

# Distress without Bankruptcy: An Emerging Market Perspective<sup>1</sup>

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# Distress without Bankruptcy: An Emerging Market Perspective

## Abstract

We investigate how institutional factors influence behavior of distressed firms in emerging markets, where bankruptcy laws are often weak and debtors have greater bargaining power in distress. By studying a comprehensive sample of distressed firms in China, a representative of the cases in other emerging markets, we find that institutional background matters considerably to distress resolution. Distressed companies facing better institutional background (i.e. with less state ownership structure, in regions with better government quality and greater degree of local financial development), display relatively better operating performance, more disciplined capital structure, and higher ultimate recovery likelihood. Our findings provide novel evidence on how institutional factors discipline distressed firm behavior and facilitate distress resolution in emerging markets.

## 1. Introduction

Bankruptcy is arguably the most important outlet to resolve distress in developed markets. During the past decade, over 30,000 bankruptcy cases were filed with the U.S. Bankruptcy Court (American Bankruptcy Institute) each year and thousands of cases were filed in the U.K. and continental Europe (Davydenko and Franks 2008). The possibility of ex-post bankruptcy and the associated costs weigh heavily on the ex-ante determination of firm capital structure and cost of capital (Modigliani and Miller 1958, Brealey and Myers 1996). Given its importance, scholars have devoted numerous studies to understanding bankruptcy and designing the optimal approach to resolve distress.<sup>2</sup> Despite the recent debate on the pros and cons of the liquidation-based (i.e. Chapter 7 in the U.S.) and the reorganization-based (i.e. Chapter 11 in the U.S.) approach,<sup>3</sup> it is widely accepted in developed economies that the enforcement of bankruptcy laws and close external monitoring by stakeholders (i.e. corporate bond holders and large institutions) play important roles in disciplining financially distressed firms, influencing corporate financial decisions, and determining creditor recovery in the event of distress.<sup>4</sup>

The situations are different in emerging markets. First of all, the prevalent ‘soft lending’ practice in emerging markets (La Porta et al. 2000b, Dinc 2005) provides easy and cheap access to capital to some companies, inducing firms to irresponsible budgeting and consequently disappointing performance and financial distress (Lin et al. 2008). Once companies get into distress, the weak legal enforcement and loose corporate governance environment in emerging markets make it complex to resolve such distress. Cross-country studies find that the actual use of bankruptcy law and the degree of creditor enforcement critically depend on a country’s institutional environment: the effectiveness of judicial system (Claessens, Djankov, and Klapper 2003, Claessens and Klapper 2005), the protection of investor rights (Dahiya and Klapper 2007), and legal origin (Djankov, Hart, McLeish, and Shleifer 2007).

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<sup>2</sup> For example, Baird et al., 2007, Bris et al. 2005, 2006, Franks and Torous, 1989, Khal 2002, Stromberg, 2000, Thorburn, 2000, Weiss, 1990, Wruck 1990, among others.

<sup>3</sup> Pulvino, 1999, Shleifer and Vishny 1992, Weiss and Wruck, 1998

<sup>4</sup> Eckbo and Thorburn, 2003, Gilson 1997, Hotchkiss, 1995, Maksimovic and Phillips, 1998

In emerging markets where institutional environments are weak, creditors often have difficulty in liquidating distressed firms or seizing distressed firm assets. Relationship banking, which arguably helps monitor the debtor companies in developed markets, is more likely to backfire during distress in emerging markets, because of the multiple layers of agency problems. Such weak legal environment and monitoring mechanisms result in greater bargaining power to debtors (Degryse and Ongena 2005, Petersen and Rajan 1994), than their counterparts in the developed markets.

The questions that we seek to answer in this study are how firms react to financial distress given their greater bargaining power in emerging markets, and what other forces come into shaping distressed companies' behavior, if bankruptcy law alone does not help creditors exert effective control over distressed companies? Given the extensive games played between different stakeholders and dynamic operating and financing decisions made in financial distress, we feel that distress events provide some valuable opportunities to study how institutional forces influence corporate behavior in emerging markets.

China is representative of many other emerging markets when it comes to distress and bankruptcy, in several significant ways. First, China witnesses the common practice of soft lending among its state-owned banks. Such soft lending practice is known to distort interest rate setting and capital allocation and lead to corporate distress, in many emerging markets (Allen, Qian and Qian 2005). Moreover, like their counterparts in other emerging markets, many Chinese companies with easy access to bank loans make imprudently aggressive investments that lead to subsequent distress (Khawaja and Mian 2005). Further, distressed debtors in China often enjoy greater power in the distress bargaining process, compared with their counterparts in developed markets. Finally, the weak bankruptcy law system in China gives way to other institutional forces to shape firm behavior in distress.

By utilizing comprehensive data from the Annual Industrial Survey Database (Chinese National Bureau of Statistics (NBS), 1998-2005) that covers all China's state-owned enterprises (SOEs) and leading non-SOEs firms in the manufacturing sector, we

aim to answer the above questions and understand how institutional background modify the behavior of distressed companies in such an emerging market context.

Our findings can be summarized as below. The ownership structure of the firm and the transferability of block ownership matter considerably to firm behavior in financial distress. SOEs are more entrenched and much slower than private firms in adjusting their policies to deal with their financial distress. Distressed SOEs display significantly inferior performance (measured by return on sales, total-factor productivity, and earnings growth) to their private counterparts. For example, one standard deviation increase in state-ownership can decrease return-on-sales by 3.8 percentages. In terms of capital structure decisions, distressed SOEs are more aggressive with their post-distress corporate financing policies, reflected by relatively higher leverage and higher fraction of long-term liabilities. As a result of the above, SOEs on average take more than one year longer to emerge from financial distress and are 50 percent less likely to ultimately emerge from financial distress.

Government quality and local financial development also influences how firms deal with their distress. Firms from regions with better quality governments and more developed financial sectors are more responsive to constraints posed by distress. Such firms typically perform relatively better through financial distress and engage in more conservative corporate financing decisions.

Our main findings are very robust under a host of alternative robustness tests. We conduct tests by focusing on both inferred distress (by several measures including the Altman Z-value, leverage, and interest coverage) and real bank loan default events, by implementing various criteria for defining distress, and different econometric specifications (pooled ordinary least squared (OLS) regressions, panel regressions, and change-in-change regressions), by endogenizing companies' different likelihood to enter distress in the first place, and by splitting the data into various sub-samples. Our main results remain unchanged.

Finally, our analyses on the changes in firm behavior from pre- to post-distress period confirm that our results are driven by the change of behavior by companies within distress, as opposed to an alternative possibility that we merely capture continuation of different firm behavior from the pre-distress period. Such results confirm that institutional factors not only explain the cross-sectional differences in average firm behavior, but are particularly powerful in explaining how firms adapt their decisions throughout distress.

Our study makes several contributions to the extant literature. First, we are among the first to demonstrate how institutional factors shape distressed firms decisions. The extant literature shows that a better institutional environment is generally beneficial to financial markets and corporate financing (La Porta et al. 1998, La Porta et al. 2002). While better institutional background may impose greater disciplines on managers and provide better protection to creditors in developed markets, it may also result in early liquidation of promising companies, hurting the interests of equity holders (Hoshi et al. 1990, Ongena et al. 2003, Degryse and Ongena 2005, Petersen and Rajan 1994). On the other hand, poorer protection of creditor rights in some weak institutional environment may indeed be helpful for debtors to restructure their business and protect the interests of stakeholders such as employees and related business parties. Therefore, studies are needed to understand how various institutional factors influence the behavior and fate of distressed companies.

In addition, studying how institutional factors influence distressed firm behavior provides understanding on a new channel through which law and institutions influence corporate finance. Given that the availability and cost of capital depends heavily on how distress and default incidents are dealt with in emerging markets, our new evidence on how local institutional environment influences distressed firm behavior depicts a specific mechanism through which law and institution affects corporate financing decisions and regional capital accessibility.

Finally, the paper provides novel evidence on distressed-firm behaviors in emerging markets, where the institutional environment is vastly different from those of

developed economies. Consistent with theory's prediction on the disciplinary role of financial distress (Jensen 1986), this paper finds that distressed firms indeed adjust their financial policy in order to recover, despite a lack of liquidation practice. In addition to existing findings that firm factors, such as capital structure (Booth et al. 2001, Ofek 1993), matter to the speed at which firms respond to distress, we show that institutional factors also determine firms' sensitiveness to distress and how they adapt their decisions in distress.

Our paper is closest to a recent paper by Davydenko and Franks (2008), which investigate how bankruptcy law influences lending and borrowing practice in a number of European countries. Our paper supports Davydenko and Franks (2008) in that we find that the legal environment around bankruptcy has important influences on how companies modify decisions and resolve distress. Our focus on the emerging markets also leads to several key distinctions from their study. First, unlike their focus on the differences in written law, we follow Djankov et al. (2007) and emphasize more on the enforcement and practice of law. One common feature of emerging markets is that factors other than the written law (such as legal enforcement, social norm, and business practice) are sometimes more important in shaping firm behavior. Related to this difference, our study focuses more on how less formal (Allen, Qian, and Qian 2005, Ayyagari, Demurguc-Kunt, and Maksimovic 2007) institutional background, such as block ownership, government quality, and financial development, help discipline distressed companies and facilitate distress resolution. Finally, in addition to real default events, which are sometimes difficult to accurately identify in emerging markets given soft lending, we rely on distress events that we infer from detailed financial information at firm level. Such a rich dataset not only allows us to study a wide spectrum of companies (from large national listed companies to small local manufacturing companies) but also enables us to investigate different aspects of distressed firm behavior.

The rest of the paper proceeds as follows: Section 2 discusses the practice of bankruptcy in emerging markets and China in particular; Section 3 develops our testable hypotheses; Section 4 describes the data; Section 5 outlines the empirical methodology; Section 6 presents our findings and discusses the results before we conclude in Section 7.

## **2. Distress and Bankruptcy in Emerging Markets**

### 2.1. Corporate bankruptcy in emerging markets

Aside from the drastic differences in economic prosperity between emerging and developed markets, there are fundamental differences in their institutional environment as well. On the legal front, LLSV (1997, 1998) show that emerging markets typically witness weak protection of creditor rights and ineffective law enforcement. On the administrative side, governments in emerging markets tend to be less efficient yet enjoying a greater level of influences on the market (Shleifer and Vishny 1994). Finally, the prevalence of soft bank lending (Sapienza 2004, Khawaja and Mian 2005) and weak corporate governance mechanism at the micro level renders a less friendly business environment to entrepreneurs (Durnev et al. 2004).

In a comprehensive summary of the bankruptcy practice around the world, Classens and Klapper (2005) show that differences in institutional background lead to distinct utilization of bankruptcy law across countries. In particular, more creditor rights and higher judicial efficiency enjoyed by most developed markets encourage the usage of bankruptcy to resolve distress. Bankruptcy resolution, in contrast, is far less common in emerging markets because 1). there is no formal bankruptcy code in some countries; 2). there is weak enforcement of contracts and protection of creditor rights in the event of default even with the existence of a formal bankruptcy code; and 3). the judicial system is inexperienced with handling distress cases and protecting creditor claims in the event of default.

As a result, most defaults and distresses in emerging markets are resolved out-of-court through informal bargaining (Gilson, John, and Lang 1990, Asquith, Gertner, and Scharfstein 1994). As debtors normally enjoy information advantage regarding company prospect and control over company assets, they command a greater level of bargaining power in distress resolution than their counterparts in developed markets.

It is worth noting that even though debtors typically enjoy greater bargaining power in the event of distress in emerging markets, they are still under pressure to emerge from distress. Existing literature has documented that financial distress can lead to considerable amount of direct and indirect costs to firms (i.e. Altman 1968, Opler and Titman 1994). Firms may suffer in the areas ranging from un-trusting suppliers and retailers, difficulty in obtaining credit, to tarnished reputation among customers.

## 2.2. Corporate bankruptcy in China

China is representative of emerging markets in terms of how distress forms and gets resolved. Like the cases in other markets, the practice of soft lending to SOEs is common, especially by state-owned banks. Such easy access to bank capital and a lack of effective monitoring leaves the borrower unchecked and induces distress.<sup>5</sup>

The bankruptcy law in our sample period was enacted in 1986 and considerably lags the practice of distress in many aspects (Law Year Book of China, 2001).<sup>6</sup> Typical to many other emerging markets, judicial system on bankruptcy is obsolete and law enforcement is weak (Allen et al. 2005, 2006). Judges and attorneys alike often find themselves lack the specific clauses to resort to in the law or law enforcement to carry out what the court rules. As a result, the court system has been very conservative with bankruptcy-related petitions so as not to contradict the interpretation of the law. The court normally requires distressed firms to first obtain consent to their bankruptcy decisions from the local government and to propose a satisfactory plan to place its existing employees, before even considering handling the cases.

Again similar to many other emerging markets, although the law does include bankruptcy as one possible solution to resolve distress, liquidation and asset possession rarely happen in China. Instead, courts tend to be protective of SOEs and encourage

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<sup>5</sup> We later perform empirical analyses that explicitly control for the fact that SOEs are more likely to enter distress and obtain consistent results with our main findings.

<sup>6</sup> “A Completely New Bankruptcy Law in Chinese History”, by Hua Song, Aug 30, 2006, Shenzhen Business Journal.

workouts and restructuring so as to keep default firms as going concerns, unless there are no other options.<sup>7</sup>

As a result, only a small fraction of filed bankruptcy cases were eventually handled by the court system and even less were eventually discharged. Appendix I reports statistics of filed and discharged bankruptcy cases in China. On average, only about 7 percent of all bankruptcy petitions were handled by the court. For example, 315 out of 7,233 filed bankruptcy cases were handled by the court, with even fewer cases reaching the judges (Law Year Book of China, 1995-2005).

In addition to common costs associated with distress, managers at distress companies in China face additional incentives to turn around their companies. Many SOE executives are also government officials and their performance as managers may influence their future career promotion within the administrative system (Bai et al. 2000, Bai and Xu 2002). Furthermore, the consequence of not recovering from distress is particularly severe for listed companies, who face the risk of being delisted from stock exchanges and losing the often lucrative opportunity in emerging markets for rights offering and future financing. This study will focus on understanding how external institutional environment, such as legal, governmental, and financial development, balances this bargaining process and disciplines management behavior, in addition to the formal law provisions.

Finally, it is worth noting that, like the case in many other emerging markets, commercial banks, even state banks<sup>8</sup> have become more discreet with their loans and

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<sup>7</sup> A famous example is the case of Zhengzhou Baiwen, a listed company at the Shanghai Stock Exchange. The company was for one time a leading department stores in Central China, before the business failed due to over-aggressive expansion. After the company went in distress for several years and owed banks hundreds of millions of dollars, the Xinda Asset Management Company, backed by the central government, took over the claims and filed bankruptcy petition against Zhengzhou Baiwen. The court initially declined to handle the case, citing that the distressed company had to first arrange its work force. After finally agreeing to accept the filings, the court ultimately decided to dismiss the case, on the ground of insufficient supporting documents. Right before it faces the risk of being de-listed, Zhengzhou Baiwen found a strategic investor who took over the company and pledged to the creditors to re-negotiate and re-pay the company's debt.

more watchful should the debtors default lately. In addition, the recent securitization of state-owned banks requires them to be more vigilant with their new lending and outstanding loan recovery. Consequently, these banks are now putting greater-than-ever effort to ensure distressed companies come up satisfactory plans with their defaulted debts. Of course, institutional background can greatly influence the behavior of both distressed firms and their creditor banks and it is our objective to investigate such interactions.

### **3. Hypothesis Development**

We next discuss three aspects of institutional background, ownership structure, governmental quality, and local financial development, that we believe are important to shaping distressed firm behavior in the context of weak bankruptcy law and develop our hypotheses.

#### **3.1. Ownership structure**

State ownership is popular around the world. SOEs often establish their competitive edge through monopolistic market power, easy access to valuable bank loan financing, and favorable tax treatment (Dinc 2005, Johnson and Mitton 2003, Shleifer 1998, Shleifer and Vishny 1994). A fundamental institutional constraint of state ownership is the lack of transferability of property rights (Alchian 1965). The associated weak managerial incentive and governance in SOEs makes them less responsive to the dire situations of financial distress. In addition, executives of SOEs are often evaluated on dimensions other than pure firm performance, such as contribution to local economic growth and employment, which distracts them from focusing on maximizing the shareholders' wealth.

Moreover, the ex-post consequence of financial distress puts quite different pressures on SOE managers, compared to those of private companies. Because of administrative order or policy motivations, banks often make favorable lending to SOEs.

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<sup>8</sup> Following the common practice, we classify the Bank of China, China Agriculture Bank, China Construction Bank, and Industrial and Commercial Bank of China, four banks traditionally controlled directly by the state government, as state banks.

SOE executives understand that such banks are unlikely to terminate the lending relationship or engage in further punitive actions, in the event of default. Consequently, SOE executives are usually slow in responding to financial distress.

As a result, we expect firms under private ownership to more effectively adjust their strategies to repay debts (reflected by better firm performance, more conservative capital structure and responsible financing decisions) and to be more likely to emerge from bankruptcy.

### 3.2. Governmental quality

The importance of government quality is not just limited to how it protects and operates SOEs. More importantly, government gets to exert critical influence on the effectiveness of legal enforcement and hence the judicial system in China. Given that institutions and legal environment are critical to economy and financial markets at the macro-level (La Porta et al. 1998, Shleifer and Vishny 1994) and to firm-level decision-makings (Demirguc-Kunt and Maksimovic 1996, 1998, 1999), the quality of government is important in defining the boundary of firm behavior. Better government quality can provide better protection of lending contracts, pose greater liquidation threat to distressed firms, influence interest rate, and enhance credit availability to companies. In contrast, poor government quality creates gaps between written law and enforcement and increases transaction costs (Bris et al. 2006, Charumilind et al. 2006, Durnev et al. 2004, La Porta et al. 1997, Ofek 1993).

In sum, we expect that firms subject to higher quality public governance to respond more quickly to financial distress (reflected by relatively better operating performance), and to more effectively reduce their borrowing (Rose-Ackerman 1991) and to be more likely to emerge from distress.

### 3.3. Financial development

Maskin and Xu (2001) and Sapienza (2004) show that banks play an important role in allocating resources and exerting the necessary monitoring on debtors. In many financial systems that are under-developed, banks play an even more important role in

providing credit access. In addition to credit availability, extant literature (Cull and Xu 2000, 2005) documents that financial development aligns firm actions with the market mechanism by screening debtors and by making market-driven, instead of policy-driven, loans.

Moreover, commercial banks, particularly those in more developed areas are typically vigilant with their loans and can therefore detect distress relatively early and manage their risk exposure. On the other hand, state-owned banks, which are influential in less financially-developed regions, are less prudent with making loans and less effective in recovering their due debts, reflected by the high level of non-performing loan from such banks during an extended period of time (Brandt and Zhu 2000). At the same time, from the firms' perspective, managers and firms located in more developed financial markets value contracts more, both from their concerns with the law and their own reputation, and from their fear of harsher punishment by creditors. Consequently, they try harder to turn distressed company around, which should result in better recovery likelihood as well.

We expect that firms from more financially developed areas would respond more quickly to financial distress, more effectively improve their financial health, and recover sooner from distress.

#### 3.4. Testable hypotheses

Summarizing our above discussions on how state ownership, government quality, and financial development can influence distressed firm behavior, we formulate the following testable hypotheses:

**Hypothesis 1.** Better institutional background (lower state ownership, better government quality, and greater financial development) helps improve distressed firms' operating performance.

**Hypothesis 2:** Better institutional background motivates firms to be more responsive and steers distressed firms toward more responsible (conservative) capital structure.

Partly reflecting the consequence of the above hypotheses, we expect that firms located in regions with better institutional background to have a greater chance of recovering from financial distress and if they do, recover sooner than firms governed by poorer institutional background. We formally formulate it in the following hypothesis:

**Hypothesis 3:** Better institutional background helps distressed firms emerge from distress.

## 4. Empirical Design

### 4.1. Data

This study utilizes the Annual Industrial Companies Database during the eight-year period between 1998 and 2005, from the Chinese National Bureau of Statistics (NBS). The financial and operating data of industrial firms is annually collected by NBS. Previous studies have used this source and confirmed that the data are accurate and well representative of the national economy (Chow 1993, Chuang and Hsu 2004, Li et al. 2006). The database covers: 1) all SOEs regardless of their annual sales, and 2) all non-SOEs firms (including domestic private firms, joint-ventures, and foreign firms) with annual sales of at least RMB 5 million (roughly, \$US 600,000, according to the exchange rate on Dec 31<sup>st</sup>, 2005). The number of firms included in this database ranges from 162,033 to 271,835 across the sample years, encompassing firms in all provinces in mainland China.<sup>9</sup> All (about 700) publicly-listed industrial firms are included in the database.

### 4.2. Classifying distress

We adopt two approaches to classify financial distress. The first is by inference while the second is based on actual default events.

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<sup>9</sup> Some firms may change their identification number due to exit from and re-entry into the NBS dataset (Jefferson et al. 2002). Therefore, we made sure that we only use observations with consistent identification numbers and remain in the entire sample period. Further, because entry and exit information can help us more accurately capture distresses and their outcomes, we believe that such information, if available, should strengthen our main results.

#### 4.2.1. Inferred distress

Our main approach is to identify distress within the first three years (1998-2000)<sup>10</sup> and track the dynamics of distressed firm behavior between 2001 and 2005.<sup>11</sup> To be thorough, we adopt several measures to classify distressed companies. Our primary criterion is the widely-used Z-score. Following Altman (1968), we estimate the Z-score for each firm within each of the first three sample years.<sup>12</sup> We define a firm to be ‘distressed’ if a company’s Z-value falls below a cut-off value in at least two consecutive years (1998 and 1999, 1999 and 2000, or 1998 through 2000). Appendix II provides details of how we estimate the Z-value and set the cut-off value. Separately, we include all companies that stayed out of distress during the entire sample period (1998 to 2005) as the control sample. Such classification generates a similar number of observations in the distressed firm sample (18,850) and control sample (17,872).<sup>13</sup>

Given the fundamental differences between the current Chinese economy and those of the U.S. economy and the implicit assumptions made (accuracy on data quality and earnings, etc) when the Z-value was first designed (Altman 2000), we experiment with several alternative definitions for distressed and control firms. For example, we use different sets of cut-off Z-values to define distressed companies. In addition, we experiment with only ‘slightly-distressed’ firms, those firms whose Z-values are slightly below the cut-off value and are very likely to recover from distress. Further, we require a firm to be distressed in all three years of the first three-year period in an alternative definition. Finally, we also use alternative selection criteria for control firms (i.e. requiring the firms to stay out of financial distress between 1998 and 2000, instead of the entire 1998-2005 period) and experiment using different numbers of years of performance to define distress. We obtain very similar results to our main findings, using the above alternative definitions.<sup>14</sup>

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<sup>10</sup> We experiment with several different cut-off years and our results are highly robust.

<sup>11</sup> Despite the East Asia financial crisis in the last 1990s, there was little negative shock to Chinese economy, which has been growing at brisk pace of over 9% per year during the sample.

<sup>12</sup> Only a handful of ‘safest’ companies were allowed to issue corporate bond during the sample period and there was no default on corporate bond during the sample period.

<sup>13</sup> Note that by construction, the number of distressed firms and that of financially-healthy firms do not add up to the total number of firms in the survey.

<sup>14</sup> We exclude such results to conserve space. They are available from the authors upon request.

In addition to the Z-score measure, we use two other criteria to infer distress: leverage and interest coverage. With leverage, we consider a firm to be in distress if the leverage of a firm is greater than one (that is, a firm has more total outstanding debts than its total assets). With the interest coverage measure, we classify a firm to be in distress if its interest coverage ratio is less than one (that is, a firm's operating incomes are not enough to cover its interest payment obligations). We then construct distressed and control samples as above, and find that the two alternative classifications generate very similar results to our main results.<sup>15</sup>

#### 4.2.2. Real default events

To address the limitations in the NBS data that no actual default events are recorded, we separately seek a sample of publicly listed firms with actual loan default. Among all companies listed in China (on the Shanghai Stock Exchange and Shenzhen Stock Exchange), we went through annual reports to identify companies that defaulted on their bank loans.<sup>16</sup> To make sure that we include companies that are financially and economically distressed, we define a company to be in distress if it not only defaulted on its debts, but also report negative net income in the same period.<sup>17</sup> Different from our practice with the NBS data, we use the 2000 to 2002 period (the first three years that such data became available) to define distress firms.<sup>18</sup> By the above criteria, we define 38 of the total 932 listed companies as distressed and other 894 companies without any default loan during the entire sample period as the control sample.

We feel that the two alternative samples/distress definitions nicely complement each other in the following ways: 1) the listed-company sample documents real default events while we observe *de facto* distress in the NBS sample; 2). The listed-company sample includes only very large listed companies while the NBS sample include both large and smaller companies; 3). the listed-company sample encompasses a wide range of industries while the NBS sample only includes the manufacturing industries; 4) the NBS

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<sup>15</sup> We exclude such results to conserve space. They are available from the authors upon request.

<sup>16</sup> Under the legislation, China Securities Regulatory Commission (CSRC) requires that listed companies disclose the information of default loan in the note of annual reports.

<sup>17</sup> Including the 81 incidents in which companies defaulted on their debts but reported positive net income does not change any of our findings.

<sup>18</sup> We exclude firms with missing loan default information.

covers slightly different time periods and much more companies. We report our results with both samples, which are most of the time highly consistent, in our empirical tests.

#### 4.3. Regression methodology

Based on the discussions in Section 3, we next focus on understanding how the three aspects of institutional background (ownership structure, government effectiveness, and financial development) modify distressed firms' interim performance, financing decisions, and their patterns of recovery from financial distress.

Our main empirical approach is to perform panel regression of firm behavior on the different aspects of institutional background. In particular, we plan to investigate whether the interactions of the institutional background and the distress dummy variable exert significant impacts on firm behavior, the dependent variables. Building upon the existing findings that the institutional background matter to average companies (which we control in the regression by including control variables), the interaction term will provide new insight into how these institutional factors influence distressed companies, in particular. Significant coefficients on the interaction variables, in the expected sign, will provide support to our hypothesis that institutional background is particularly important to distressed firm behavior.

##### 4.3.1. Dependent variables

We are concerned about the performance, financial structure, and recovery outcome of distressed firms. Performance is measured as return on sales (ROS), although several other performance measures including total factor productivity and earnings growth are also been examined. Appendix IV provides a description of the above variables.

To track a firm's capital structure, we adopt two measures: the leverage, defined as total liabilities divided by total assets, and long-term-debt ratio, defined as the ratio of a firm's long term debt to its total liabilities. As we discussed in Section 2, weak institutional background poses less threat to distressed companies to act promptly to change their capital structure. By measuring the change in leverage through the sample

years, we will understand how firms change the level of debts, relative to their assets. In addition, the fraction of long-term debts among all debts depicts how the institutional factors influence companies to balance between debts with different maturities.

We adopt two variables to track recovery outcome for financially distressed firms. First, we trace each distressed firm's performance throughout the rest of the sample period. The dummy variable equals one if the distressed firm is no longer distressed by our definition at the end of the sample period, 2005 for NBS sample and 2007 for default sample, and otherwise zero. We then estimate hazard rate model using the dummy variable as the dependent variable, to examine which types of firms are more likely to emerge from distress at the end of our sample period. The hazard rate model specification addresses the fact that we have a 5-year observation window for recovery to happen and our observation of the ultimate recovery is truncated.

Alternatively, we count the number of years that that a distressed company stays in distress, since the beginning and till the end of the investigation period. For example, company that went into distress in 2002 and recovered in 2004 records an observation of 2 years. By construct, the minimum number of years is zero (a firm emerges from distress in 2001 and has since stayed out of distress) and the maximum number of years is five (a firm stays in distress till the end of our sample period in 2005 or 2007). We adopt the Tobit regression approach to account for the fact that the data may be truncated due to the length of our sample period.

#### 4.3.2. Independent variables

On ownership structure, we include state ownership measured as the fraction of a firm's equity owned by various levels of government agencies. We perform additional analyses (unreported) by adopting a dummy variable that equals to 1 if state equity ownership in a company is no less than 50 percent and 0 otherwise and all our main results retain.<sup>19</sup>

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<sup>19</sup> Such results are available from the authors upon request.

Next, we take advantage of the variations across different provinces of China to focus on the other two aspects of the local institutional background: local government quality and financial market development. We measure governmental quality by adopting an index from Fan and Wang (2002), which is inversely related to government size, namely the fraction of the population in a province that is not employed in the government bureaucracy. We would argue that government size is a reasonable proxy for government quality because organizational redundancy and excess employment have been widespread across China's governmental agencies.<sup>20 21</sup>

We evaluate local financial development by a widely used measure of credit allocation marketization (China National Economic Research Institute, Fan and Wang 2002), defined as the fraction of short-term loans made to non-state sector (including agricultural loans, loans to village/township enterprises, loans to private enterprises, and loans to foreign-owned enterprises) divided by total short-term loans in a region. We also experiment with alternative definitions of financial development by using competitiveness of the local banking sector (defined as the deposits held by non-state-owned financial institutions scaled by total regional deposits in the same report) and a weighted combination of the above two variables based on principal component analysis and obtain very similar results.

Finally, we include the following firm-level control variables in almost all regressions: 1). financial distress dummy: a dummy variable that equals to one if a firm is classified as 'in distress' (See Appendix II); 2). List: a dummy variable equal to one if a firm is publicly traded, and zero otherwise; 3). firm size: the logarithm of company book assets in thousands of RMB; 4). firm leverage: total liabilities divided by total assets; 5). tangible asset ratio: the fraction of total tangible assets to total assets; 6). Firm age: the

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<sup>20</sup> We adopt yet another alternative measure of government effectiveness, the government quality index in The Annual Report of Urban Competitiveness in China (Social Science Academic Press 2003), and obtain very similar results to our main findings. The Chinese Academy of Social Sciences surveys the level of bureaucratization, the frequency of government expropriation, and the level of citizen satisfaction for 200 cities in China and employs a principal component analysis to arrive at a city-level index of government service quality. We use the mean value of the index levels of all cities within a province as the proxy for the provincial level government quality.

<sup>21</sup> All unreported additional analyses are available from the authors upon request.

number of years that a firm has been in existence. In most regressions, we include year and industry fixed effects.

Table 1 provides summary statistics of these variables for both the NBS (in Panel A) and the publicly listed samples (in Panel B). As Table 1 indicates, the sample of publicly listed companies on average have better performance and lower leverage than the companies from the NBS Survey. This should not be too surprising given that listed companies are much bigger in size and often supported by various levels of governments. This is also partly related to the listing requirement at the two Chinese stock exchanges in that only companies with solid fundamentals in the past three years are allowed to list their shares at the exchange. Partly related to this, Table 1 also shows that once in default, listed companies are far more likely to recover and take less time to recover. Again, we feel that this is probably because listed-companies have better business to start with and better access to bank capital than companies in the NBS sample.

## **5. Regression results**

### **5.1. Operating performance**

Table 2 reports the performance regression results. The left panel reports results based on the NBS sample, while the right panel reports those of the publicly-listed sample. In addition to the reported specifications in which we include all three types of institutional variables in the same regression, we have also experimented specifications in which we include only one type of institutional variable at a time in the regression and we obtain consistent and slightly stronger results.<sup>22</sup>

Higher ownership by the state indeed suggests poorer performance, especially when firms are in distress. One standard deviation increase in state ownership ratio can decrease return-on-sales by about 3.2 percentages (about one-sixth standard deviation in return-on-sales) among distressed companies. In addition, the coefficients on the interaction terms between government quality and distress dummy and between financial development and distress dummy are both significantly positive, indicating better

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<sup>22</sup> Such results are available from the authors upon request.

government quality and local financial development bring relatively better performance among distressed companies. In terms of economic significance, a one standard deviation improvement in government quality and financial development lead to 3.0 and 0.6 percentages (about one-sixth and three-percent of one standard deviation in return-on-sales) increase in operating performance. In addition, the results with two alternative measures of firm performance, total-factor-productivity (TFP) and earnings growth, generate very similar results to those with return-on-sales.

The results utilizing information on default within the sample of listed companies (in three columns on the right of Table 2) are very similar. Although the interaction term between financial development and distress dummy variable did not come out significantly, probably due to the lack of power given a much smaller sample size, state ownership and government quality display significant impact on distressed firm behavior.

All above findings provide strong support to our hypothesis that firms facing weaker institutional background perform worse in distress. It is interesting to note that although state ownership seem to matter to return-on-sales of average companies, government quality and financial development only matter to return-on-sales when firms are in distress. Such findings stress that our results do not simply document a continuation effect from pre-distress period and that institutional factors have more pronounced impact on firm behavior while firms are in distress.

In sum, the above findings lend strong support to our hypothesis 1 that distressed firm performance is heavily affected by augmenting institutional factors where bankruptcy law is weak.

## 5.2. Financing decisions

In addition to maintaining their business up and running as usual, managers at distressed companies have to act fast to deal with liquidity constraints and demands made by various stakeholders. In particular, the managers have to make important financing decisions, which are critical to the survival and recovery of distressed firms.

Our results in column 1 of Table 3 indicate that the coefficient on the interaction term between state ownership and distress dummy is significantly negative, suggesting that state ownership is associated with higher financial leverage for firms in distress. Although better government quality generally provides greater debt capacity to companies (Shleifer and Vishny 1992), it turns out that distressed firms are less leveraged in those areas of China. This is again consistent with the argument that better government facilitates contract enforcement and creditor protection. As a result, distressed firms are more motivated to reduce their debts and improve their financial health. The results of financial development are of similar spirit. Better financial development generally enables companies to raise more debt capital. However, once a company gets in distress, areas with better financial development seem to witness stronger monitoring on the distressed firms, manifested by the distressed firms' greater reduction of debts, compared with firms in provinces of poorer financial development.<sup>23</sup>

In Column 2, state ownership is associated with shorter debt maturity. However, for distressed firms, increases in state ownership are associated with longer debt maturity, suggesting that state ownership is engaged in more long-term loans.

Interestingly, government quality and financial development have opposite impact on debt maturity among average firms: better government quality tends to increase debt maturity yet better financial development reduces debt maturity. We conjecture that this is partly because non-state banks, which are more active in more financially-developed areas, impose closer monitoring on their lending by making shorter-term debts. The effects of the two institutional factors on distressed firms' maturity structure are, however, insignificant. We are not surprised by the results for at least two reasons. First, extant studies are somehow divided in their predictions/findings on what firms should do with the debt maturity in distress (Dinc 2005, Ongena et al. 2003, among others). In addition, government quality and financial development can indeed yield ambivalent predictions regarding the use of long-term relative to short-term debt. On one hand, these institutional

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<sup>23</sup> To address the possibility that the debts for distressed companies may largely come from accumulating interest payment obligations, we perform unreported analyses that subtract interest payment from the liability measures and repeat our main analyses. We obtain very similar results.

forces, when stronger, imposes greater constraints on distressed firms for them to repay their defaulted long-term debts. On the other, it is possible that more robust government and financial sector encourage more debt renegotiation and private workouts, which may lead firms to swap their short-term debts to long-term debts, providing firms the much needed liquidity to completely repay their debts.

As in Columns (3) and (4), our results utilizing the sample of listed companies are consistent with those based on the NBS sample. Overall, such analyses confirm our results using the inferred distress among the NBS sample companies. The similarity between the two samples in part confirms the efficacy of using the Altman Z-score to detect distress in emerging markets nowadays.

### 5.3. Recovery from distress

Our results in Table 4 suggest that, other things constant, state ownership significantly reduces the likelihood that a firm emerges from distress by the end of our sample period. On the other hand, firms from areas with better governance quality and financial development are more likely to emerge. All three coefficients are significant at the 1 percent level and also economically significant. One standard deviation change in state ownership, government quality, and financial development can lead to 24, 23, and 13 percentage change in firms' recovery probability. Such results, taken together with our previous results on firm decisions, indicate that better institutional background provides greater incentives for firms to take the proper turn-around strategy and that firms are more likely to obtain the objective of improving business and successful restructure.

Similar to our results on recovery probability, state ownership increases the length of time it takes a firm to emerge, while a firm resides in environment with better quality government and greater financial development takes less time to emerge, consistent with the above findings on recovery probability. Again, our additional analyses utilizing real default events among listed companies generate consistent results with the NBS sample.

Our above evidence suggests that it is more likely and takes less time for firms under stringent public governance and market discipline to emerge from distress in

China's weak bankruptcy environment. Our findings support the line of argument (Bai and Xu 2002, Brandt and Zhu 2000) that 'the invisible hand' at market place plays a powerful role in shaping firm behavior towards the more efficient direction.

#### 5.4. Further analyses

We next perform a host of additional analyses to verify the robustness and gain more understanding about our results.

##### 5.4.1. Change in distressed firms' policies

One apparent possibility is that the distressed firms under poor institutional background may have always displayed poor operating performance and aggressive financing policies, even before they enter distress. We perform some alternative analyses to show that we are not simply picking up a firm fixed effect in our main regressions. First, we repeat the same regression as in Tables 2 and 3 with the change in the dependent variables from pre-distress to post-distress period, as opposed to previously the level of the dependent variables. In particular, we calculate the average performance for the same firm during the 2-year pre-distress period and the 5-year post-distress period. We then calculate the percentage performance change in each firm and perform cross-sectional regression of performance change on the institutional background. This approach is in essence a difference-in-difference approach, which enables us to pinpoint how distressed firms adjust their decisions in response to their institutional surroundings. Table 5 reports the results. Almost all interested coefficients remain in the same direction as our main analyses and many of them remain highly significant. We take this as additional support for the findings from our main pooled regressions.

##### 5.4.2. Ownership structure change and firm behavior

We perform additional analyses to understand how ownership structure change influences distressed firm behavior. If distorted incentive and loose monitoring, in addition to the access to soft lending, is responsible for the differences between SOEs and private firms, we would expect that a change in ownership structure around financial distress should lead to changes in firm performance and capital structure decisions

accordingly. This is exactly what we have found. Table 6 reports that although increase in private ownership has mixed impact on average companies, an increase in private ownership brings significantly better performance, lower leverage, and shorter debt maturity, which help companies recover from distress.

#### 5.4.3. SOEs versus private firms

An alternative and probably more straightforward way of comparing how institutional background influence firms with different ownership structure is by splitting the sample into sub-samples of SOEs and private firms and investigate how firms respond in distress. We find in Table 7 that our main results retain with respective sub-samples using only SOEs or private firms. This suggests that our findings are universal within each sector of the economy, rather than simply reflecting the contrast between SOEs and private companies. Such sub-sample analyses also provide additional support that institutional background other than state ownership have their own shares of incremental impact on distressed firm behavior.

#### 5.4.4. Endogenizing the tendency to be in distress

It is conceivable that the practice of soft lending may be more prevalent in regions where institutional monitoring is weak and this may lead some companies more likely to be in distress than others in the first place.<sup>24</sup> For example, SOEs are much more likely to enter distress than private companies across all regions and regions in which state-enterprises play greater roles witness higher level of distress incidents. To control for such endogeneity in firms' likelihood to be in financial distress in the first place, we performed two-stage Heckman regression by including the Mills ratio and endogenizing the probability of entering financial distress into the second-stage regression in understanding firm behavior within financial distress. Again, we obtain similar results.

#### 5.4.5. Alternative ways to define default

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<sup>24</sup> For example, we find from the sample that firms in Shan'Xi province, a province with relatively less advanced institutional background, are almost three times more likely to be distressed than firms in Zhejiang province, with relatively better institutional environment.

As mentioned in Section 3, we have adopted two alternative ways (leverage and interest coverage) to define financial inferred distress. Our main results remain very similar to the ones being reported in the paper.

## 6. Conclusions

We provide novel evidence on how financially distressed firms' policies respond to external institutional factors in China, a leading and the largest emerging market in which bankruptcy law is loosely enforced. We find that ownership structure, government quality, and financial sector development heavily influence firm decisions in distress. Companies with higher state ownership and firms from areas with relatively poorer government effectiveness and/or poorer financial development witness worse operating performance, more aggressive corporate financing policies, and lower likelihood of emerging from financial distress. Such findings highlight the importance of institutional and market factors to firm behaviors in distress, which in turn have the potential of changing credit availability, interest rate, and firm capital structure at the national level. The experience from China sheds lights on our understanding of distressed firm policies in other markets where weak institutions and lax contract enforcement are also prevalent.

There are several areas for future research. One natural extension of the paper is to explore how the impact of institutional background in different emerging markets. Similar to Davydenko and Franks (2008), this line of research will take advantage of the cross-border variation in institutional environment and extend existing understanding about firm behavior across emerging markets. Secondly, our results suggest that local institutional background greatly modifies firm behavior as firms adapt their decisions to make the best out of existing legal system. Such results suggest that future studies should put more emphasis on understanding more details about various institutional backgrounds and how they shape various corporate behaviors. Finally, as laws and regulations constantly go through overhauls and revisions, our current study encourages future event studies that utilize such shifts and investigate how banks and firms adapt to changes in institutional background.



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### Appendix I. Statistics of the Number of Filed and Discharged Bankruptcy Cases

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001
Number of cases filed	478	1,156	1,938	4,400	5,697	6,206	5,313	5,255	7,233
Number of cases discharged	69	98	142	370	400	n.a.	267	217	315

Source: Law Year Book of China, 1993-2001

## Appendix II. Methods of Classifying Distressed versus Control Firms

We use three different methods to define distressed versus control firms for the study: 1). the Altman (1968) Z-score; 2). leverage; and 3). interest coverage.

1). With the Z-score approach, we follow Altman (1968) in predicting a company's probability of going into distress in the next period. We use the following formula to predict the Z-score for a company during a year:

$$Z \text{ Score} = A \times 3.3 + B \times 0.99 + C \times 0.6 + D \times 1.2 + E \times 1.4$$

, where A stands for EBIT/Total Assets; B stands for Net Sales /Total Assets; C stands for Market Value of Equity / Total Liabilities; D stands for Working Capital/Total Assets; and E stands for Retained Earnings /Total Assets.

Following Altman (2000), we set different cut-off values for private and public companies. Within each year, we define a private company to be in distress if its predicted Z-score is below 1.23, and define a public company to be in distress if its predicted Z-score is below 1.81. A firm has to be distressed in at least two consecutive years in the three-year period between 1998 and 2000 to be defined as 'distressed' for the studied period from 1999 to 2005. On the other hand, we define a company as 'healthy' for the control sample if a company is not defined as 'distressed' in any year during the entire sample period (1998 to 2005). By definition, distressed companies and control companies do not exhaust the whole set of companies included in the NBSC data set.

2). With the leverage approach, we define a company to be 'distressed' if a company's leverage ratio (defined as the ratio of total liabilities to total assets) is greater than one for at least two years of the three-year period between 1998 and 2000. On the other hand, we define a company as 'healthy' for the control sample if a company's leverage ratio is below one in any year during the entire sample period (1998 to 2005).

3). With the interest coverage approach, we define a company to be 'distressed' if a company's earnings before interest and tax payment (EBIT) is lower than its interest payment obligation for at least two years of the three-year period between 1998 and 2000. On the other hand, we define a company as 'healthy' for the control sample if a company's EBIT is greater than its interest payment obligation in every year during the entire sample period (1998 to 2005).

### **Appendix III. Method of estimating total-factor-productivity (TFP) of a firm**

To estimate a firm's TFP, we perform the following steps:

1. Following a two-factor Cobb-Douglas production function, we regress the total dollar sales of a company on two factors, labor and capital, for all firms within an industry in a given year.
2. We use the industry-level estimate of the coefficients on labor and capital to predict the total dollar sales of each firm.
3. We then take the regression residual as the TFP of the firm.

## Appendix IV. Variable Descriptions

Variable	Definition
<b>Dependent Variables</b>	
ROS	Return on sales, defined as net earnings divided by total sales.
TFP	Total factor productivity (TFP) is the estimated residual of a log-linear Cobb-Douglas production function for each industry and year. Two input factors, Labor and Capital, are measured as the employee number and total fixed assets, respectively.
Earnings growth	The year-by-year percentage growth of total earnings
Leverage	The ratio of total liabilities to total assets
Maturity	The ratio of long-term debt to total liabilities
Recovery dummy	A dummy variable that equals to 1 if a firm go out of financial distress by the end of the sample period, and 0 otherwise.
Recovery time	The number of years between the first year after distress and the year when a firm emerges from distress and stays out of distress till 2005 for NBS sample or 2007 for listed company sample. For a firm that did not emerge from distress, the observation takes the value of 5 years.
<b>Independent Variables</b>	
State ownership	The percentage that state agencies own in a company (NBS Database)
Government quality	A provincial index constructed to be inversely related to the number of a local government's bureaucrats and staffs divided by regional population. The variable is transformed using the following formula: $(V_{\max(2001)} - V_i) / (V_{\max(2001)} - V_{\min(2001)}) * 10$ , where $V_i$ is the original value, $V_{\min(2001)}$ is the minimum $V_i$ among all the provinces/special districts in 2001, and $V_{\max(2001)}$ is the maximum $V_i$ among all the provinces/special districts in 2001. We use the average of the 2001 and 2002 observations for each province (Fan and Wang 2002).
Financial development	The index of credit allocation marketization, defined as the fraction of short-term loans made to non-state sector (including agricultural loans, loans to village/township enterprises, loans to private enterprises, and loans to foreign-owned enterprises)

divided by total short-term loans in a region. We use the average of the 2001 and 2002 observations for each province (Fan and Wang 2002).

### **Control Variables**

Distress	A dummy variable equal to 1 if a firm is defined to be 'distressed' according to one of our criteria, and 0 otherwise.
List	A dummy variable equal to 1 if a firm is publicly-listed, and 0 otherwise.
Size	The log of firm total assets in the beginning year of financial distress (NBS Database)
Leverage at start of distress	The firm leverage in the beginning year of financial distress (NBS Database)
Tangible assets	The ratio of tangible assets to total assets in the beginning year of financial distress (NBS Database)
Age	The number of years that a firm has been in existence, in the beginning year of financial distress (NBS Database)

**Table 1 Summary Statistics**

This table presents the descriptive statistics of dependent and independent variables. All variables are defined in Appendix IV. The NBS sample includes observations from National Bureau of Statistics, China and the listed company sample includes observations of companies listed at Shanghai and Shenzhen Stock Exchange.

**Panel A NBS sample**

Variables	Observation	Mean	Median	Std. Dev.
Dependent variables				
ROS	255,112	-0.0132	0.0128	0.193
TFP	254,400	0.102	0.144	0.962
Earnings growth	214,983	0.336	0.134	7.28
Leverage	257,054	0.623	0.621	0.305
Long-term debt ratio	256,454	0.139	0.00522	0.219
Recovery dummy	18,850	0.351	0.00	0.477
Recovery time	18,850	3.93	5.00	1.68
Independent variables				
State ownership	255,683	0.438	0.243	0.457
Government quality	31	5.14	6.18	4.13
Financial development	31	3.19	2.34	2.75
Distress	36,722	0.513	1.00	0.500
List	36,722	0.00408	0.00	0.0638
Size*	36,722	10.2	10.0	1.52
Leverage*	36,722	0.635	0.640	0.314
Tangible assets ratio*	36,722	0.939	0.982	0.0969
Age*	36,706	15.7	9.00	16.0

**Panel B Listed company sample**

Variables	Observation	Mean	Median	Std. Dev.
Dependent variables				
ROS	4,707	0.0645	0.0597	0.151
TFP	4,766	0.0663	0.0143	0.804
Earnings growth	4,288	-0.0698	0.0334	1.90
Leverage	4,813	0.461	0.447	0.300
Long-term debt ratio	4,813	0.139	0.0677	0.175
Recovery dummy	38	0.605	1.00	0.495
Recovery time	38	2.92	3.50	2.02
Independent variables				
State ownership	4,743	0.383	0.424	0.248
Distress	932	0.0408	0.00	0.198
Size*	932	20.8	20.7	0.856
Leverage*	932	0.389	0.376	0.184
Tangible assets ratio*	932	0.966	0.982	0.0560
Age*	932	2.68	2.00	1.68

\* indicates observation at the start of the financial distress.

**Table 2 Firm Operating Performance and Institutional Background**

We report panel-regression results of firm operation performance (ROS, TFP, and earnings growth) on three types of institutional background, ownership structure, government quality, and financial development. All variables are defined in Appendix IV. P-values are provided in parentheses. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

	NBS sample			Listed company sample		
	ROS	TFP	Earnings growth	ROS	TFP	Earnings growth
State ownership	-0.0120*** (0.000)	-0.182*** (0.000)	-0.0913*** (0.005)	0.00635 (0.643)	-0.0145 (0.883)	0.279** (0.037)
State ownership*distress	-0.0698*** (0.000)	-0.274*** (0.000)	-0.477*** (0.000)	-0.264*** (0.001)	0.317 (0.526)	-1.12* (0.062)
Government quality	-0.000796*** (0.003)	0.00404 (0.123)	0.0108 (0.114)	0.000500 (0.701)	0.00360 (0.701)	0.000826 (0.951)
Government quality*distress	0.00734*** (0.000)	0.0261*** (0.000)	0.0265** (0.011)	0.0177*** (0.003)	0.118* (0.099)	0.206*** (0.004)
Financial development	0.0000388 (0.847)	0.0133*** (0.000)	0.0124** (0.013)	0.00150 (0.205)	0.0359*** (0.000)	0.0150 (0.187)
Financial development*distress	0.00208*** (0.000)	0.0252*** (0.000)	0.0386*** (0.000)	-0.000458 (0.935)	-0.0146 (0.707)	0.109* (0.066)
Distress	-0.107*** (0.000)	-1.07*** (0.000)	-0.652*** (0.000)	-0.0819* (0.053)	-1.26** (0.012)	-1.50*** (0.002)
List	0.0457*** (0.000)	0.0552 (0.305)	-0.293*** (0.003)			
Size	0.00404*** (0.000)	0.218*** (0.000)	-0.00169 (0.829)	0.00846* (0.052)	0.139*** (0.000)	-0.00375 (0.925)
Leverage at start of distress	-0.0573*** (0.000)	0.248*** (0.000)	0.273*** (0.000)	-0.158*** (0.000)	0.251 (0.159)	0.157 (0.454)
Tangible asset ratio	0.0527*** (0.000)	0.222*** (0.000)	-0.116 (0.339)	-0.00768 (0.916)	0.825 (0.157)	0.311 (0.637)
Age	-0.000817*** (0.000)	-0.00946*** (0.000)	-0.00701*** (0.000)	-0.00743*** (0.000)	-0.0530*** (0.000)	-0.0206 (0.307)
Constant	0.0632*** (0.000)	-1.69*** (0.000)	1.81*** (0.000)	0.0283 (0.787)	-3.49*** (0.000)	-0.331 (0.739)
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Cluster by firm	Yes	Yes	Yes	Yes	Yes	Yes
Observations	253,538	252,915	213,715	4,613	4,673	4,202
Number of firms	36,632	36,629	36,538	924	927	913
R-squared	0.148	0.343	0.012	0.177	0.097	0.022

**Table 3 Firm Capital Structure and Institutional Background**

We report panel-regression results of firm capital structure (leverage and maturity) on three types of institutional background, ownership structure, government quality, and financial development. All variables are defined in Appendix IV. P-values are in parentheses. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

	NBS sample		Listed company sample	
	Leverage	Maturity	Leverage	Maturity
State ownership	-0.00567** (0.024)	-0.00592** (0.018)	-0.0350*** (0.000)	0.0000482 (0.998)
State ownership*distress	0.0508*** (0.000)	0.0646*** (0.000)	0.209*** (0.000)	-0.0724 (0.176)
Government quality	0.00725*** (0.000)	0.00136** (0.014)	-0.000109 (0.889)	0.00135 (0.531)
Government quality*distress	-0.00793*** (0.000)	-0.000935 (0.238)	-0.0204*** (0.000)	-0.00768** (0.027)
Financial development	0.00254*** (0.000)	-0.00700*** (0.000)	-0.000353 (0.596)	-0.00566*** (0.003)
Financial development*distress	-0.00595*** (0.000)	0.000558 (0.406)	-0.0138*** (0.000)	0.00210 (0.618)
Distress	0.207*** (0.000)	0.00386 (0.568)	0.0967*** (0.001)	0.0103 (0.703)
List	-0.0193* (0.093)	-0.0324*** (0.002)		
Size	-0.00763*** (0.000)	0.0179*** (0.000)	0.000598 (0.797)	0.0368*** (0.000)
Leverage at start of distress	0.540*** (0.000)	0.0554*** (0.000)	0.784*** (0.000)	0.141*** (0.000)
Tangible asset ratio	0.0160 (0.223)	-0.0893*** (0.000)	-0.0875** (0.026)	-0.0283 (0.761)
Age	0.000946*** (0.000)	0.000176*** (0.006)	0.00516*** (0.000)	-0.00418* (0.099)
Constant	0.136*** (0.000)	0.0445*** (0.003)	0.170*** (0.004)	-0.638*** (0.000)
Industry	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes
Cluster by firm	Yes	Yes	Yes	Yes
Observations	255,359	254,814	4,717	4,717
Number of firms	36,673	36,668	927	927
R-squared	0.529	0.178	0.59	0.222

**Table 4 Recovery from Distress and Institutional Background**

We report results on the probability of firms recovering from distress and the number of years it takes for firms to recover from distress. We define a distressed firm to recover if its Z-value is no longer lower than our cut-off value or pay off its default loan and stays out of distress during the investigation period. The number of years ranges from 0 (if a firm recovers in the first year after distress) to 5 (if a firm does not recover till the end of the sample period). We adopt a hazard rate model in recovery possibility regression and the Tobit model in time of recovery regression to control for the truncated observations. For default sample since there are few observations we don't include industry dummy variables. All variables are defined in Appendix IV. P-values are provided in parentheses. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

	Recovery Probability: Hazard Rate Model		Time to Recovery: Tobit Model	
	NBS score sample	Listed company sample	NBS score sample	Listed company sample
State ownership	-0.528*** (0.000)	0.807 (0.577)	1.46*** (0.000)	-1.14 (0.621)
Government quality	0.0568*** (0.000)	0.354*** (0.002)	-0.150*** (0.000)	-1.01*** (0.008)
Financial development	0.0481*** (0.000)	0.160** (0.047)	-0.127*** (0.000)	-0.407* (0.054)
List	0.560* (0.053)		-1.56** (0.017)	
Size	-0.0727*** (0.000)	0.316 (0.263)	0.202*** (0.000)	-1.08* (0.078)
Leverage at start of distress	-0.904*** (0.000)	-2.61 (0.113)	2.56*** (0.000)	8.25** (0.045)
Tangible asset ratio	0.618*** (0.000)	-0.0138 (0.993)	-1.55*** (0.000)	1.82 (0.669)
Age	-0.0155*** (0.000)	0.372 (0.366)	0.0396*** (0.000)	-0.697 (0.186)
Constant			2.09*** (0.000)	30.4** (0.031)
Industry	Yes	No	Yes	No
Cluster by region	Yes	Yes	No	No
Observations	18,709	28	18,709	34
Number of firms	18,709	28	18,709	34
Log likelihood	-62,401	-40.5	-23,669	-54.9

**Table 5 Changes in Operating Performance, Capital Structure and Investment Decisions on Institutional Background**

We report cross-sectional results on changes in firm operating performance and capital structure on institutional background, ownership structure, government quality, and financial development. All variables are defined in Appendix IV. P-values are provided in parentheses. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

	NBS sample					Listed company sample				
	ROS	TFP	Earnings growth	Leverage	Maturity	ROS	TFP	Earnings growth	Leverage	Maturity
State ownership	0.00252 (0.117)	0.0332* (0.085)	0.0700 (0.807)	0.00776*** (0.007)	0.00265 (0.662)	0.0496** (0.037)	0.130 (0.122)	-0.222 (0.867)	-0.0337* (0.056)	0.0259 (0.245)
State ownership*distress	-0.0291*** (0.000)	-0.111*** (0.000)	-2.00*** (0.000)	0.0524*** (0.000)	-0.104 (0.235)	-0.398*** (0.003)	-0.601 (0.117)	6.41 (0.156)	0.253*** (0.002)	-0.111 (0.236)
Government quality	0.000426 (0.178)	0.0143 (0.107)	0.0314 (0.607)	0.00221*** (0.000)	0.00229** (0.047)	-0.000057 (0.980)	0.0108 (0.186)	0.00200 (0.987)	0.000384 (0.824)	0.000850 (0.695)
Government quality*distress	0.00140* (0.076)	-0.00580 (0.406)	0.0181* (0.079)	-0.00370*** (0.000)	-0.00383** (0.043)	0.00521 (0.712)	0.0129 (0.780)	2.26*** (0.000)	-0.0236** (0.015)	0.00684 (0.396)
Financial development	0.000301 (0.215)	-0.00255 (0.685)	0.0162 (0.708)	0.00153*** (0.001)	0.00225 (0.298)	0.00817*** (0.000)	-0.00228 (0.741)	0.190* (0.078)	0.0000379 (0.979)	0.00221 (0.231)
Financial development*distress	0.000194 (0.775)	0.0161*** (0.007)	0.0413 (0.631)	-0.00499*** (0.000)	-0.00461 (0.179)	0.0900*** (0.000)	0.179*** (0.000)	0.694 (0.146)	-0.0204** (0.018)	0.00281 (0.792)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	35,762	35,214	32,595	36,502	36,222	872	877	513	890	893
Number of firms	35,762	35,214	32,595	36,502	36,222	872	877	513	890	893
R-squared	0.0376	0.0649	0.0063	0.0775	0.0015	0.189	0.120	0.123	0.166	0.0706

**Table 6. Results of Ownership Structure Change**

This table reports the regression result of firm operating performance and capital structure on increase in private ownership. Increase in private ownership is defined as the percentage increase in ownership by non-state owners. Other variables are defined in Appendix IV. We exclude the results of TFP and earnings growth to conserve space. These two variables generate qualitatively similar results to ROS, which are available from the authors upon request. P-values are provided in parentheses. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

	NBS sample					Listed company sample				
	ROS	Leverage	Maturity	Recovery Probability	Time to Recovery	ROS	Leverage	Maturity	Recovery Probability	Time to Recovery
Increase in private ownership	0.0000727 (0.877)	0.00727*** (0.000)	0.00512*** (0.001)	0.267*** (0.000)	-0.754*** (0.000)	0.0110 (0.556)	0.00746 (0.734)	-0.0298 (0.107)	-0.691 (0.598)	1.82 (0.398)
Increase in private ownership *distress	0.0202*** (0.000)	-0.0117*** (0.000)	-0.0116*** (0.000)			0.203* (0.062)	-0.167* (0.055)	0.0118 (0.901)		
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No	No
Cluster	By firm	By firm	By firm	By region	No	By firm	By firm	By firm	By region	No
Observations	216,585	218,203	217,811	18,476	18,476	3,681	3,769	3,769	28	34
Number of firms	36,584	36,653	36,648	18,476	18,476	910	913	913	28	34
R-squared / Log likelihood	0.117	0.485	0.162	-62,147	-23,811	0.129	0.453	0.230	-43	-62

**Table 7. Results of SOEs Vs. Private Firms**

This table reports the result of previous regressions for sub-sample SOEs and private firms, respectively. All variables are defined in Appendix IV. The listed company sample doesn't present the result of recovery probability and time to recovery since the sample size is too small to run regression. We exclude the results of TFP and earnings growth to conserve space. These two variables generate qualitatively similar results to ROS, which are available from the authors upon request. P-values are provided in parentheses. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

**Panel A NBS sample**

	ROS		Leverage		Maturity		Recovery Probability		Time to Recovery	
	SOE	Private	SOE	Private	SOE	Private	SOE	Private	SOE	Private
Government quality	-0.000303 (0.322)	-0.00204*** (0.000)	0.00647*** (0.000)	0.00707*** (0.000)	0.00198* (0.055)	0.000495 (0.408)	0.0748*** (0.000)	0.0335*** (0.002)	-0.191*** (0.000)	-0.0892*** (0.000)
Government quality*distress	0.00902*** (0.000)	0.00375*** (0.000)	-0.00891*** (0.000)	-0.00480*** (0.000)	-0.00353*** (0.005)	0.00292*** (0.005)				
Financial development	0.00251*** (0.000)	-0.00126*** (0.000)	0.00230*** (0.007)	0.00300*** (0.000)	-0.00581*** (0.000)	-0.00685*** (0.000)	0.0497*** (0.002)	0.0532*** (0.000)	-0.129*** (0.000)	-0.147*** (0.000)
Financial development*distress	0.00126*** (0.008)	0.00339*** (0.000)	-0.00599*** (0.000)	-0.00707*** (0.000)	0.000285 (0.774)	-0.00217** (0.012)				
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No
Cluster	By firm	By firm	By firm	By firm	By firm	By firm	By region	By region	No	No
Observations	113,261	140,277	115,043	140,316	144,802	140,012	11,303	7,406	11,303	7,406
Number of firms	16,540	20,092	16,581	20,092	16,579	20,089	11,303	7,406	11,303	7,406
R-squared / Log likelihood	0.148	0.118	0.124	0.515	0.516	0.193	-26,213	-31,684	-11,492	-12,087

**Panel B Listed company sample**

	ROS		Leverage		Maturity	
	SOE	Private	SOE	Private	SOE	Private
Government quality	0.000509 (0.727)	0.00620 (0.290)	0.000146 (0.859)	0.000611 (0.789)	0.00190 (0.370)	-0.00153 (0.648)
Government quality*distress	0.0171** (0.048)	0.0805* (0.073)	-0.00911** (0.049)	-0.0427*** (0.000)	-0.0115** (0.035)	-0.00860 (0.437)
Financial development	0.000405 (0.763)	-0.00269 (0.658)	-0.000151 (0.836)	-0.000562 (0.741)	-0.00636*** (0.001)	-0.00145 (0.544)
Financial development*distress	0.00528 (0.656)	0.0155 (0.549)	-0.00909** (0.038)	-0.0229*** (0.002)	0.000846 (0.899)	-0.00210 (0.786)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Cluster	By firm	By firm	By firm	By firm	By firm	By firm
Observations	3,938	675	4,011	706	4,011	706
Number of firms	752	172	754	173	754	173
R-squared	0.211	0.138	0.616	0.559	0.228	0.148