17)
Control Variables	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes	Yes
Province x Year FE	Yes	Yes	Yes	Yes
Observations	7,760	3,395	7,760	3,395
R-squared	0.32	0.35	0.32	0.35

Panel D: Employer-friendly Courts

Dependent Variable:	*Employment Growth*		*Layoff Rate*	
	More	Less	More	Less
	(1)	(2)	(3)	(4)
Distress × Post	0.057**	0.022	-0.049***	0.005
	(2.44)	(0.77)	(-3.01)	(0.25)
Distress	-0.065***	-0.041**	0.052***	0.010
	(-3.65)	(-1.97)	(3.91)	(0.75)
Control Variables	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes	Yes
Province x Year FE	Yes	Yes	Yes	Yes
Observations	4,927	6,239	4,927	6,239
R-squared	0.32	0.34	0.35	0.33

Table 5: Alternative Proxies for Financial Distress

The sample period is 2001-2014. The unit of observation is a firm-year. In Panel A, *Default* is the natural logarithm of the amount of past-due loans disclosed in a firm's financial statements. In Panel B, *Distress* is set to one if a firm's defaulted loan amount over total liabilities exceeds the sample median of defaulting firms. In Panel C, *Distress* is set to one if a firm's Altman's (1968) Z-score for financial constraint falls into industry bottom quartile for two consecutive years and zero otherwise. For all panels, the dependent variable is *Employment Growth* in columns 1-3 and is *Layoff Rate* in columns 4-6. In columns 1 and 4, we compute employment growth and layoff rate for all employees. We consider the employment growth and layoff rate of low-quality labor in columns 2 and 5, and of high-quality labor in columns 3 and 6. We measure labor quality based on education. Variable definitions are in the Appendix. All models include a constant, control variables (*Size*, *Leverage*, *Cash Flow*, *Tangible*, *SOE*, *Market to Book*, *Subsidy*), and fixed effects as indicated on the table, but the coefficients are not reported. *T*-statistics computed with robust standard errors clustered at the firm level are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Defaulted Loans

Dependent Variable:	*Employment Growth*			*Layoff Rate*		
	All Employees	Low-quality Employees	High-quality Employees	All Employees	Low-quality Employees	High-quality Employees
	(1)	(2)	(3)	(4)	(5)	(6)
Default × Post	0.003***	0.003***	0.002	-0.002**	-0.002**	-0.001
	(2.77)	(2.84)	(1.29)	(-2.54)	(-2.53)	(-1.23)
Default	-0.003***	-0.003***	-0.005***	0.002***	0.002***	0.002***
	(-4.33)	(-3.78)	(-4.39)	(3.56)	(3.10)	(3.48)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Province x Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	11,213	11,213	11,213	11,213	11,213	11,213
R-squared	0.31	0.28	0.28	0.30	0.29	0.29

Table 5 continued.

Panel B: Large Defaults

Dependent Variable:	*Employment Growth*			*Layoff Rate*		
	All Employees	Low-quality Employees	High-quality Employees	All Employees	Low-quality Employees	High-quality Employees
	(1)	(2)	(3)	(4)	(5)	(6)
Distress × Post	0.066**	0.073***	0.032	-0.039**	-0.046**	-0.037
	(2.48)	(2.59)	(0.87)	(-2.04)	(-2.39)	(-1.54)
Distress	-0.082***	-0.073***	-0.107***	0.054***	0.051***	0.071***
	(-4.27)	(-3.63)	(-3.96)	(3.62)	(3.39)	(3.96)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Province x Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	11,213	11,213	11,213	11,213	11,213	11,213
R-squared	0.31	0.28	0.28	0.30	0.29	0.30

Panel C: Altman's Z-score

Dependent Variable:	*Employment Growth*			*Layoff Rate*		
	All Employees	Low-quality Employees	High-quality Employees	All Employees	Low-quality Employees	High-quality Employees
	(1)	(2)	(3)	(4)	(5)	(6)
Distress × Post	0.028**	0.030**	0.006	-0.017**	-0.016*	-0.014
	(2.11)	(2.09)	(0.35)	(-2.15)	(-1.84)	(-1.54)
Distress	-0.030**	-0.029**	-0.031**	0.012	0.009	0.014*
	(-2.45)	(-2.22)	(-2.00)	(1.47)	(1.07)	(1.67)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Province x Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	11,189	11,189	11,189	11,189	11,189	11,189
R-squared	0.31	0.28	0.28	0.30	0.29	0.29

Table 6: Dynamic Estimation

This table relates to the dynamics of employment growth around the enforcement of the 2008 Labor Contract Law. The sample period is 2001-2014. The unit of observation is a firm-year. The dependent variable is *Employment Growth* in column 1 and is *Layoff Rate* in column 2. Variable definitions are in the Appendix. All models include a constant, control variables (*Size*, *Leverage*, *Cash Flow*, *Tangible*, *SOE*, *Market to Book*, *Subsidy*), and fixed effects as indicated on the table, but the coefficients are not reported. *T*-statistics computed with robust standard errors clustered at the firm level are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent Variable:	*Employment Growth*	*Layoff Rate*
	(1)	(2)
Distress × Year 2006	0.017	-0.023
	(0.63)	(-1.16)
Distress × Year 2007	-0.005	-0.000
	(-0.16)	(-0.02)
Distress × Year 2008	0.029	-0.029
	(0.98)	(-1.51)
Distress × Year 2009	0.077**	-0.042*
	(2.26)	(-1.80)
Distress × Year >= 2010	0.060***	-0.043***
	(2.77)	(-2.76)
Distress	-0.059***	0.038***
	(-3.62)	(3.03)
Control Variables	Yes	Yes
Firm FE	Yes	Yes
Industry x Year FE	Yes	Yes
Province x Year FE	Yes	Yes
Observations	11,213	11,213
R-squared	0.31	0.30

Table 7: Placebo Tests

The sample period is 2001-2014. The unit of observation is a firm-year. Panel A reports the summary statistics based on 500 simulations randomly assigning distress status to sample firms. Column 1 reports the coefficient estimates and *T*-statistics for *Employment Growth* and *Layoff Rate* using the actual distressed and non-distressed firms (column 1 of Table 2 Panels A and B). In Panel B, the dependent variable is *Employment Growth* in column 1 and is *Layoff Rate* in column 2. *Pseudo Post* is a dummy variable set to one if the year is equal or greater than 2005 and zero otherwise. Variable definitions are in the Appendix. All models include a constant, control variables (*Size*, *Leverage*, *Cash Flow*, *Tangible*, *SOE*, *Market to Book*, *Subsidy*), and fixed effects as indicated on the table, but the coefficients are not reported. *T*-statistics computed with robust standard errors clustered at the firm level are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Summary Statistics based on 500 Simulations

	Distress	Mean	5%	25%	Median	75%	95%
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Employment Growth	**0.054**	0.001	-0.025	-0.01	0.000	0.012	0.027
	(2.94)	(0.05)	(-1.63)	(-0.65)	(0.02)	(0.77)	(1.76)
Layoff Rate	**-0.035**	0.000	-0.017	-0.006	0.000	0.006	0.013
	(-2.75)	(-0.04)	(-1.92)	(-0.66)	(-0.03)	(0.65)	(1.52)

Panel B: Timing of the Event

Dependent Variable:	*Employment Growth*	*Layoff Rate*
	(1)	(2)
Distress × Pseudo Post	0.027	-0.017
	(1.28)	(-1.07)
Distress	-0.054***	0.031**
	(-2.75)	(2.05)
Firm FE	Yes	Yes
Industry x Year FE	Yes	Yes
Province x Year FE	Yes	Yes
Observations	11,213	11,213
R-squared	0.31	0.30

Table 8: Matched Samples

This table relates the effect of labor protection on the employment decision of financially distressed firms using matched samples. The sample period is 2001-2014. The unit of observation is a firm-year. The matched sample is created using the propensity score matching (PSM) approach in Panel A, the coarsened exact matching (CEM) approach in Panel B, and the entropy balanced matching approach in Panel C. In all panels, the dependent variable is *Employment Growth* in columns 1-3 and is *Layoff Rate* in columns 4-6. We classify employee quality based on college education. Variable definitions are in the Appendix. All models include a constant, control variables (*Size*, *Leverage*, *Cash Flow*, *Tangible*, *SOE*, *Market to Book*, *Subsidy*), and fixed effects as indicated on the table, but the coefficients are not reported. *T*-statistics computed with robust standard errors clustered at the firm level are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: PSM Matching

Dependent Variable:	*Employment Growth*			*Layoff Rate*		
	All Employees	Low-quality Employees	High-quality Employees	All Employees	Low-quality Employees	High-quality Employees
	(1)	(2)	(3)	(4)	(5)	(6)
Distress × Post	0.170***	0.210***	0.064	-0.086**	-0.081**	0.033
	(3.10)	(3.49)	(0.96)	(-2.49)	(-2.01)	(0.94)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Province x Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	730	730	730	730	730	730
R-squared	0.78	0.76	0.78	0.78	0.77	0.81

Panel B: CEM Matching

Dependent Variable:	*Employment Growth*			*Layoff Rate*		
	All Employees	Low-quality Employees	High-quality Employees	All Employees	Low-quality Employees	High-quality Employees
	(1)	(2)	(3)	(4)	(5)	(6)
Distress × Post	0.108***	0.135***	0.018	-0.077***	-0.092***	-0.005
	(2.93)	(3.30)	(0.42)	(-3.11)	(-3.49)	(-0.18)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Province x Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,163	4,163	4,163	4,163	4,163	4,163
R-squared	0.65	0.64	0.61	0.71	0.71	0.64

Table 8 continued.

Panel C: Entropy Balanced Matching

Dependent Variable:	*Employment Growth*			*Layoff Rate*		
	All Employees	Low-quality Employees	High-quality Employees	All Employees	Low-quality Employees	High-quality Employees
	(1)	(2)	(3)	(4)	(5)	(6)
Distress × Post	0.061***	0.082***	0.015	-0.042***	-0.052***	-0.003
	(2.62)	(3.16)	(0.52)	(-2.64)	(-2.92)	(-0.15)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Province x Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	9,444	9,444	9,444	9,444	9,444	9,444
R-squared	0.57	0.55	0.56	0.61	0.60	0.60

Table 9: Other Concurring Events

The sample period is 2001-2014. The unit of observation is a firm-year. In Panel A, the sample in columns 1 and 3 consists of firms that report overseas revenue during the 2003-2007 period. The samples in columns 2 and 4 include firms that only have domestic revenue during the 2003-2007 period. The dependent variable is *Employment Growth* in columns 1-2 and *Layoff Rate* in columns 3-4. In Panel B, the sample includes all financially distressed firms. *Near Bankruptcy* is a dummy variable set to one if a firm's Altman Z-score equals or is below 1.8, and zero otherwise. The dependent variable is *Employment Growth* in column 1 and *Layoff Rate* in column 2. Variable definitions are in the Appendix. All models include a constant, control variables (*Size*, *Leverage*, *Cash Flow*, *Tangible*, *SOE*, *Market to Book*, *Subsidy*), and fixed effects as indicated on the table, but the coefficients are not reported. *T*-statistics computed with robust standard errors clustered at the firm level are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: The 2008-2009 Global Financial Crisis

Dependent Variable:	*Employment Growth*		*Layoff Rate*	
	Export-Dependent Firms	Domestic Operating Firms	Export-Dependent Firms	Domestic Operating Firms
	(1)	(2)	(3)	(4)
Distress × Post	0.077*	0.053**	-0.056**	-0.034**
	(1.94)	(2.44)	(-2.21)	(-2.28)
Distress	-0.059**	-0.055***	0.046**	0.031***
	(-1.99)	(-3.28)	(2.27)	(2.62)
Control Variables	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes	Yes
Province x Year FE	Yes	Yes	Yes	Yes
Observations	3,217	7,888	3,217	7,888
R-squared	0.40	0.35	0.41	0.34

Panel B: The 2007 Bankruptcy Law

Dependent Variable:	*Employment Growth*	*Layoff Rate*
	(1)	(2)
Near Bankruptcy × Post	-0.009	-0.012
	(-0.27)	(-0.59)
Near Bankruptcy	0.002	0.009
	(0.06)	(0.39)
Control Variables	Yes	Yes
Year FE	Yes	Yes
Industry FE	Yes	Yes
Province FE	Yes	Yes
Observations	788	788
R-squared	0.15	0.13

Table 10: Consequences of Workforce Adjustment

This table relates the consequences of the reduced ability to make workforce adjustment for financially distressed firms. The sample period is 2001-2014. The unit of observation is a firm-year. In Panels A through D, the dependent variable is *Cost of Debt*, *ROA Growth*, *Wage Growth*, and *Asset Sales*, respectively. In all panels, we estimate the regressions for the full sample in column 1 and distinguish between firms with high and low ex-ante low-quality labor intensity in columns 2-5. In all panels, we classify employee quality based on college education in columns 2-3, and technical skills in columns 4-5. Variable definitions are in the Appendix. All models include a constant, control variables (*Size*, *Leverage*, *Cash Flow*, *Tangible*, *SOE*, *Market to Book*, *Subsidy*), and fixed effects as indicated on the table, but the coefficients are not reported. *T*-statistics computed with robust standard errors clustered at the firm level are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Debt Financing

Dependent Variable: *Cost of Debt*					
Labor Quality Classification:		Education		Technical Skills	
Low-quality Labor Intensity:		High	Low	High	Low
	(1)	(2)	(3)	(4)	(5)
Distress × Post	0.010**	0.015**	0.009	0.016***	0.005
	(2.49)	(2.45)	(1.27)	(2.76)	(0.74)
Distress	-0.001	-0.000	-0.006	-0.001	-0.003
	(-0.46)	(-0.11)	(-1.25)	(-0.16)	(-0.79)
Control Variables	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes	Yes	Yes
Province x Year FE	Yes	Yes	Yes	Yes	Yes
Observations	9,699	3,811	3,316	3,674	3,442
R-squared	0.52	0.53	0.53	0.54	0.52

Panel B: Profitability

Dependent Variable: *ROA Growth*					
Labor Quality Classification:		Education		Technical Skills	
Low-quality Labor Intensity:		High	Low	High	Low
	(1)	(2)	(3)	(4)	(5)
Distress × Post	-0.011*	-0.017*	-0.001	-0.020**	0.002
	(-1.79)	(-1.79)	(-0.13)	(-2.11)	(0.19)
Distress	-0.006	-0.011	0.004	-0.006	-0.001
	(-1.21)	(-1.62)	(0.57)	(-0.96)	(-0.09)
Control Variables	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes	Yes	Yes
Province x Year FE	Yes	Yes	Yes	Yes	Yes
Observations	10,893	4,185	3,669	4,029	3,800
R-squared	0.31	0.35	0.32	0.35	0.31

Table 10 continued.

Panel C: Wage Growth

Dependent Variable: *Wage Growth*					
Labor Quality Measure:		Education		Technical Skills	
Low-quality Labor Intensity:		High	Low	High	Low
	(1)	(2)	(3)	(4)	(5)
Distress × Post	-0.062	-0.135**	0.027	-0.155***	0.082
	(-1.36)	(-2.38)	(0.32)	(-2.71)	(0.91)
Distress	0.025	0.032	0.029	0.045	-0.000
	(0.73)	(0.72)	(0.47)	(1.00)	(-0.00)
Control Variables	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes	Yes	Yes
Province x Year FE	Yes	Yes	Yes	Yes	Yes
Observations	11,207	4,375	3,794	4,216	3,932
R-squared	0.24	0.28	0.35	0.30	0.33

Panel D: Asset Sales

Dependent Variable: *Asset Sales*					
Labor Quality Classification:		Education		Technical Skills	
Low-quality Labor Intensity:		High	Low	High	Low
	(1)	(2)	(3)	(4)	(5)
Distress × Post	0.004	0.010**	0.002	0.008*	0.005
	(1.26)	(2.00)	(0.47)	(1.73)	(1.07)
Distress	-0.002	-0.006**	-0.001	-0.005*	-0.003
	(-1.17)	(-2.13)	(-0.32)	(-1.65)	(-0.85)
Control Variables	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes	Yes	Yes
Province x Year FE	Yes	Yes	Yes	Yes	Yes
Observations	10,802	4,125	3,642	3,973	3,775
R-squared	0.34	0.40	0.34	0.41	0.34

Table 11: Survival Analysis

This table presents the cox regression estimates of survival analysis, relating labor intensity to the likelihood of survival. The sample period is 2001-2014. The unit of observation is a distress event. Columns 1-3 estimate the hazard ratio of recovery. Columns 4-6 estimate the hazard ratio of turning into a zombie firm. Variable definitions are in the Appendix. All models include a constant, control variables (*Size*, *Leverage*, *Cash Flow*, *Tangible*, *SOE*, *Market to Book*, *Subsidy*), and fixed effects as indicated on the table, but the coefficients are not reported. *T*-statistics computed with robust standard errors clustered at the firm level are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent Variable:	*Hazard Ratio of Recovery*			*Hazard Ratio of Zombie Firms*		
Labor Quality Classification:		Education	Technical Skills		Education	Technical Skills
	(1)	(2)	(3)	(4)	(5)	(6)
Post	-1.035***			0.183		
	(-8.85)			(0.30)		
Post × Low-quality Labor Intensity		-0.249***	-0.255***		1.247**	1.284**
		(-3.01)	(-2.92)		(1.98)	(2.06)
Low-quality Labor Intensity		-0.040	-0.054		0.306	0.285
		(-0.68)	(-0.91)		(0.79)	(0.75)
Size	0.255***	0.221***	0.217***	-0.343	0.237	0.178
	(4.12)	(3.30)	(3.25)	(-1.04)	(0.41)	(0.32)
Leverage	-0.363	-0.635*	-0.622*	4.027	4.802*	4.736*
	(-0.97)	(-1.75)	(-1.72)	(1.42)	(1.73)	(1.74)
Cash Flow	-0.588	0.645	0.596	-8.010**	-9.079**	-9.017**
	(-0.97)	(0.99)	(0.90)	(-2.29)	(-2.04)	(-2.00)
Tangible	1.010***	0.977***	0.948***	-1.138	-3.173	-3.021
	(2.99)	(2.95)	(2.90)	(-0.61)	(-1.02)	(-0.97)
SOE	-0.222*	-0.374***	-0.376***	0.172	0.246	0.293
	(-1.88)	(-3.21)	(-3.25)	(0.26)	(0.26)	(0.31)
Market to Book	-0.003	-0.053**	-0.056**	-0.240**	-0.362**	-0.348**
	(-0.14)	(-2.03)	(-2.11)	(-2.29)	(-2.05)	(-2.09)
Subsidy	0.108*	0.107*	0.105*	-1.890	-1.976**	-1.905**
	(1.89)	(1.76)	(1.71)	(-1.32)	(-2.03)	(-2.07)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Recovery Year FE	No	Yes	Yes	No	Yes	Yes
Observations	338	297	297	290	254	254

Table 12: Delay in Recovery and Productivity

This table reports OLS estimates for recovery time and firm productivity. The sample period is 2001-2014. The unit of observation is a distress event. The dependent variable is *Recovery Time* in columns 1-3, *TFP* in columns 4-6, and *Labor Productivity* in columns 7-9. Variable definitions are in the Appendix. All models include a constant, control variables (*Size*, *Leverage*, *Cash Flow*, *Tangible*, *SOE*, *Market to Book*, *Subsidy*), and fixed effects as indicated on the table, but the coefficients are not reported. In columns 7-9, we also control for capital intensity. *T*-statistics computed with robust standard errors clustered at the firm level are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent Variable:	*Recovery Time*			*TFP*			*Labor Productivity*		
Labor Quality Classification:		Education	Technical Skills		Education	Technical Skills		Education	Technical Skills
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Post	2.749***			-0.043			-0.009		
	(7.84)			(-1.15)			(-0.05)		
Post × Low-quality Labor Intensity		0.469*	0.533**		-0.086**	-0.095***		-0.432*	-0.509*
		(1.84)	(2.01)		(-2.54)	(-2.81)		(-1.68)	(-1.89)
Low-quality Labor Intensity		0.101	0.122		-0.018	-0.013		-0.344*	-0.324*
		(0.63)	(0.78)		(-0.64)	(-0.47)		(-1.79)	(-1.81)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recovery Year FE	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Observations	337	296	296	332	291	291	337	296	296
R-squared	0.27	0.56	0.56	0.11	0.20	0.20	0.43	0.53	0.54

Table 13: Delay in Recovery and Resource Allocation

The sample period is 2001-2014. In columns 1-2 of Panel A and columns 1 and 3 of Panel B, the unit of observations is a distress event. In columns 3-6 of Panel A and columns 2 and 4 of Panel B, the unit of observation is a firm-year. In Panel A, the dependent variable is the percentage change of high-quality employees from the beginning to the ending periods of financial distress in columns 1-2, the fraction of high-quality employees relative to all employees in columns 3-4, and the fraction of high-quality employees relative to low-quality employees in columns 5-6. In columns 1-2 of Panel B, the dependent variable is the amount of government subsidy received over the distress period, scaled by assets at the beginning year of the distress. In columns 3-4 of Panel B, the dependent variable is the natural logarithm of one plus the amount of government subsidy. Variable definitions are in the Appendix. All models include a constant, control variables (*Size*, *Leverage*, *Cash Flow*, *Tangible*, *SOE*, *Market to Book*, *Subsidy*), and fixed effects as indicated on the table, but the coefficients are not reported. *T*-statistics computed with robust standard errors clustered at the firm level are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Delay in Recovery and Turnover of High-quality Employees

Dependent Variable:	*Percentage Change in High-quality Employees*		*Fraction of High-quality Employees to All Employees*		*Fraction of High-quality Employees to Low-quality Employees*	
Labor Quality Classification:	Education	Technical Skills	Education	Technical Skills	Education	Technical Skills
	(1)	(2)	(3)	(4)	(5)	(6)
Recovery Time	-0.024*	-0.040***				
	(-1.71)	(-2.96)				
2nd Year in Distress			-0.015*	-0.034*	-0.018*	-0.059**
			(-1.72)	(-1.70)	(-1.86)	(-2.27)
3rd Year in Distress			-0.026**	-0.059**	-0.033**	-0.093***
			(-2.08)	(-2.18)	(-2.44)	(-2.97)
4th Year and Beyond in Distress			-0.026**	-0.071**	-0.021	-0.071**
			(-1.98)	(-2.40)	(-1.52)	(-2.28)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Recovery Year FE/Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	239	239	789	789	789	789
R-squared	0.27	0.27	0.33	0.27	0.20	0.15

Table 13 continued.

Panel B: Delay in Recovery and Government Subsidy Allocation

Dependent Variable:	*Subsidy/Assets*		log(1 + *Subsidy*)	
	(1)	(2)	(3)	(4)
Recovery Time	0.290***		0.501**	
	(4.00)		(2.37)	
2nd Year in Distress		0.305***		1.628***
		(2.81)		(3.35)
3rd Year in Distress		0.646***		2.327***
		(3.95)		(3.62)
4th Year and Beyond in Distress		1.753***		3.874***
		(6.46)		(5.37)
Control Variables	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Recovery Year FE/Year FE	Yes	Yes	Yes	Yes
Observations	282	789	282	789
R-squared	0.25	0.52	0.36	0.41

Table 14: Non-distressed Firms

The sample period is 2001-2014.The unit of observations is a province-year. In Panel A, the dependent variable is the fraction of government subsidies allocated to non-distressed firms within a given province-year in columns 1-3 and is the average amount of bank loans granted to non-distressed firms in a province in columns 4-6. In Panel B, the dependent variable is the average KZ value (columns 1-3) and TFP (columns 4-6) of non-distressed firms in a province. All models include a constant, control variables (GDP Growth, Marketization, CPI, fraction of college graduates, and fixed assets), and fixed effects as indicated on the table, but the coefficients are not tabulated. *T*-statistics computed with robust standard errors clustered at the firm level are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Government Subsidies and Bank Loan Allocations

Dependent Variable:	*Government Subsidies*			*Bank Loans*		
Labor Quality Classification:		Education	Technical Skills		Education	Technical Skills
	(1)	(2)	(3)	(4)	(5)	(6)
Fraction of Distressed Firms	-1.520***			-0.100*		
	(-6.05)			(-2.83)		
Fraction of Low-quality Labor-Intensive Distressed Firms		-1.433***	-1.400***		-0.108**	-0.117***
		(-4.01)	(-3.88)		(-2.52)	(-2.89)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	407	406	406	426	426	426
R-squared	0.44	0.41	0.40	0.26	0.25	0.26

Table 14: Non-distressed Firms

Panel B: Financial Constraint and Productivity

Dependent Variable:	*Financial Constraint*			*TFP*		
Labor Quality Classification:		Education	Technical Skills		Education	Technical Skills
	(1)	(2)	(3)	(4)	(5)	(6)
Fraction of Distressed Firms	4.754*			-0.355***		
	(1.78)			(-3.42)		
Fraction of Low-quality Labor-Intensive Distressed Firms		5.582*	4.875		-0.495***	-0.490***
		(1.95)	(1.47)		(-3.93)	(-3.85)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	426	426	426	426	426	426
R-squared	0.60	0.60	0.60	0.37	0.38	0.38