

Going Bankrupt in China*

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Abstract

This paper investigates how legal reforms affect credit markets by examining the introduction of courts specialized in bankruptcy in China. We construct a new case-level dataset on bankruptcy filings and exploit the staggered introduction of specialized courts across Chinese provinces. Specialized courts brought fundamental changes to the judicial system: they are run by bankruptcy professionals that are less likely to be under the influence of local governments. Thus, they favored the transition from a state-oriented to a market-based bankruptcy regime. Provinces that introduced specialized courts experienced higher liquidation of state-owned firms, faster resolution of insolvency, and a decrease in the share of zombie firms – which we define as low productivity firms kept in business by preferential credit lines. State-owned firms operating under specialized courts experienced a decrease in the size of new bank loans, lower access to new loans, and lower investment in physical capital. These results highlight how limiting government intervention can improve insolvency resolution, and have important policy implications in light of the recent increase in insolvency that followed China’s debt boom.

Keywords: Financial distress; China; Court efficiency.

JEL Classification: G33, G34, K22.

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1 Introduction

In the last decade, China experienced a massive increase in corporate debt. Several factors have contributed to this debt boom: the stimulus policies of 2009-2010 – which fostered bank credit and promoted local government financing vehicles – , the development of a corporate bond market, the fast growth of shadow banking.¹ Academics and policy makers have raised concerns about the risks associated with the Chinese credit boom and the recent increase in insolvency.² In addition, the Chinese central government expressed concerns about the large number of “zombie” firms – low-productivity and often state-owned companies kept in business by preferential credit lines – and recognized the lack of efficient legal bankruptcy procedures that could facilitate their liquidation or restructuring. Despite the increasing pressure on the Chinese insolvency resolution system, little is still known about how bankruptcy works and the role of government in distress resolution in China.

This paper aims at closing this gap in the literature by providing evidence on bankruptcy resolution in China. We have two objectives. First, we provide new stylized facts based on case-level data on how firms go bankrupt in China and describe the main legal changes in bankruptcy regulation that occurred in the last decade. Second, we exploit one specific legal change – namely, the staggered introduction of specialized courts – to study the effect of courts specialized in bankruptcy on insolvency resolution and credit markets.

Until the introduction of specialized courts, bankruptcy cases in China were filed in local civil courts. Similar to other developing countries, Chinese local civil courts are characterized by limited expertise in bankruptcy resolution, lack bankruptcy professionals, and experience long delays in processing cases (Djankov, Hart, McLiesh, and Shleifer 2008). In addition, Chinese local civil courts tend to operate under the influence of local politicians, which have strong incentives to keep financially distressed state-owned companies alive to contain local unemployment and boost local GDP growth, which are important determinants of their political career. Thus, despite China has a recent bankruptcy law modeled out of those of developed economies, the influence of local governments over local courts has led to weak law enforcement and less independent judicial system in bankruptcy. This resulted in long delays in insolvency proceedings and prevented timely resolution of SOEs in distress. To deal with state-owned “zombie” firms in an economy already characterized by high debt levels, the central government has promoted the introduction of new courts specialized in bankruptcy across Chinese provinces. These specialized courts were mod-

¹See, among others: Bai, Hsieh, and Song (2016), Cong, Gao, Ponticelli, and Yang (2018), Hachem and Song (2016), Chen, He, and Liu (2017).

²The corporate bond market experienced the first defaults by a privately owned firm in 2014, and by a state-owned firm in 2015, followed by many others (Jin, Wang, and Zhang 2018). Local government financing vehicles started to default on their loans (Gao, Ru, and Tang 2017). According to data from the Chinese Supreme Court, the number of bankruptcy cases filed by Chinese companies increased by more than 50 percent between 2015 and 2016 (Wildau 2016).

eled on the US system and run by insolvency professionals, with the objective to decrease the influence of local politicians and fasten the liquidation of inefficient state-owned firms.

In the empirical analysis we exploit the staggered introduction of specialized courts across Chinese provinces over time to identify their effect on bankruptcy resolution outcomes and corporate credit markets. Specifically, the new courts were introduced at different times in different provinces between 2007 and 2017, with most courts being introduced between 2014 and 2017. To study the effect of specialized courts on bankruptcy outcomes, we construct a new dataset covering 1,285 bankruptcy cases of medium-to-large size, non-publicly listed firms, which were filed in China between 2002 and 2017. We manually extract case-level information from bankruptcy documents. In particular, we extract bankrupt firms' characteristics such as size and sector of operation, duration of the bankruptcy proceedings, court where each case was filed, judge and trustee identifiers, and bankruptcy outcome such as liquidation or reorganization.

Our first finding is that the introduction of specialized courts led to an increase in the share of liquidations of state-owned firms. According to the central government, new courts were introduced to facilitate the liquidation of unproductive state-owned firms and the reallocation of their resources to the rest of the economy. In this sense, our finding is consistent with the declared objective of the reform. We also find that cases filed in provinces that established specialized courts have lower resolution time compared with those filed in provinces where civil courts still handle bankruptcies. This result is driven by a decrease in the time to resolve insolvency of state-owned firms, while we find no effect on time in court to resolve insolvency of privately-owned firms.

Next, we study the implications of new courts on credit markets. Two potential effects are at work here. First, a recovery rate effect. Specialized courts reduced the time to resolve insolvency, thus better preserving the value of distressed firms. This should translate into higher recovery rate for creditors and thus an increase in banks' incentive to supply capital ex-ante. Second, by reducing political interventions in insolvency resolution, the introduction of specialized courts increased the probability of liquidating inefficient SOEs. Thus, if loans to these firms are not perceived as guaranteed by the government anymore, this might decrease banks' incentive to supply them capital ex-ante. Given that these two effects operate in opposite directions for SOEs, in the empirical analysis we are particularly interested in studying the heterogeneous effects of new courts on bank lending to state-owned versus privately-owned firms.

To study the impact of specialized courts on bank lending, we use data from the China Stock Market and Accounting Research (CSMAR) dataset, which covers publicly traded firms. When we focus on new bank credit, we find no effect of court introduction on average size of new bank loans nor on the average probability of getting a new loan. However, there are significant heterogeneous effects between SOEs and privately owned firms. In particular, SOEs experience a decrease in size of new bank loans and have lower

probability of obtaining a new loan after the introduction of specialized courts. On the other hand, our evidence suggests privately-owned firms benefited from the introduction of new courts in terms of access to bank lending. We also study the impact of specialized courts on real outcomes. We find that new capital investment decreased for SOEs while it increased for private firms. Consistently, we document that privately-owned firms decreased their cash position to finance new investment, while the opposite is true for SOEs.

Finally, we study whether - at provincial level - the introduction of specialized courts had an impact on the share zombie firms, which we define as low-productivity firms benefiting from financing conditions that are not justified by their fundamentals. Our results suggest that provinces where specialized courts were introduced experienced a decrease in the share of zombie firms. This is consistent with our finding on investment at firm-level: the reduction in zombie firms in provinces that introduced specialized courts created growth opportunities that were mostly captured by privately-owned firms.

Overall, our findings suggest that court specialization favored the transition from a state-oriented to a market-based bankruptcy regime, at least when it comes to local government influence on insolvency resolution of local SOEs. New courts brought faster resolution of financially distressed SOEs and pushed local private firms to invest more, thus mitigating resource misallocation in Chinese credit markets.

This paper contributes to both the development literature and the law and finance literatures. The seminal works in the law and finance literature has been at macro level, and focused on the role of a country's legal and judicial infrastructure on financial markets (La Porta, Lopez-de Silanes, Shleifer, and Vishny 1997, La Porta, Lopez-de Silanes, Shleifer, and Vishny 1998; Djankov et al. 2008; Claessens and Klapper 2005; Safavian and Sharma 2007). More recent work has used micro-data and within-country variation to study the effect of specialization and efficiency of judicial enforcement on both financial and real outcomes (Visaria 2009, Ponticelli and Alencar 2016, Rodano, Serrano-Velarde, and Tarantino 2011), or the effect of specific legal reforms that target creditor rights on bank lending decisions (Vig 2013). Our paper is related to the latter strand of this literature, which focuses on micro data and within-country variation. Our main contribution in this sense is twofold. First, we offer the first evidence on this topic in the context of China. This has important policy implications given Chinese recent credit boom and the stress under which its insolvency system might be in the near future. Second, and differently from most of the previous literature, we offer evidence based on case-level data on bankruptcies filed in Chinese courts, which allows us to better identify the channel through which institutional changes can affect credit and real outcomes.

The rest of the paper is organized as follows: Section 2 describes the institutional background of recent bankruptcy reforms introduced in China in the last decade, Section 3 describes the main data sources used in the paper and presents a set of basic stylized

facts. Finally, Section 4 presents the identification strategy and describes the empirical results.

2 Bankruptcy Law Reforms in China

Weak protection of creditor rights has been a major impediment to financial market development in China. During the period 1983-2002, the creditor rights index proposed by La Porta et al. (1997, 1998) (LLSV hereafter) was 2 out of 4. Djankov, McLiesh, and Shleifer (2007) argue that both creditor protection through the legal system and information-sharing institutions are associated with private credit growth. Cross-country studies also suggest that legal reforms need efficient enforcement to lead to increases in credit access.

During the last decade, China implemented a new bankruptcy law (2007) that aimed at strengthening creditor rights, for both domestic and foreign creditors. However, these reforms had limited impact on creditors' recovery in distress. Potential explanations reside in lengthy court proceedings, bureaucratic procedures involved, lack of judicial specialization and political influence in insolvency resolution.

2.1 Pre-Specialized Bankruptcy Reform

The 1986 Republic of China Bankruptcy Law was introduced to address insolvency procedures of state-owned enterprises (SOEs), given the prominence of SOEs in the Chinese economy back then. Essentially, the 1986 bankruptcy law focused on the following issues that could have emerged from large SOEs going out of business: the protection of workers, the prevention of social protests, and the maintenance of social stability. Under this old bankruptcy law, secured creditors had lower priority than government and workers in the order of repayment in case of liquidation. This made the Chinese bankruptcy regime particularly unfriendly to secured creditor, prioritizing government and workers' claims. Weak protection of secured creditors is consistent with the low LLSV creditor rights index observed until 2003.

To facilitate efficiency in bankruptcy resolution in presence of raising share of privately owned firms and foreign firms, a new bankruptcy law was introduced in 2007. China was in the middle of an economic boom driven by a more market-oriented economy and the growing role of foreign direct investment. One of the legal reforms required to join the World Trade Organization (WTO) in 2001 was a new bankruptcy law to protect secured creditor rights. The goal of the WTO members was to bring Chinese bankruptcy law up to international standards, and to ensure that creditors were sufficiently protected, especially when it came to foreign firms operating in China. Despite politicians' incentives to keep inefficient firms as ongoing concerns and maintain social stability, there is a second

objective in the post-WTO era: attracting foreign direct investment and promote local economic development. In an attempt to enhance creditors rights, especially for foreign firms operating in China, Chinese lawmakers drafted a new law based on bankruptcy regulations in the United States and Europe. The 2007 bankruptcy law replaced the 1986 Republic of China Bankruptcy Law aiming at transforming China from a pro-debtor to a pro-creditor regime.³

The 2007 bankruptcy law brought important changes in creditor rights' protection. First, it strengthens the role of creditor committees and secured creditors' ability to recover their claims by introducing a new reorganization procedure (Chapter 8 of the Chinese bankruptcy law). Chapter 8 of the 2007 bankruptcy law resembles Chapter 11 of the United States Bankruptcy Code, where creditors hold meetings with the debtor and have the right to review and approve the reorganization plan. Second, the 2007 bankruptcy law applies to a wider range of privately owned firms, foreign firms, and financial institutions, which contrasts to the limited scope of the 1986 bankruptcy law, which mainly focused on state-owned enterprises. In addition, the 2007 bankruptcy reform also laid out rules for mandatory liquidation to protect creditors if a firm is in severe distress and the bankruptcy proceedings are lengthy.⁴

Despite the substantial changes in legal rules, the evidence suggests that the 2007 bankruptcy law had a limited impact. According to bankruptcy practitioners consulted for the World Bank Doing Business Database, the recovery rate of secured creditors in Shanghai increased from 31.6 percent in the 2004-2007 period to 35.7 percent in the 2008-2011 period (no data is available for other regions). According to data from the Supreme Court of China, the total number of bankruptcy cases filed in China decreased by 18% in the three-year period after the passage of the law.⁵

Even after the introduction of the new law, the fundamental issue was that secured creditors had low power to claim assets whenever local governments had strong interests in keeping firms in financial distress alive. This was motivated by political concerns, as massive layoffs could have adverse effects on their political careers. Given that local governments still had considerable influence over insolvency proceedings, secured creditors and investors had, in practice, weaker protection than legal rules in the books would indicate. The lack of effectiveness of legal reforms in China reflects a common issue: when legal rules do not have proper enforcement, new rules can be ineffective (Djankov et al. (2008)). In practice, Chinese firms in financial distress need to obtain the "consent"

³The Chinese government initiated the drafting of the new law in August 2003 after entering the WTO. The law was then amended and revised by the National Congress until its final approval on June 1, 2007.

⁴When the likelihood of survival is low, judges can bypass the reorganization procedure completely and move to liquidation directly. This was supposed to shorten bankruptcy proceedings and guarantee higher recovery to creditors' claim on non-viable firms.

⁵The Supreme Court of China releases the aggregate number of cases filed in each year. In 2007, 3,817 bankruptcy cases were filed in total, 3,139 cases were filed in 2008, and 3,128 cases were filed in 2009.

of the local government to start an official bankruptcy procedure (Fan, Huang, and Zhu (2013)). Thus, Chinese local courts only accept a small fraction of bankruptcy cases. The lengthy procedures and the influence of local governments on civil courts reduced firms' incentive to file for bankruptcy at an early stage, with adverse effects on their survival probability and debt recovery rates. Consequently, even after the introduction of the new bankruptcy law, the judicial system remained ineffective in handling bankruptcy cases, with potentially negative economic consequences. As courts tend to be protective of state-owned enterprises and keep zombie firms as going concerns, resources tend to be misallocated towards low-productivity SOEs, which suppresses competition and deters the entry of healthy firms.

2.2 Post-Specialized Bankruptcy Reform

To improve the efficiency of debt enforcement in the legal process, the Chinese government promoted the introduction of courts specialized in bankruptcy proceedings. This reform aimed at promoting an efficient mechanism for liquidating and restructuring zombie firms in bankruptcy. As mentioned in Section 2.1, prior to the introduction of specialized courts, insolvency proceedings were subject to bureaucratic delays, given the potential involvement of local governments and the insufficient number of professional bankruptcy judges in civil courts. From the perspective of the central government, the reform was motivated by several factors. First, in the presence of large amounts of non-performing loans (NPLs) among regional banks, the government became willing to trade off the benefits of lower financial fragility in the banking sector against the reputation costs associated with potential massive layoffs. Second, the financial effort to maintain SOEs in operation can be extremely high, as it demands continuous evergreening of bank loans and further intensifies the local government deficits.⁶ Finally, the central government was concerned about the increasing number of zombie firms and the growing amounts of non-performing loans following the debt stimulus, which could trigger systemic risk and bankruptcies of financial institutions. One of the objectives of the reform was therefore to facilitate the liquidation and restructuring of inefficient firms – especially SOEs – through which indirectly restore the soundness of the banking sector.

Until the introduction of specialized courts, bankruptcy cases in China were filed in local civil courts. Chinese local civil courts tend to operate under the influence of local politicians, which have strong incentives to keep financially distressed state-owned companies in business to contain local unemployment and boost local GDP growth. Starting in 2007 and after the occurrence of major bankruptcy cases, several Chinese provinces

⁶The steel industry is the standard example of a sector populated by zombie firms – as intended in Caballero, Hoshi, and Kashyap (2008) – where banks continue to extend credit to otherwise insolvent borrowers. Within the eight large and mid-size steel companies, the average leverage ratio is 90%, and the total losses in 2007 accounted for 24.3 billion Yuan with interest expenses of 9.2 billion Yuan.

started the first phase of introducing courts specialized in bankruptcy. This first phase included provinces specialized in steel and coal production (e.g., Shanxi Province), where bankruptcies of large companies in this sector can trigger large unemployment to the local economy.⁷

In November 2014, the Supreme Court formulated recommendations to introduce courts specialized in bankruptcy and provided official guidelines for such introduction. In the two years after the Supreme Court guidelines – between December 2014 and May 2016 – a second phase of introduction of specialized courts took place across provinces in China. This second phase included the following jurisdictions: Beijing, Shanghai, Tianjin; Hebei, Jilin, Jiangsu, Zhejiang, Anhui, Hubei, Hunan, Guangdong.

Finally, in June 2016, a third phase was started when the Supreme Court formally required all provinces to have at least one court specialized in bankruptcy cases (in fact some provinces have more than one specialized court). As of December 2017, almost all of Chinese provinces had established specialized courts with a total number of 97 in various jurisdictions.⁸ The specialized courts brought fundamental changes to the judicial system in China, strengthening law enforcement and favoring the transition from a state-oriented to a market-based bankruptcy regime. The old regime was characterized by state involvement in shaping bankruptcy outcomes in civil courts. The introduction of specialized courts modified the old regime in several ways. First, under the specialized court regime, qualified bankruptcy administrators and professional trustees oversee the reorganization process, which are less likely to be influenced by local governments. In particular, the trustee appointed by the judge is selected with a random draw out of a rotating panel of qualified trustees with specific industry expertise and that are originally from other regions. This selection process alleviates the concern that the trustee may have political connections with local government and thus influenced in her actions. Second, specialized courts simplify the procedure for debtors to file for bankruptcy and facilitate creditor votes in remote area. This alleviated creditor coordination problems that existed under the civil courts. Better coordination among creditors and more independent trustees are important safeguards over government influence in bankruptcy resolution. Creditor committee and trustee may vote against any proposal by the government merely seeking to keep the firm alive for political reasons, which could have adverse effects on firm value. In the Appendix of the paper we provide a case study to illustrate the implication of switching from a state-oriented bankruptcy regime to a market-based bankruptcy regime.

⁷Our results are robust to excluding the early phase of introduction as the majority of provinces introduced specialized courts after 2013.

⁸This includes the twenty-two provinces, four municipalities, and three autonomous regions. The Guizhou province, Tibet autonomous region and Ningxia Hui autonomous region have not yet established courts specialized in bankruptcy.

3 Data and Stylized Facts

We use data from a number of sources. The main datasets employed in the empirical analysis include the following three sources covering the years from 2005 to 2017: the hand-collected dataset with location and introduction dates of courts specialized in bankruptcy across China, case-level data on bankruptcy outcomes, and firm-level data from the China Stock Market and Accounting Research Database (CSMAR). The first two proprietary datasets allow us to track the dynamics of bankruptcy proceedings from bankruptcy filing through insolvent resolution – or up to their status in December 2017 for cases that were recently filed and not yet closed – for non-publicly listed firms.⁹ The third data provides detailed information on debt structure of Chinese publicly listed firms.

First, the introduction dates of specialized courts across provinces in China is derived from the Ministry of Justice or the Supreme Court as the precise dates are not publicly disclosed. To validate the implementation dates, we also conducted several rounds of interviews with Supreme Court judges, local court judges, trustees (e.g., lawyers, lawyer associations, or accountants) that were involved in major bankruptcy cases. For each province, we use the earliest introduction date of a specialized courts as the official implementation date in our sample. Figure 1 shows the number of provinces introducing their first specialized court by quarter in China. As shown, some Chinese provinces started introducing their first specialized courts right after the bankruptcy reform of 2007. However, it was only at the end of 2014 that the majority of Chinese provinces introduced specialized courts, after the official guidance from the Supreme Court. We observe an average of two provinces introducing their first specialized court every quarter in the years 2015, 2016 and 2017. As of December 2017, almost all Chinese provinces had at least one specialized court.¹⁰ Based on our interviews and discussions with specialized court judges, the timing of introduction of specialized courts was largely unexpected and often occurred upon sudden bankruptcies of large firms. Importantly, the decision to introduce specialized courts reflected more a political will rather than an economic outcome.¹¹

⁹Given the fact that there is limited number of public firms that went bankrupt within the last decade, our sample consists of major corporate bankruptcies for firms that were not listed on Shanghai or Shenzhen stock exchange, as well as a wide coverage of small, medium, and large firms. These non-public firms are considered to represent the operation and financial structure of firms in the manufacturing sector in China.

¹⁰By the end of November 2017, a total number of 97 specialized courts were established across twenty-two provinces, four municipalities, and three autonomous regions. In fact, some of the provinces have multiple specialized courts to reduce the congestion of civil courts and improve the efficiency in court enforcement.

¹¹One unique feature of our setting is that the bankruptcy procedures are less subject to judicial discretion from judges as in the United States which sometimes favor debtors and other times favor creditors (e.g., Bris, Welch, and Zhu (2006)). Gennaioli and Rossi (2010) model the judicial decision-making given the demand and supply shape the way bankruptcy judges to resolve financial distress, which leads to “forum shopping” and pro-debtor courts over-reorganize bankrupt firms. In China, we observe less judicial discretion. In fact, the law prevents forum shopping and has binding legal restrictions on the jurisdiction where a firm can file. According to the 2007 Chinese bankruptcy law, firms can only file for

[Figure 1 here]

The case-level data on bankruptcy filings covers cases filed in local courts – filed under normal civil courts or specialized courts – between 2002 and 2017 across various jurisdictions. The bankruptcy filings provide the full-text source of bankruptcy documents from the initial filing to the case closing date. Our initial sample consists of 1,285 cases, including both reorganizations and liquidations. In aggregate, both civil and specialized courts accepted an increasing number of bankruptcy cases starting from 2012. We observe a substantial increase in bankruptcy filings from 2014 to 2017.¹² Given the fact that a large number of bankruptcy cases involves small firms with extremely low asset value, these cases automatically go through the bankruptcy procedures and declares the resolution outcomes shortly after filing. These relatively small cases with low asset value are not recorded in our data, which instead only focuses on relatively large corporate bankruptcies.

We manually coded case information from bankruptcy documents, which are usually compiled by the trustees. Most of these documents have incomplete information on asset value, liabilities, recovery rate, number of creditors (secured versus unsecured), secured and unsecured amount of claims. We fill some of the missing information by directly contacting the trustees that were in charge of each case. Information on firm characteristics is collected from the bankruptcy filings and – for pre-bankruptcy financial information – from the local business bureau. To the best of our knowledge, and despite its limitations, this is the first case-level database on corporate bankruptcy in China, and it allows us to track the evolution of bankruptcy cases from initiation to closing (the duration of proceedings), as well as to observe a rich set of creditor characteristics, debtor characteristics, judicial characteristics, and the case outcome.

We can use this case-level data to provide basic stylized facts on bankruptcy outcomes and shed some light on how firms go bankrupt in China. Figure 2 shows the geographical distribution of bankruptcy cases across Chinese provinces in our sample. As expected, Coastal provinces display higher number of cases with respect those located in the interior as they have higher population density and concentration of industrial activities. In section 4 we discuss in detail the correlation between introduction of specialized courts and province characteristics and economic trends (including number of bankruptcy cases).

[Figure 2 here]

Figure 3 shows the distribution of bankruptcy cases in our sample by sector of operation of the firm filing for bankruptcy. As shown, the majority of cases in our sample are concentrated in manufacturing, followed by services and construction.

bankruptcy in the jurisdiction where their main business is located.

¹²According to the statistics release by the Supreme court in March 2018, the number of cases accepted was 1,521 in 2012, 1,919 in 2013, 2,031 in 2014, 3,568 in 2015, 5,665 in 2016, 9,542 in 2017 with an average growth rate of 47%. The number of cases closed also experienced an increasing trend: 1,521 in 2012, 1,919 in 2013, 2,031 in 2014, 3,568 in 2015, 5,665 in 2016, and 6,257 in 2017 at an average growth rate of 28%.

[Figure 3 here]

Beside the impact of judicial reforms on bankruptcy outcomes, we further study the effect of specialized courts on credit markets. Ideally, we would like to use data on bank lending and interest rate paid by non-publicly listed firms operating under different jurisdictions and covering the years when most specialized courts were introduced (between 2014 and 2017). Unfortunately, we do not have access to such data.¹³ Thus, to study the ex-ante effects of specialized courts on the magnitude of bank loans and terms of debt contracts at origination, we use firm-level data from the China Stock Market and Accounting Research Database (CSMAR) dataset. This dataset is constructed from quarterly company reports and covers publicly listed firms. Data includes information on: loan amount, interest rate paid, maturity, as well as ownership structure and capital investment. We match firms to provinces (and, thus, jurisdictions) based on the headquarter location of public firms contained in the WIND China dataset. The CSMAR data is at quarterly frequency and runs from the first quarter of 2005 to the first quarter of 2018, thus spanning the period in which specialized courts were introduced across the vast majority of Chinese provinces. We further require that firms do not have missing information on financial statements and ownership structure.

Table 1 shows the summary statistics for all the dependent and independent variables used in the empirical analysis.

[Table 1 here]

4 Empirics

4.1 Testable Hypotheses

In this paper, we study how judicial outcomes and lending activity respond to the introduction of specialized courts. The introduction of specialized courts has two potential effects – an enhanced recovery rate effect and a liquidation effect. We describe them in what follows before presenting our identification strategy.

First, specialized courts employ judges and trustees that are bankruptcy professionals. Professionalization, by making insolvency resolution faster and better managed, increases recovered value of assets, and can thus generate higher lending ex-ante. To test this hypothesis we first focus on case-level data and study whether specialized courts have an effect on judicial efficiency as measured by time in court to resolve insolvency. We are currently extracting additional variables from case documents that can be used as proxies

¹³The Chinese manufacturing survey has no information on bank loans or interest rates, and ends in 2013. The Chinese Banking Regulatory Commission data on bank loans used, among others, in Cong et al. (2018), covers lending to non-publicly listed companies but only covers loans originated up to 2013.

of judicial professionalization, such as trustee choice and background, which we hope to use in the next iteration of the paper.

Second, specialized courts favor a more market-oriented bankruptcy regime which reduces the influence of local government. Lower political interventions in insolvency translates into higher probability of liquidating inefficient SOEs. To test this hypothesis we first focus on case-level data and study whether specialized courts have an effect on probability of liquidating financially distressed SOEs. In addition, if loans to these firms are not perceived as guaranteed by the government anymore, this might decrease banks' incentive to supply them capital ex-ante. Given that these two effects operate in opposite directions for SOEs, whether the enhanced recovery rate or the liquidation effect dominates when it comes to SOEs borrowing remains an empirical question.

4.2 Methodology

In this section we study the effect of the staggered introduction of specialized courts in China on judicial, financial and real outcomes. First, we study whether the introduction of specialized courts increased the share of SOE that were liquidated or reorganized in a given province. We also study whether specialized courts affected the length of bankruptcy cases. Next, we study the effect on bank credit – loan size, credit access and interest rates – and real outcomes at firm-level such as capital investment. Finally, we study the effect of new court on the share of zombie firms at province-level.

For identification purposes, we exploit the staggered introduction of courts specialized in bankruptcy cases across Chinese provinces. The baseline equation to be estimated is as follows:

$$y_{isjt} = \alpha_s + \alpha_j + \alpha_t + \beta(\textit{AfterSpecialCourt})_{st} + \varepsilon_{isjt} \quad (1)$$

Where i indexes bankruptcy cases or firms depending on the specification, s indexes provinces, j indexes sectors and t indexes quarters. The variable $(\textit{AfterSpecialCourt})_{st}$ is a dummy equal to one in the period the first specialized court was introduced in a given province and for all the periods thereafter, and zero otherwise. Firms located in provinces where the variable $(\textit{AfterSpecialCourt})_{st}$ is equal to 1 operate in an environment where specialized bankruptcy courts handle the distress resolution process. Meanwhile, firms located in provinces where $(\textit{AfterSpecialCourt})_{st}$ is equal to 0 operate in an environment where bankruptcy cases are still settled by local civil courts. Thus, in each quarter t , the treatment group is composed by provinces that have at least one court specialized in bankruptcy in operating as of time t , while the control group is composed by provinces where the introduction of specialized courts happened after t .

In the baseline specification we control for province, industry and time fixed effects, and standard errors are clustered at the province-industry level. We estimate additional

specifications that control for firm-level characteristics such as: age, size, leverage ratio, profitability (operating income divided by assets) and asset tangibility (defined as property, plant, and equipment divided by assets). All firm controls are defined at $t - 1$.

The main concern with this identification strategy is that the timing and location of the introduction of specialized courts are correlated with local economic conditions. For example, specialized courts might be introduced in provinces that are experiencing negative economic shocks in order to deal with increasing number of insolvencies of local firms. This type of correlation would generate a negative relationship between introduction of specialized courts and bank lending. Alternatively, specialized courts might be introduced first in provinces where politicians can “afford” to be stricter with inefficient SOEs or zombie firms because the local economy is growing fast and can absorb eventual layoffs. This type of correlation would instead generate a positive relationship between introduction of specialized courts and bank lending. To explore the extent of these concerns, in Table 2 we study the relationship between measures of province economic performance and probability of introduction of specialized courts. As shown, economic performance as measured by growth in Gross Regional Product (GRP) in the previous year does not predict court introduction. Similarly, we find that court introduction is not predicted by agricultural sector growth in the previous year at province level. Instead, past negative performance in the construction sector does predict court introduction.¹⁴ Table 2 also tests for a set of additional characteristics at province level, such as total number of firms, total number of SOEs and average firm size as measured by assets. In the empirical analysis we show that our results are robust to adding these controls at province level.

Next, we study the heterogeneous effects of the introduction of specialized courts between SOEs and private firms. State-owned firms received local government protection when cases were dealt with by civil courts. Thus, we want to test whether new specialized courts changed how bankruptcy rules are enforced for state-owned enterprises relative to private firms. This analysis can help to shed light on the effect of political influence in the judiciary on economic outcomes.

To examine the heterogeneous impact of judicial reform on firms with different state ownership, we add an interaction term to equation (1) and estimate the following equation:

$$\begin{aligned}
 y_{isjt} &= \alpha_s + \alpha_j + \alpha_t + \beta_1(\textit{AfterSpecialCourt})_{st} \times I(\textit{SOE})_{isjt} \\
 &+ \beta_2(\textit{AfterSpecialCourt})_{st} + \beta_3 I(\textit{SOE})_{isjt} + \varepsilon_{isjt}
 \end{aligned} \tag{2}$$

The variable $I(\textit{SOE})_{isjt}$ in equation (2) is a dummy equal to 1 if the firm is state-owned. The coefficient of interest in this specification is β_1 , which captures the differential effect

¹⁴Performance of the construction sector is measured as the increase of the gross output value of construction from $t-4$ to t . Data is sourced from the National Bureau of Statistics.

of specialized courts on SOEs relative to private firms.

4.3 Judicial Outcomes

We start by focusing on judicial outcomes using case-level data. We start by studying whether specialized courts introduced by the central government affected the liquidation of SOEs in a given province. To this end, we construct a variable capturing the share of bankruptcy cases regarding state-owned firms over total bankruptcy cases filed in a given province and quarter. We then estimate an equation similar to equation (1) at province-quarter level.

The results are reported in Table 3. In column 1 we focus on total number of bankruptcy cases as an outcome. The coefficient on specialized court introduction is positive but not statistically significant, which indicates that provinces that introduced these courts did not experience a faster increase in the number of bankruptcy cases relative to those that did not in a given quarter. This is consistent with our hypothesis that specialized court introduction is orthogonal to differences in local business cycle. Next, in column 2 of Table 3, we focus on the share of bankruptcy cases of SOEs. The results show that provinces that introduced specialized courts experienced an increase in the share of SOE bankruptcy filings relative to provinces that did not introduce. Also, the estimated coefficients in columns 3 and 4 show that the increase in the share of SOE bankruptcy is driven by liquidation rather than reorganization cases.

Next, we focus on how the introduction of specialized courts affected time in court to resolve insolvency. Time in court is measured in days from the date in which the case is accepted by the court to the date in which insolvency is resolved, either by confirmation of the reorganization plan or by liquidation of the company. Table 4 compares the average time in court for cases in our sample that started before vs after the introduction of specialized courts in each province. Additionally, the table splits cases into those regarding SOEs and those regarding privately owned firms. As shown, the average length of bankruptcy cases was lower for cases started after the introduction of specialized courts. The difference is largest for cases regarding SOEs, which took on average almost three years in court before introduction of specialized courts, while less than one year in the period after.

[Table 4 here]

Table 5 more formally test the effect of specialized courts on case length by estimating equation (1) when the outcome variable is time in court. When controlling for province and time fixed effects, we find that the introduction of specialized courts had no significant impact on average time in court. However, we do find that cases of liquidation of SOEs experience a significant decrease in their length when dealt with by specialized courts. The

magnitude of our estimates suggest that in provinces that introduced specialized courts, SOEs' bankruptcies take as long as privately owned firms' bankruptcies to be resolved.

[Table 5 here]

4.4 Financial Outcomes: Loan Size and Access to New Loans

In sections 4.3 and 4.6 we showed that the introduction of specialized courts in China induced faster liquidation of SOEs and lower survival probability of low-productivity zombie firms. In this section we study whether the introduction of new courts had an impact on credit markets. On one hand, specialized courts increase the professionalization and efficiency of local court enforcement for all firms, potentially increasing creditors' recovery rate. On the other, by decreasing political pressure from local governments to keep SOEs in business, the introduction of such courts could have lowered the incentive to extend credit to state-owned companies. Consequently, we expect the effect of specialized courts to be heterogeneous for state-owned versus private firms.

Column (1) to (4) of Table 6 show the impact of specialized court on bank loan amount. We estimate equation (1) where the outcome variable *TotalBankCredit* equals the logarithm of one plus the total amount of new bank loans issued in quarter t to firm i . Note that the dependent variable is extracted from the balance sheet by aggregating all bank loan facilities within a given quarter. Column (1) reports the average effect across *all* firms. The coefficient estimate indicates that, in response to the introduction of specialized courts in a given province, banks did not increase the amount of lending to firms headquartered under their jurisdiction. In column (2) we estimate heterogeneous effects between SOEs and privately owned firms using equation (2). We find that, following the introduction of specialized courts, SOEs experienced a significant decrease in amount of new bank loans. Privately-owned firms, instead, experienced an increase in new bank loans, which explains the lack of an average effect shown in column (1). The magnitude of the estimate coefficients indicates that, after the introduction of specialized courts, SOEs received, on average, 6.4 percent smaller loans relative to their sample average pre-specialized courts. On the other hand, privately-owned firms received, on average, 2.9 percent larger loans relative to their sample average pre-specialized courts. As shown, the negative effect of specialized courts on average loan amount for SOEs is robust to controlling for industry specific trends as well as firm fixed effects (columns (3) and (4)), while the positive effect for private firms becomes smaller and not statistically significant with more saturated models. The lack of a strong positive effect for private firms might be explained, at least in part, by the fact that time in court for bankruptcy cases of private firms did not significantly decrease with the introduction of new courts. As we showed in section 4.3, most of the effect on judicial outcomes was limited to cases regarding SOEs.

[Table 6 here]

We also study the effect of specialized courts on two additional financial outcomes: access to new loans and bank credit spread. The results on access to new loans are reported in columns (5) to (8) of Table 6. The outcome variable in this three columns is a dummy equal to one if firm i gets a new bank loan in quarter t . The results shown follow a pattern consistent with the loan amount outcome. We find no average effects when focusing on all firms. Instead we find heterogeneous effects between SOEs and private firms. In particular, the estimated coefficients indicate that SOEs are around 6.6 percent less likely to receive a new bank loan relative to their sample average pre-specialized courts (private firms are 3 percent more likely, but this result is not robust to controlling for industry specific trends or firm fixed effects).

Finally, in Table 8 we study the effect of new courts on bank spread paid by firms on new bank loans. The data is sourced from loan announcements of publicly traded firms and collected by CSMAR. As shown, our estimate for this outcome rely on only 1,462 loan announcements over the period 2005 to 2017 and is therefore only suggestive evidence of the mechanism. Still, the results show that firms operating in provinces that introduced specialized courts experienced lower cost – 0.6 percentage points – of new bank loans relative to those in provinces where specialized courts were still to be introduced. The magnitude of the decrease corresponds to 35 percent of the average spread in the pre-specialized court period in our sample. Notice also, that, despite the coefficient is not statistically significant, the heterogeneous effects shown in column (2) suggest that the decrease in cost of capital is entirely driven by private firms.

[Table 8 here]

4.5 Real Outcomes: Investment and Cash Holdings

In section 4.4 we showed that the introduction of specialized courts in China had heterogeneous effects on the intensive and extensive margin of bank lending. In this section we study whether higher bank credit also translated into larger investment. To this end, we estimate a version of equations (1) and (2) where the outcome variables is capital investments. The results are reported in columns (5) to (8) of Table 7.

Column (5) shows that the introduction of specialized courts fostered an increase in average firm investment. Columns (6) to (8) show that this effect is driven by privately-owned firms, while SOEs actually experienced a decrease in investment following the introduction of new courts. The latter finding is consistent with the results presented in section 4.4: SOEs received smaller loans in the post-specialized court period, and invested less as a consequences. The former finding needs more discussion, as private firms experienced only small and non significant effects in terms of bank loan size and new loans issuance. Still, they experience a large increase in investment. To investigate this further, in columns (1) to (4) of Table 7 we study the effect of specialized courts on

cash ratio – defined as the ratio of cash and cash equivalents over assets. The results are consistent with the average and heterogeneous effects documents in columns (5) to (8) for investment. In particular: the estimated coefficient in column (1) indicates that, in response to the introduction of specialized courts in a given province, firms decreased their cash holdings. As shown in columns (2) to (4), this effect is entirely driven by private firms, while SOEs actually increased their cash ratio, consistently with their decrease in investment. Overall, our results on real outcomes suggest that private firms increased capital investment in response to the introduction of specialized courts, and that this investments were mostly self-financed. On the other hand, SOEs decreased their capital investment and held on to more cash, potentially as a safety net against default.

[Table 7 here]

4.6 Share of local zombie firms

In section 4.3 we showed that the introduction of new specialized courts increased the share of liquidations regarding SOEs and reduced the time in court for such cases. In this section we study whether specialized courts had an impact on the probability that local “zombie” firms remain in operation.

To this end, we define “zombie” firms following Caballero et al. (2008). More specifically, we define as zombie if two conditions are met. First, the firm is charged an actual interest rate that is 0.25 percentage points lower than the hypothetical minimum interest rate it should pay given its debt structure. To construct the hypothetical minimum we use the minimum benchmark rate for each maturity class set by the Central Bank of China (PBC) along with the amount of debt in each maturity class in the firm balance sheet. Second, the firm has productivity – as captured by Total Factor Productivity (TFP) – below the median in its sector. Notice that both conditions need to be met for a firm to be defined as zombie. We do not impose that all SOEs are zombie firms, although the correlation between the share of SOEs and the share of zombie firms at province level is quite high (0.72).

Using this definition, we test whether specialized courts had an impact on the share of zombie firms operating within their jurisdiction. Table 9 reports the results of estimating equation (1) when the outcome variable is the share of zombie firms in operation in a given province in a given quarter. As shown, the estimated coefficients capturing the effect of the introduction of specialized courts on share of zombie firms in a given province is negative and significant. This indicates that zombie firms operating under a specialized bankruptcy court are less likely to be in operation relative to those operating in provinces that still do not have a specialized court. The magnitude of the coefficient indicates that, after the introduction of specialized courts, provinces experience 1.4 percentage points reduction

in the share of zombie firms. The average share of zombie firms across provinces in the sample is 15.8 percent.

Overall, the result presented in Table 9 is consistent with the idea that, under local civil courts, zombie firms were protected from bankruptcy by local government. In the new regime, instead, local governments have less discretion on bankruptcy cases and zombie firms are more likely to be liquidated once in financial distress. In addition, this result is consistent with the real effects shown in Table 7: reduction in zombie firms in provinces that introduced new specialized courts created investment opportunities that were then captured by privately-owned firms.

[Table 9 here]

5 Concluding Remarks

In the last decade, China has introduced two important reforms to its bankruptcy system. First, in 2007, the Chinese government introduced a new bankruptcy law, which increased secured creditors' protection. Second, starting from the same year, some Chinese provinces introduced courts specialized in bankruptcy cases. From 2014 the Supreme Court actively promoted the introduction of such courts all across China in an effort to make the resolution of insolvency more efficient and professionally managed. This has recently become a priority for the Chinese government, that is facing the issue of liquidating low-productivity and mostly state-owned companies kept in business by preferential credit lines.

In this paper we exploit the staggered introduction of specialized bankruptcy courts to study their effect on judicial and credit market outcomes. We find that provinces that introduced specialized courts experience higher liquidation of state-owned firms, faster resolution of insolvency, and a decrease in the share of zombie firms relative to provinces where bankruptcy is still resolved by civil courts. This is consistent with the idea that specialized courts decrease the influence of local governments on insolvency procedures. Such influence can artificially keep in business financially distressed state owned companies and prevent the use of their resources. We also find that state owned firms operating under specialized courts experienced a decrease in bank loan amounts, lower loan issuance and investment.

These results have important policy implications. China experienced a large credit boom in the last decade and, more recently, an increase in insolvency of corporate debt. Our results indicate that specialized courts can play an important role in liquidating zombie firms and favor the reallocation of resources to more productive firms.

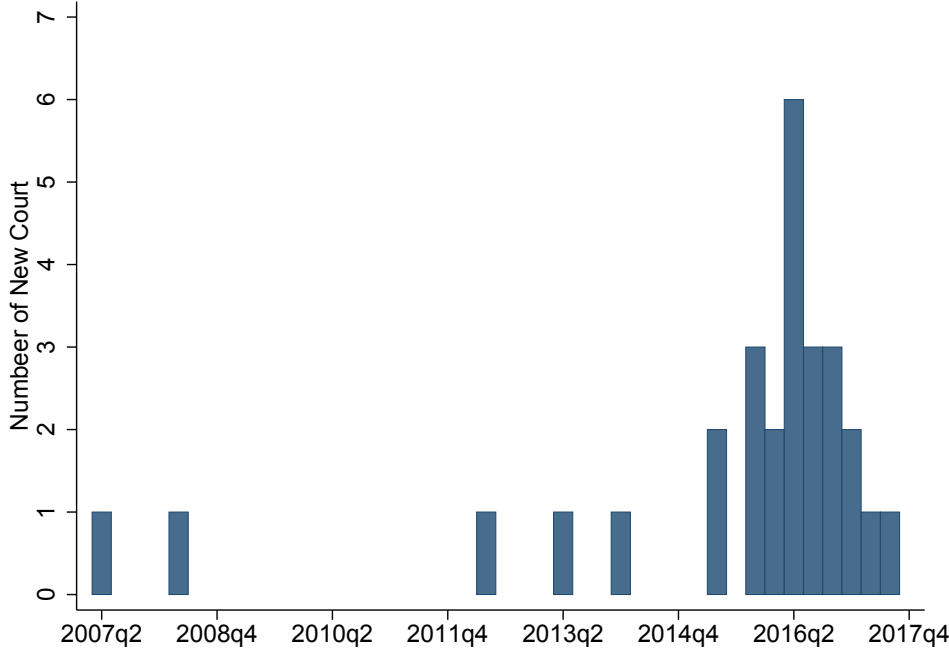
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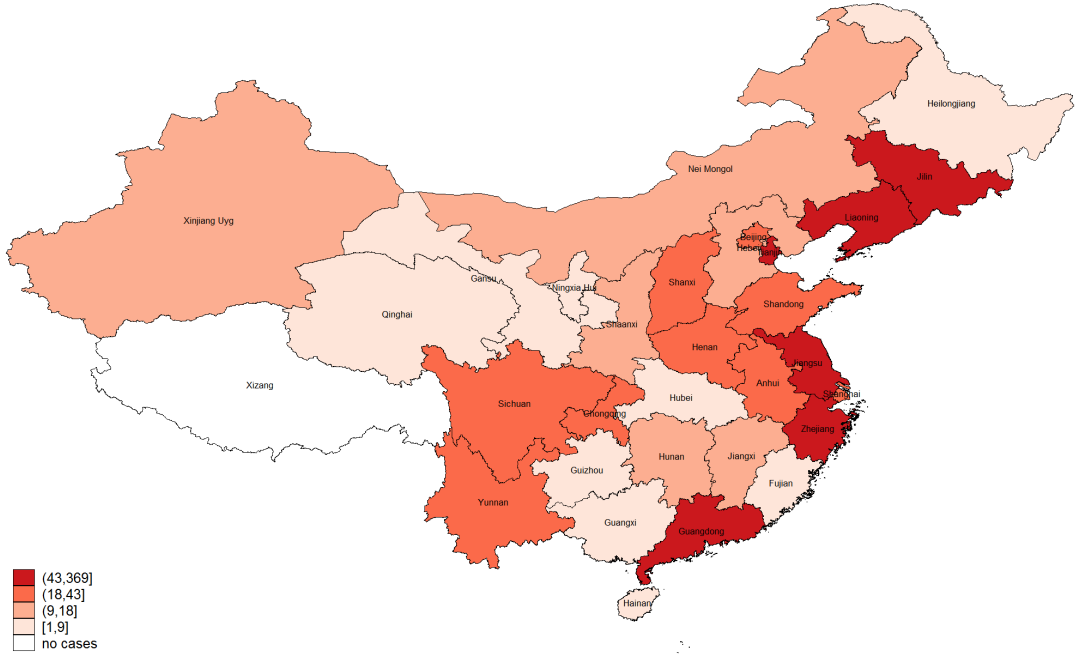
Figures and Tables

Figure 1: Number of first specialized court introduced by quarter



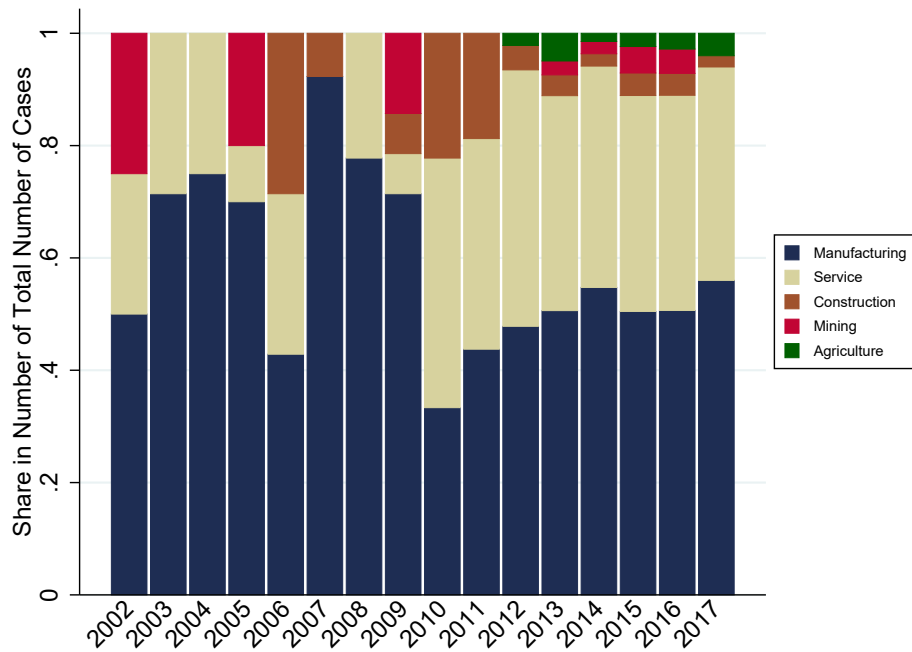
Notes: The Figure shows the number of courts specialized in bankruptcy introduced in each quarter between 2007Q1 and 2017Q4. We focus on the first court introduced in each province.

Figure 2: Distribution of bankruptcy cases by province



Notes: The Figure shows the geographical distribution of bankruptcy cases across Chinese provinces.

Figure 3: Share of bankruptcy cases by sector



Notes: The Figure shows distribution of bankruptcy cases across sectors.

Table 1: Summary statistics

Variable	Mean	Median	S.D.	Count
Firm Level				
Loan Issuance	13.954	18.258	8.514	88,773
Loan Access	0.735	1.000	0.441	88,773
Investment	7.568	0.000	8.810	88,773
I(SOE)	0.513	1.000	0.500	88,773
Age	10.037	9.000	6.532	88,773
Size	21.824	21.680	1.319	88,773
Leverage	0.451	0.447	0.234	88,773
Profitability	0.009	0.008	0.022	88,773
Tangibility	0.238	0.202	0.175	88,773
MB	3.913	2.859	3.986	88,773
Case Level				
Time in Bankruptcy	348.991	197.000	486.983	469
I(Liquidation)	0.843	1.000	0.364	1,278
I(Reorganization)	0.162	0.000	0.369	1,278
I(case=SOE)	0.097	0.000	0.296	1,278
Province Level				
Total Bankruptcy Cases	3.737	2.000	6.381	342
% SOE Cases	0.166	0.000	0.332	342
% SOE Liquidation Cases	0.169	0.000	0.337	311
% SOE Reorganization Cases	0.075	0.000	0.243	93
$\Delta \log GRP_{t-(t-4)}$	0.078	0.076	0.104	338
$\Delta \log Agriculture_{t-(t-4)}$	0.053	0.048	0.091	338
$\Delta \log Construction_{t-(t-4)}$	0.089	0.093	0.125	338

Table 2: Introduction of Specialized Courts and Province Characteristics

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
$\Delta \log GRP_{t-(t-4)}$	-4.473 (4.227)					
$\Delta \log Agriculture_{t-(t-4)}$		-3.502 (2.525)				
$\Delta \log Construction_{t-(t-4)}$			-2.491* (1.296)			
log number of firms				0.148 (0.156)		
log number of SOEs					0.289 (0.288)	
log average firm size						0.153 (0.331)
Observations	1,021	1,016	1,021	1,019	1,019	1,019
Quarter FE	YES	YES	YES	YES	YES	YES

Notes: The unit of observation is a province quarter. The time period is 2007Q2 to 2017Q4. Cox model with time-varying variables is used for survival analysis, and the introduction of specialized court is defined as the event happening. Significance level: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 3: Proportion of SOE cases per Province per Quarter

VARIABLES	(1) Total bankruptcy cases	(2) Total bankruptcy cases	(3) Proportion of SOE all cases	(4) Proportion of SOE all cases	(5) Proportion of SOE liquidation cases	(6) Proportion of SOE liquidation cases	(7) Proportion of SOE reorganization cases	(8) Proportion of SOE reorganization cases
AfterSpecialCourt	1.623 (3.260)	1.711 (3.041)	0.133** (0.0583)	0.140** (0.0595)	0.117** (0.0533)	0.130** (0.0609)	0.0312 (0.0338)	0.0275 (0.0303)
$\Delta \log GRP_{t-(t-4)}$		-0.859 (4.485)		-0.0577 (0.0946)		0.265*** (0.0693)		-0.444*** (0.0531)
$\Delta \log Agriculture_{t-(t-4)}$		9.752 (7.363)		0.338* (0.192)		0.298 (0.192)		-0.156 (0.261)
$\Delta \log Construction_{t-(t-4)}$		7.676 (17.28)		0.125 (0.155)		0.118 (0.160)		0.107 (0.215)
Observations	335	333	335	333	303	301	82	82
R-squared	0.651	0.655	0.485	0.486	0.486	0.498	0.623	0.729
Quarter FE	YES	YES	YES	YES	YES	YES	YES	YES
Province FE	YES	YES	YES	YES	YES	YES	YES	YES
Weight	Total cases	Total cases	Total cases	Total cases	Liquidation cases	Liquidation cases	Reorganization cases	Reorganization cases
N clusters	29	29	29	29	28	28	17	17

Notes: The unit of observation is a province quarter. The time period is 2006Q1 to 2017Q4. Provinces are weighted by number of cases in the entire period. Standard errors in parentheses are clustered at province level. POE: bankruptcy cases where firm is privately-owned. SOE: bankruptcy cases where firm is state-owned. Standard errors in parentheses are clustered at province level. Significance level: *** p<0.01, ** p<0.05, * p<0.1

Table 4: Judicial Outcomes: Before vs. After Introduction of First Specialized Court

	Time in Bankruptcy		
	POE	SOE	Total
Before First Specialized Court	362.7 (364.6)	908.6 (1419.0)	446.7 (675.3)
After First Specialized Court	182.2 (186.2)	291.4 (557.2)	194.6 (255.3)
Change (in days)	-180.5	-617.2	-252.1
Pct Change	-50%	-68%	-56%

Notes: Each cell reports the average time in court to resolve a bankruptcy case (in days). Standard deviation reported in parenthesis. POE: bankruptcy cases where firm is privately-owned. SOE: bankruptcy cases where firm is state-owned.

Table 5: Judicial Outcomes

VARIABLES	(1)	(2)
AfterSpecialCourt	43.75 (28.75)	59.53 (35.15)
After SpecialCourt \times I(SOE)		-366.8* (184.7)
I(SOE)		256.9 (167.5)
$\Delta \log GRP_{t-(t-4)}$	12.37 (86.46)	-138.3 (99.20)
$\Delta \log Agriculture_{t-(t-4)}$	-291.3* (158.4)	-268.3* (135.5)
$\Delta \log Construction_{t-(t-4)}$	-374.8* (212.4)	-390.0 (229.8)
Observations	451	451
R-squared	0.542	0.555
Quarter FE	YES	YES
Province FE	YES	YES
N clusters	22	22

Notes: The unit of observation is a case. We have precise information on days in court for 451 out of 1285 cases in our sample during the time period 2002Q1 to 2017Q4. Standard errors in parentheses are clustered at province level. Significance level: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 6: Financial Outcomes: Loan Amount and Access to New Loans

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Loan Amount	Loan Amount	Loan Amount	Loan Amount	Access to New Loans	Access to New Loans	Access to New Loans	Access to New Loans
After SpecialCourt	-0.077 (0.148)	0.325* (0.185)	0.282 (0.190)	0.124 (0.167)	-0.004 (0.008)	0.018* (0.010)	0.015 (0.011)	0.007 (0.009)
After SpecialCourt × I(SOE)		-0.960*** (0.248)	-0.924*** (0.262)	-0.533*** (0.205)		-0.052*** (0.014)	-0.049*** (0.015)	-0.030*** (0.011)
I(SOE)		-0.239 (0.228)	-0.231 (0.230)	-0.518* (0.305)		-0.006 (0.012)	-0.006 (0.012)	-0.028* (0.017)
$\Delta \log GRP_{t-(t-4)}$	-0.652** (0.331)	-0.718** (0.330)	-0.762** (0.334)	-0.413 (0.307)	-0.031* (0.018)	-0.035* (0.018)	-0.038** (0.019)	-0.018 (0.017)
$\Delta \log Agriculture_{t-(t-4)}$	-0.118 (0.261)	-0.098 (0.261)	0.012 (0.264)	-0.011 (0.238)	-0.004 (0.014)	-0.003 (0.014)	0.004 (0.015)	0.000 (0.013)
$\Delta \log Construction_{t-(t-4)}$	0.269 (0.364)	0.292 (0.364)	0.314 (0.367)	0.123 (0.315)	0.019 (0.020)	0.020 (0.020)	0.021 (0.020)	0.011 (0.018)
log number of firms	0.763 (0.601)	0.848 (0.600)	0.705 (0.586)	0.134 (0.559)	0.033 (0.032)	0.038 (0.032)	0.031 (0.032)	-0.003 (0.030)
log average firm size	0.671 (0.836)	0.758 (0.832)	0.543 (0.820)	0.012 (0.756)	0.037 (0.045)	0.043 (0.045)	0.034 (0.045)	-0.001 (0.041)
log number of SOEs	-0.867 (0.563)	-0.965* (0.566)	-0.919 (0.559)	-0.930* (0.525)	-0.037 (0.030)	-0.043 (0.030)	-0.039 (0.030)	-0.043 (0.028)
Age	-0.040** (0.016)	-0.029* (0.017)	-0.029* (0.017)	0.296 (0.245)	-0.002** (0.001)	-0.001 (0.001)	-0.001 (0.001)	0.015 (0.013)
Size	2.590*** (0.109)	2.626*** (0.108)	2.603*** (0.109)	3.406*** (0.116)	0.101*** (0.006)	0.103*** (0.006)	0.101*** (0.006)	0.152*** (0.007)
Leverage	10.172*** (0.655)	10.161*** (0.653)	10.197*** (0.660)	5.713*** (0.490)	0.486*** (0.036)	0.486*** (0.035)	0.487*** (0.036)	0.262*** (0.027)
Profitability	-7.920** (3.087)	-8.124*** (3.095)	-7.369** (3.209)	-6.298*** (1.879)	-0.319* (0.164)	-0.326** (0.164)	-0.290* (0.170)	-0.297*** (0.101)
Tangibility	2.141*** (0.664)	2.302*** (0.670)	2.359*** (0.683)	1.620*** (0.582)	0.106*** (0.036)	0.112*** (0.036)	0.117*** (0.037)	0.089*** (0.032)
MB	-0.044* (0.022)	-0.045** (0.023)	-0.050** (0.023)	0.095*** (0.013)	-0.003*** (0.001)	-0.003*** (0.001)	-0.004*** (0.001)	0.005*** (0.001)
Observations	88,773	88,773	88,773	88,773	88,773	88,773	88,773	88,773
R-squared	0.313	0.314	0.332	0.570	0.224	0.225	0.246	0.503
Quarter FE	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Province FE	YES	YES	YES	YES	YES	YES	YES	YES
Industry × Quarter FE	NO	NO	YES	NO	NO	NO	YES	NO
Firm FE	NO	NO	NO	YES	NO	NO	NO	YES
N clusters	784	784	784	784	784	784	784	784

Notes: The unit of observation is a firm quarter. The time period is 2006Q1 to 2017Q4. The loan amount variable is defined as the cash received from new loan in the quarter. Loan access is defined as $Loan\ Amount > 0$. Investment is defined as the cash payed for investment in the quarter. Loan amount is transformed by $\log(1+x)$ and winsorized at 0.01. Firm controls are defined at time $t - 1$. Standard errors in parentheses are clustered at province-industry level. Significance level: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 7: Real Outcomes: Cash Ratio and Investment

VARIABLES	(1) Cash Ratio	(2) Cash Ratio	(3) Cash Ratio	(4) Cash Ratio	(5) Investment	(6) Investment	(7) Investment	(8) Investment
After SpecialCourt	-0.005* (0.003)	-0.019*** (0.004)	-0.017*** (0.004)	-0.022*** (0.004)	0.662*** (0.181)	1.331*** (0.206)	1.203*** (0.203)	1.640*** (0.203)
After SpecialCourt × I(SOE)		0.033*** (0.005)	0.026*** (0.005)	0.037*** (0.004)		-1.603*** (0.281)	-1.294*** (0.295)	-2.085*** (0.235)
I(SOE)		-0.003 (0.004)	-0.002 (0.004)	-0.002 (0.006)		-0.986*** (0.196)	-1.044*** (0.199)	-0.296 (0.262)
$\Delta \log GRP_{t-(t-4)}$	-0.025*** (0.007)	-0.022*** (0.007)	-0.016** (0.006)	-0.023*** (0.006)	0.404 (0.407)	0.305 (0.402)	0.034 (0.381)	0.310 (0.377)
$\Delta \log Agriculture_{t-(t-4)}$	-0.001 (0.005)	-0.001 (0.005)	-0.003 (0.004)	-0.002 (0.005)	0.030 (0.337)	0.068 (0.337)	0.083 (0.340)	0.040 (0.325)
$\Delta \log Construction_{t-(t-4)}$	-0.019*** (0.007)	-0.020*** (0.007)	-0.014** (0.006)	-0.023*** (0.007)	-0.062 (0.397)	-0.010 (0.395)	-0.214 (0.365)	0.141 (0.396)
log number of firms	0.027** (0.012)	0.023* (0.012)	0.021* (0.011)	0.037*** (0.012)	0.322 (0.642)	0.403 (0.635)	0.404 (0.602)	0.164 (0.636)
log average firm size	0.004 (0.016)	-0.000 (0.016)	0.005 (0.014)	0.018 (0.016)	0.508 (0.785)	0.567 (0.772)	0.503 (0.743)	0.275 (0.771)
log number of SOEs	-0.032*** (0.011)	-0.029*** (0.011)	-0.028*** (0.010)	-0.030*** (0.011)	-0.326 (0.653)	-0.508 (0.640)	-0.571 (0.588)	-0.793 (0.603)
Age	-0.002*** (0.000)	-0.002*** (0.000)	-0.003*** (0.000)	-0.009** (0.004)	0.002 (0.015)	0.034** (0.015)	0.042*** (0.015)	0.351 (0.216)
Size	-0.002 (0.002)	-0.002 (0.002)	-0.001 (0.002)	-0.014*** (0.003)	2.289*** (0.078)	2.404*** (0.078)	2.402*** (0.079)	2.085*** (0.099)
Leverage	-0.157*** (0.010)	-0.157*** (0.010)	-0.152*** (0.010)	-0.148*** (0.010)	-4.114*** (0.359)	-4.161*** (0.350)	-4.187*** (0.355)	-3.144*** (0.406)
Profitability	0.379*** (0.053)	0.379*** (0.053)	0.393*** (0.056)	0.243*** (0.036)	6.687*** (2.212)	5.954*** (2.225)	6.428*** (2.336)	2.855* (1.669)
Tangibility	-0.228*** (0.011)	-0.230*** (0.011)	-0.231*** (0.012)	-0.252*** (0.013)	-7.004*** (0.515)	-6.539*** (0.516)	-6.564*** (0.531)	-4.069*** (0.500)
MB	0.001 (0.000)	0.001* (0.000)	0.001** (0.000)	-0.000 (0.000)	0.009 (0.014)	0.007 (0.014)	-0.001 (0.014)	0.001 (0.013)
Observations	88,770	88,770	88,770	88,770	88,773	88,773	88,773	88,773
R-squared	0.325	0.327	0.357	0.611	0.200	0.205	0.227	0.396
Quarter FE	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Province FE	YES	YES	YES	YES	YES	YES	YES	YES
Industry × Quarter FE	NO	NO	YES	NO	NO	NO	YES	NO
Firm FE	NO	NO	NO	YES	NO	NO	NO	YES
N clusters	784	784	784	784	784	784	784	784

Notes: The unit of observation is a firm year. The time period is 2006Q1 to 2017Q4. Cash ratio is defined as cash and cash equivalents to total asset, winsorized at 0.01. Investment is defined as the cash paid for investment in the quarter, transformed by $\log(1+x)$ and winsorized at 0.01. Firm controls are defined at time $t - 1$. Standard errors in parentheses are clustered at province-industry level. Significance level: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 8: Interest Rate Spread

VARIABLES	(1)	(2)
After SpecialCourt	-0.617** (0.259)	-0.593 (0.373)
After SpecialCourt \times I(SOE)		-0.060 (0.486)
I(SOE)		-0.529 (0.388)
$\Delta \log GRP_{t-(t-4)}$	-0.717 (0.676)	-0.811 (0.664)
$\Delta \log Agriculture_{t-(t-4)}$	-0.458 (0.714)	-0.465 (0.727)
$\Delta \log Construction_{t-(t-4)}$	1.382 (1.066)	1.475 (1.068)
log number of firms	3.181* (1.672)	2.770 (1.759)
log average firm size	2.966 (2.005)	2.498 (2.063)
log number of SOEs	-0.712 (1.360)	-0.450 (1.402)
Age	-0.011 (0.025)	-0.006 (0.027)
Size	-0.336*** (0.105)	-0.309*** (0.110)
Leverage	1.987** (0.805)	2.123** (0.820)
Profitability	-1.665 (4.831)	-2.596 (5.031)
Tangibility	-3.659*** (0.796)	-3.359*** (0.857)
MB	0.049 (0.035)	0.043 (0.035)
Observations	1,462	1,462
R-squared	0.510	0.515
Quarter FE	YES	YES
Industry FE	YES	YES
Province FE	YES	YES
Industry \times Quarter FE	NO	NO
Firm FE	NO	NO
N clusters	238	238

Notes: The unit of observation is a loan. The time period is 2006Q1 to 2017Q4. Firm controls are defined at time $t-1$. Standard errors in parentheses are clustered at province-industry level. Significance level: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 9: "Zombie" Firms and Specialized Courts

VARIABLES	(1) Zombie firms share	(2) Zombie firms share
After SpecialCourt	-0.0139* (0.00727)	-0.0140* (0.00727)
$\Delta \log GRP_{t-(t-4)}$		-0.00681 (0.0155)
$\Delta \log Agriculture_{t-(t-4)}$		-0.00499 (0.0176)
$\Delta \log Construction_{t-(t-4)}$		-0.0150 (0.0152)
Observations	1,483	1,483
R-squared	0.604	0.604
Time FE	YES	YES
Province FE	YES	YES
Weight	Firm Number	Firm Number
N clusters	31	31

Notes: The unit of observation is a province quarter. The time period is 2006Q1 to 2017Q4. The outcome variable is the share of zombie firms in the province that year. A firm is defined as "zombie" when the actual interest rate it paid is 0.25% lower than the minimum interest rate calculated by its debt and bond in balance sheet, given the current interest rate, following Caballero et al. (2008), and its productivity is lower than median. Standard errors in parentheses are clustered at province level. Significance level: *** p<0.01, ** p<0.05, * p<0.1

Appendix A: Deciphering Bankruptcy in China, A Case Study of Dongbei Special Steel Group

In this section we present a case study to illustrate the impact of legal changes on bankruptcy resolution in China. The case describes the bankruptcy resolution process for Dongbei Special Steel Group Co., Ltd, a state-owned enterprise.

Financial Pressure Mount with Bond Defaults

Since March 2016, the steel maker, Dongbei Special Steel has defaulted on 10 bonds within four months, which accounts for a total of 7 billion Yuan held by more than 100 creditors. The bond defaults triggered a sharp sell-off in the corporate debt markets as investors reassessed the likelihood of bailouts for provincially-owned state enterprises, as the central government aims to reduce the overcapacity in coal and steel sectors. Given the lack of resolution plan from the Liaoning government officials in a timely manner, bond defaults triggered unprecedented liquidity crisis. As a result, the default events adversely affected the reputation of Liaoning government and the credit quality of local firms. Furthermore, the tension between the local government and creditors over how to restructure its debt, highlighting the challenges in restructuring inefficient, state-owned enterprises.

Dongbei Special Steel Group Co., Ltd. represents a high-profile state-owned enterprise, where the Liaoning province State-owned Assets Commission owned 68.8 percent, Heilongjiang province State-owned Assets Commission owned 14.5 percent, and China Orient Asset Management (state-owned “bad-loan bank”) owned 16.7 percent, respectively. Dongbei Special Steel survived for decades as “zombies” with state support by propping the lossmaking state company with subsidies and cheap credits from local banks. One of the critical issue facing Dongbei Special Steel is the lack of transparency in financial reporting. For example, the asset value of 19 billion (Yuan) reported in October 2016 dropped substantially from the asset value of 30 billion filed at the end of 2014. The sharp decline in asset caused investor anger and cast doubts on the potential asset transfer in heavily indebted SOEs. Furthermore, in a bankruptcy system often subject to government interventions, its can difficult for protect creditor value after a company files for bankruptcy. After the steel group defaulted 10 times since 2016, two creditors filed for bankruptcy and the company entered formal bankruptcy on October 10, 2016 and approved by the Intermediate People’s Court of Dalian.

Tensions between Local Government and Creditors

When a state-owned company is in distress, it is a common practice for local government officials to seek out of court solutions through negotiations with creditors (e.g., local banks). This is because formal bankruptcies would cause adverse consequences to the local economy and the stability of labor market. A large fraction of Dongbei Special bonds is held by state-owned banks, including Bank of China, China Development, and Agricultural Bank of China, with a total of approximately 44 billion as of May 2016. Despite these financial institutions are significantly exposed to Dongbei Special’s financial distress, the local banks in Liaoning province were reluctant to take active role given the dominance of government ownership in asset deployment, and the distribution of assets across creditors. In presence of weakness in law enforcement, the voting rights of bank creditors and bondholders in the reorganization plan are fundamental to a market-based solution to the zombie problem.

Historically, the Chinese bankruptcy professionals questioned the independence of the court in restructuring or liquidation. The local government intervened in SOE bankruptcy proceedings and the court failed to play a proper supervisory role in distress resolution. Fundamental interests of creditors could have been undermined, and unsecured creditors recover relatively little in the distress resolution. To switch from a state-oriented to market-oriented bankruptcy regime, the objective is to ensure that the reorganization and liquidation process are carried out in a systematic and fair manner.

Changing Role of Local Government

The local government influences the bankruptcy resolution decisions with the following considerations. On the one hand, the local employment and social stability had been the first order importance in the past, which directly affect politician's career path and promotions. As a result, the judicial system on bankruptcy was ineffective despite the passage of the new bankruptcy law in July 2008, and the court system had been conservative with bankruptcy-related petitions (Fan, Huang, and Zhu, 2013). In the past, the court normally requires distress firms to first obtain consent for their bankruptcy decisions from the local government. For example, 315 out of 7,233 filed bankruptcy cases were accepted by the court in 2001 according to the Law Year Book of China 1993-2001, with even fewer professional judges in bankruptcy resolution.

On the other hand, given the implementation of stringent laws and improvement in legal enforcement in the past decade, the central government forces court to handle the bankruptcy cases to protect the joint interests of workers, bank creditors, and unsecured creditors. In addition, the local government has reputation concerns given the development of the bond market, which imposes hardened budget constraint, allows for entry, and exits to achieve economic efficiency. The local government has incentive to promote restructuring of lossmaking state companies in the long run at the expense of labor downsizing pressure in the short run. The bankruptcy of Dongbei Special Steel becomes a test case for Chinese bankruptcy law, which could set a precedent for dealing with thousands of "zombie enterprises". One of central question is what role will the government of Liaoning play this time? The way court and creditors work out a restructuring plan will test how the law is applied and whether it can fairly protect the interest of lenders, especially bondholders and minority shareholders.

Initial Plan and Final Plan of Reorganization

On September 1, 2016, the central government announced guideline on deleverage and restore efficiency through stringent implementation of specialized courts and a market-based approach to bankruptcy resolution. As a result, creditor committee could exercise substantial power in deciding outside investors, which contrasts the prior dominant role of local government in bankruptcy resolution.

The initial plan right after entering bankruptcy failed when Dongbei Special's creditors rejected a proposal by Liaoning government for debt-equity swaps with essentially little cash payment. From October 2016 to May 2017, Dongbei Special Steel involved in numerous rounds of meetings with creditors and searched for additional financing from outside investors. In the mid of May, according to insiders involved in the restructuring, the Liaoning government reached a state-owned public firm Ansteel Group Corporation (located also in Liaoning province) by seeking mergers between state groups, which imposes less disruption to regional economies.

However, both the creditor committee voted against the proposal given limited cash repayment, and approached privately-owned investors—Jiangsu Shagang Group, one of

the country's most successful private steel tycoons. The creditor committee emphasize the importance of operating efficiency in choosing the outside investors. On June 30, 2017, the creditor committee voted for the restructuring plan of reduction in government control—Shagang Group owned 43 percent stake by investing 4.5 billion, which surpasses Liaoning province State-owned Assets Commission as the largest shareholder. In addition, the filing specifies that Shagang Group can exercise control rights over the company to prevent the potential influence of local government. On August 8, 2017, the plan of reorganization was approved by the creditors committee and disclosed to the public. The reorganization of Dongbei Special Steel demonstrates the importance of market-based solution to the zombie problem. Following this bankruptcy, local government started to exert less political influence and promote the judicial system and law enforcement in bankruptcy resolution.