Resolving financial distress where property rights are not clearly defined: the case of China

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Abstract

We use data on financially distressed Chinese companies in order to study a debt market where property rights are inadequately defined and poorly enforced. To help with identification we use an event where a business-friendly province published new guidelines regarding the administration and enforcement of assets pledged as collateral. Although by no means a comprehensive reform of bankruptcy law or property rights, by instructing courts to enforce existing contractual rights (rudimentary as they were) the new guidelines virtually eliminated creditors runs and produced a sharp increase in the survival rate of companies suffering financial distress. These changes illustrate how piecemeal reforms of property rights and their enforcement may have a significant impact on economic outcomes. Our analysis and results challenge the view that a fully fledged system of private property is a precondition for economic development.

JEL:Classification: G21, G23, G33, N25, O43, P48s

Key words: Finance and development, property rights, financial distress, creditors runs

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1 Introduction

The right to property is one of the pillars of the market economy. An owner of an asset can pledge title (the formal expression of ownership) as collateral against credit, an exchange that "is the bedrock on which much of the financial system operates"; see Besley and Ghatak (2008). One important role of collateral is to tighten the debtor's incentive to perform on her obligations, thereby decreasing the cost of transacting debt finance; see Hart and Moore (1998). Another role, which is the main focus of this paper, is to rank the creditors by order of seniority thereby diminishing the hazard of coordination failures and creditors runs.

An important characteristic of emerging markets is that the right to property is not fully developed while, at the same time, it is being constantly adapted and reformed. The study of emerging markets is interesting in its own right, but it can also provide important insights into the functioning of developed markets. In that respect, China is an interesting object of study: largely industrialized, its markets fiercely competitive with companies mostly driven by the profit motive. At the same time, the process of protracted, piecemeal and haphazard market reforms, which has been ongoing since the 1980s, still falls short of allowing companies to establish full ownership of their productive assets. As a Socialist Market economy, China still rejects the concept of private property, at least in theory. As is well known, the economy has been performing remarkably well, reversing a century and a half of economic decline, recently becoming the world's largest (PPP adjusted); see Figure 1.

Insert Figure 1 here

For identification, we use one of the many piecemeal reforms that shaped China's capital markets in the last forty years. In 2012 the government of one of China's most prosperous and most business friendly provinces published a technical report "answering questions" about the status of secured creditors under existing Chinese law. The report's unassuming title hid a strong and unambiguous message: that rights in property pledged by the debtor to the creditor by way of a contract, are recognized in-theory by Chinese law, and though ignored in practice so far, should be implemented as intended. It had an immediate effect:

violation of the order of seniority, which were causing creditors to run on companies' assets virtually vanished in-province, among titled creditors, post 2012. Significant improvements in performance, e.g. in survival rates and the availability of credit followed. Crucially, the reform was limited in its nature, was not part of a comprehensive reform of, say, bankruptcy law; the rights obtained through the acquisition of title were still much restricted by comparison to developed economies.

Our data is hand collected from the private records of "the bank" (TB), a relatively small lender headquartered in the "treated" province. The data covers 969 non listed, private SMEs that suffered financial distress between 2008 and 2015. The data is of exceptional quality and granularity. In addition to standard items such as leverage, loan-to-value ratios, recovery rates and survival outcomes, the data also contains narratives with case histories recorded by TB's credit officers, which contain valuable institutional information. An important property of the data is that since the reform applied only in-province, and since TB had out-of-province borrowers, unaffected by the reform, the latter can be used as a control group.

To allow for a better interpretation of the results we precede the formal analysis with a detailed institutional description. Although, in theory, China rejects the concept of private property, in practice it has to accept that investors would not invest money and effort in the development of an asset unless they gained some control rights over it. Rights vary widely, in terms of strength and quality. The strongest, called "title", is, in fact, a relatively short-term lease that can be pledged as collateral. The weakest is an informal right of usage that, although costly to obtain, cannot be pledged as collateral. Just 55% of the companies in our sample have assets with titles. Even then, the value of a title depends on auxiliary institutions. For example, a right that is not properly registered could allow a third party to create a conflicting right. More importantly, the TB's narratives document incidents where efforts by TB's credit officers to repossess secured assets were frustrated by courts who preferred more junior creditors who filed early. The resulting first-mover advantage often precipitated a creditors runs.

We provide a comprehensive analysis of the impact of the 2012 reform across several debtor characteristics. First, we document that early filing for repossession used to deliver an advantage in terms of recovery rates. To derive the result we utilize the fact that in some cases TB is a secured creditor while in others it is an unsecured creditor. Pre 2012, the mean recovery rate on TB's in-province secured loans was 77%, but that rate was only 45% if it failed to be the first to file for repossession. At the same time, by filing first, TB could increase its recovery rate on unsecured loans from 26% to 67%. These differences virtually vanish,

in-province, post 2012 reform. More direct evidence is a sharp drop, from 13% to just 1%, in the incidence of secured banks calling back loans pre maturity, in response to another creditor declaring the company in default. A similar drop, from 16% to 3%, is measured for banks with unsecured loans. Hence, once the junior creditors realize that they cannot "jump the queue" through aggressive recovery practices, their best interest is served by "staying loyal" to the firm and hoping that it survives distress. Feeling more secure in their position, the secured creditors have little incentive to call back their loan. In contrast, for our control group, including untitled in-province debtors and out-of-province titled borrowers, the reform had no effect on TB's recovery rates, since it affected only in-province borrowers with titles to pledge.

Second, the diminished advantage to the first mover delivered material improvements in real corporate performance. Survival rates for distressed borrowers "treated" by the 2012 reform increased from 9% to 19%. With better survival prospects, bank-credit availability also improved, with its volume increasing some 15% (measured at the point of entering distress). Interest rates on such credit fell by about 40*bp*. Notwithstanding, even after 2012, bank lending to titled in-province companies was just 37% of total assets, compared with 66% for the UK, 63% for France and 79% for Germany; see Davydenko and Franks (2008). Bank credit for untitled in-province companies is 30% lower relative to titled in-province companies.

The reform also reduced the reliance on "informal" lenders who charged extremely high interest rates. For example, before 2012 the interest rate spread on such credit was around 18% in comparison with 0.9% for unsecured bank credit.[1] Worse, it is not uncommon for suppliers of informal credit to "enforce" their claims through the exercise of physical violence against the defaulting debtor. Our narratives provide evidence of debtors and their families, reporting to the police, asking to be placed in custody for their own protection. The narratives also indicate that debtors often leave town and flee for fear of harassment. Indeed, for treated company owners, the incidence of fleeing fell from 24% pre 2012 to just 8% post 2012.

Third, following the 2012 reform bank debt became more concentrated: among treated companies the share of secured bank lending in total bank lending increased from 51% pre reform to 72% post 2012. We take it as an indication that inadequate property rights undermine companies' ability to optimize their debt structure. Theories of debt structure, c.f. Bolton and Scharfstein (1996), trade off the advantage of

[1] See Leong, Li, Pavanini, and Walsh (2021) for a structural model of illegal money lending by "credit sharks" based on data from Singapore. They report interest rates in the same order of magnitude as in our sample, or even higher. However, they describe their borrowers as "vulnerable individuals", with no access to formal credit, whose main reasons for accessing the illegal market are gambling losses or alcohol abuse. They also report harassment by the credit sharks upon default, but the impression is that the methods are "more restrained"; they suggest this may be because police in Singapore provide debtors with some protection against harassment.

dispersed run-prone debt in deterring strategic default (where the debtor defaults just in order to renegotiate the contract to his own advantage) against its disadvantage in risking coordination failures. Hypothetically, creditors runs could be part of a second-best debt structure, intended to "harden the budget constraint". Since the direct effect of the 2012 reform was to transfer cash and control rights from the unsecured to the secured creditors, the null predicts an increase in debt dispersion so as to restore the optimal debt structure. That the opposite effect is observed indicates that the pre reform debt structure was sub-optimal, constrained by absence of the legal instruments that are necessary in order to achieve an efficient level of debt concentration.

Fourth, the 2012 reform created for titled (in province) companies came at the expense of untitled in-province companies. Post 2012, untitled companies had less bank credit, paid a higher price and came to rely more heavily on "informal lenders". For such borrowers the incidence of owners fleeing the province increased from 28% pre 2012 to 34% post 2012.

Our results contrast, sharply, with those obtained in developed markets, where creditors runs are virtually non undocumented[2] – unlike bank runs that are well documented, see Gorton (1988), Calomiris and Mason (2003) Iyer and Puri (2012) and a survey by Goldstein (2013). Notwithstanding, creditors run play a prominent role in the analysis of bankruptcy law. Jackson's (1986) influential work starts with the idea that the assets of the distressed company form a common pool, which the competing creditors tend to over exploit. Many have used this idea in order to justify an active role for courts in the resolution of financial distress, including the power to stay certain contractual rights as in Chapter 11 of the US bankruptcy code. The striking effectiveness of the 2012 reform raises the question whether such measures are required. Well structured, well prioritized debt contracts already contain a contingency plan to allocate property rights on the company's assets in case of distress, which strict enforcement should implement. As a result, the asset pool is privately rather than commonly owned. Remarkably, such outcome was achieved by the 2012 reform without any change in corporate bankruptcy law which, anyway, is hardly available to Chinese SMEs.

Our results build on the description of property rights in Allen Qian and Qian (2005). They also bear on their hypothesis that China has created an alternative economic model, based on trust and reputation. Rather, we document a reality where the debtor-creditor relationship is still organized around the concept

[2]The only exception is Hertzberg, Liberti, Paravisini (2011) who document a fall in lending activity by Argentinian banks upon learning that their information is to be revealed to other creditors. The fine granularity of our data allows us to identify the entire causal chain from inadequate implementation of property rights, through the advantage it gives the first mover to economic outcomes, thereby highlighting differences between mature and developing financial markets.

of private property, albeit, poorly implemented. The "alternative" channels of informal lending that did develop are very costly and carry an unacceptable human cost in terms of harassment and even violence against debtors. At the same time, our findings reveal an important role played by local government that is attentive to the needs of business, willing to act promptly and implement reforms so as to remove constraints that are binding on local business. Notwithstanding, we also find in the narratives some clear cases of local government using its powers, selectively, in order to "help" certain debtors out of distress.

Our results also bear on the finance-development literature, which tends to emphasize that property rights are a precondition for a successful process of economic development; see North and Thomas (1973), De Soto (2000), La Porta et. al. (1998), and Acemoglu, Johnson and Robinson (2001). Rather, our findings highlight the fact that the right to property is a bundle of privileges: the right of usage, the right to lease, the right to pledge assets in order to secure credit, the right to prioritize credit, etc. Indeed, even freedom from harassment can be viewed as part of the debtor's right to their property. It is conceivable that various elements of the bundle bind at different points of the development path. For example, not being able to prioritize security interests may not have been a binding constraint in the 1980s when farming collectives were allowed to allocate plots of land for private cultivation, but did become a binding constraint thirty years later.[3] While starting up with a fully-fledged system of property rights is theoretically conceivable, it may be deemed impractical due to other constraints. In particular, such a system is likely to be intensive in legal and administrative human capital, a s highly constrained resource in emerging economies; see Allen Qian and Qian (2005) for a description of judicial resources in China.

A more evolutionary approach to the interrelated process of institutional and real economic development can be found in the writing of the great English jurist, Henry Maine (1861).[4] At an early stage, societies are "distinguished by the prevalence of co-ownership, by the inter-mixture of personal with proprietary rights, and by the confusion of public with private duties." But then, once "the wheels of society had begun to move quickly," a gradual process starts where rights in assets are carved out of the "common fund" and held individually, first through uninterrupted usage, then possession and, ultimately, private property. Along the transition process, assets are "conveyed with incomplete forms, and held, therefore, under imperfect titles."

It is interesting to note that institutional arrangements similar to China's can be found in poorer emerging

[3] Chari, Liu, Wang, and Wang (2019) for a study of a 2003 reform of leasing rights of agricultural land with a 10% productivity gain.

[4] The following citations are taken from Chapter 8.

markets. For example, Besely (1995) provides a vivid description of rural Ghana, a society in "transition between a traditional system of land rights (which emphasizes claims of the community) and a modern one (which emphasizes the claims of the individual)." The various right commonly bundled in "property" may be broken down; for example, the right to sell does not follow automatically from the right to lease. Even when an asset can be sold, strings of "lineage approval" to the transaction may still attach, revealing the "vestiges of the [older] communal land tenure system." Equally important, "formal (de jure) rights might have very little to do with the ability to exercise these rights (de facto)". Hence, in Anloga, a less developed region of Ghana, although 78% of the currently cultivated farmers could purchase their land, only 3% actually did so. The interesting feature of China is that such patterns of institutional under-development are still present even when the economy has already reached such an advanced stage of industrialization. However, other historical examples suggest a similar pattern: Britain was facing similar such issues even when the industrial revolution was already in full swing. For example, during the eighteenth century open fields and village commons were fenced in so as to enhance agricultural productivity, often by coercive means, not dissimilar to those in present day China; see Clark (1998). Also, Franks and Sussman (2005) document how US bankruptcy law in the 19 th century evolved through a series of ad hoc reforms implemented by Federal courts in the reorganization of bankrupt railroads, largely in the absence of any Congress mandated corporate bankruptcy law. It was only in the 20 th century that Congress took steps to give statutory formality to the innovations of the courts.

While our sample is made up of small non listed companies, recent events indicate that they may be valid well beyond that population. On 9 December 2021, Evergrande a real-estate developer based in Shenzhen (Guangdong province), listed on the Hong Kong stock exchange, with debt obligations in excess of $300 billion, defaulted on loans made by foreign creditors.[5] Concerns about creditors runs are explicitly mentioned, with one analyst stating: "creditors are racing to take Evergrande to court so they can be in a better position to get their money back". Interestingly, even a company as big as Evergrande had to turn to "shadow" or "underground" lenders who charged annualized interest rates as high as 73%.[6] Aware of coordination problems, the provincial authorities set up a special court to handle the case,[7] and, also, "parachute[d] a team of officials into the indebted company,"[8] which "includes representatives from [other]

[5]See Financial Times (FT), 9 December 2021, https://www.ft.com/content/6d6b1f79-52b3-49e5-aa8a-7068adec7a9d.
[6]See FT, 16 December 2021, https://www.ft.com/content/941c0e96-ebf1-42ee-97ec-ad6764f35cbf?shareType=nongift.
[7]See FT, 16 December 2021, https://www.ft.com/content/941c0e96-ebf1-42ee-97ec-ad6764f35cbf?shareType=nongift.
[8]See FT, 3 December 2021, https://www.ft.com/content/502ab22a-45b4-48e0-afc2-c0fb5e6ac58b.

state-owned enterprises".[9] Cleary, the process has become politicized; one analyst comments: "Chinese restructurings are like horse-trading. ... You have to play ball with the government;"[10] our narratives are consistent with this view.

Our paper is organized as follows: Section 2 describes the data, Section 3 describes the institutional setting, Section 4 provides a formal analysis, Section 5 includes some extensions and robustness tests and section 6 provide a discussion of the results and some conclusions.

2 The Data

We have assembled our data from TB's private records, a relatively small bank operating out of one of China's most affluent provinces, reputed for a climate supportive of private business. Cull and Xu (2005) survey company managers in eighteen cities; the capital of TB's province scores highly on questions such as "to what extent do government officials that you regularly have contact with help rather than hinder firms?" or "what is the likelihood that the legal system would uphold your contracts and property rights in business disputes?" Our sample is restricted to SMEs, which are the backbone of China's Domestic Private Enterprise (DPE) sector. According to a recent report by Minsheng Bank[11], DPEs account for more than 60% of China's GDP, more than 50% of the Government's tax revenues and about 80% of urban employment.

SME/DPEs make up the most dynamic and the most productive part of the Chinese economy, in comparison with State Owned Enterprises (SOEs). Song, Storesletten and Zilibotti (2011) report a profitability gap of 9% between DPEs and SOEs, while Brandt, Hsieh, and Zhu (2008), Brandt and Zhu (2010) and Hsieh and Klenow (2009) report a Total Factor Productivity (TFP) gap of between 1.42% and 2.3%, respectively, albeit using different methodologies and covering a period slightly earlier than ours.[12] In addition, evidence gathered by Song, Storesletten and Zilibotti (2011) indicate that China's DPEs suffer low availability of bank loans, where only 10% of investments are funded by bank loans in comparison with 30% in the SOE sector. A Standard Chartered (2010) survey of Chinese SMEs[13], reports that 41% had no access at all to bank credit. This suggests that our sample is taken from the better funded, more developed segment of the

[9] See FT, 6 December 2021, https://www.ft.com/content/b3df27fb-f54d-4680-95cf-3563bdcd2fe4.
[10] See FT, 10 December 2021, https://www.ft.com/content/476dbe5c-02cd-4650-a48c-ea65201ea6f4.
[11] See http://www.sohu.com/a/136566101_618573, in Chinese.
[12] According to Song, Storesletten and Zilibotti (2011), China's DPEs are slightly more profitable than Foreign Enterprises active in China.
[13] Median total assets of only 10 million RMB in compatrison to about 95 million RMB in our sample – see Table 1.

Chinese private business population.

TB, like most other Chinese banks, extends credit via fixed-term loans of one-year maturity, although it often extends several staggered loans to the same client within a single year. Our sample, covering the years 2008 to 2015, contains more than half-a million loans, extended to $21,860$ borrowers. In case the debtor defaults on any loan, any creditor is allowed to demand repayment of its own loans. It follows that the reality of Chinese banking is close to credit-line lending (i.e. overdraft facilities in the UK or "revolvers" in the US). Table 1 consolidates the data at the level of company years of which there are $78,343$ data points.

Insert Table 1 here

During the sample period, 969 borrowers defaulted, an annual default rate of 1.2%. Although a formal bankruptcy procedure does exist in China, it is beyond the reach of the vast majority of SMEs. In fact only 21 distressed companies in our sample were resolved using formal bankruptcy. Another 42 were resolved through ad hoc informal conferences of creditors, sponsored by local government. Interestingly, among our 969 distress cases there are eight SOEs that happen to satisfy the SME definition, all resolved using one of the two procedures above, an indication of the political connections required to access them; see Section 5.3 for a more comprehensive analysis. Excluding these government sponsored resolutions, we are left with $906 = (969 - 21 - 42)$ private resolutions, constituting our "working sample".

Upon default, TB collects additional, more accurate, information on the borrower so as to better manage its recovery efforts. In particular, TB collects information about other creditors, with whom it has to compete for recovery, including private, non-bank creditors. Of special interest are narratives by TB's credit officers documenting the difficulties encountered during the debt recovery process.

According to financial indicators reported in Table 1, the companies in the working sample are not that different in size or even profitability relative to the general population of non-distressed companies; one year before default they still report return on assets (ROA) of 9.7%. Possibly, at that point, TB was oblivious to the performance of its borrowers, raising questions about the quality of its monitoring.[14] To address this concern, we correlate default with TB's pricing and funding decisions two years prior to default; Table 2 reports the results. (Firm FEs and other controls are included.) The strong statistical significance indicates that TB was aware of the problem, but small economic magnitudes indicate a mild reaction: interest rates

[14] A point made by Jack Ma in his well-known speech to the Bund Financial Summit, Shanghai 24 October 2020, describing Chinese banks as having a "pawn-shop mentality". These allegations are not supported by the analysis below.

increase by 15*bp*s two years before default and by 25*bp*s one year before default. That may be explained by the fact that although regulatory interest-rate ceilings were abolished a few years before the beginning of our sampling period, customary adherence to the policy lingered on. TB's aversion to a repricing of debt is, however, accompanied by a sharper reaction with respect to lending volumes, which are cut back 4% two years before default and by 19% in the year preceding default.

Insert Table 2 here

3 Institutional framework

"China has been a country of many ironies that continue to perplex a thoughtful outsider. Particularly perplexing is the disparity between the words and the reality"; see Zhang (2003). To better understand these "words" we present a short description of the complicated institutional system that governs the resolution of financial distress among Chinese SMEs.

3.1 Property rights

As far as land is concerned, "private property" is a misnomer. In legal-political theory, China is a Socialist Market Economy. Socialism implies that all land and, by implication, any attached equipment or structures, are ultimately "owned" by an abstract entity that is "the people of China".[15] In practice, "the people" exercise ownership either through one of the State's organs (e.g. the People's Liberation Army or a provincial government), or, directly, via local farming collectives, who control much of the country's economically valuable land.

At the same time, a market economy, vibrant and fast growing as China's, also requires that companies are able to acquire some control rights on assets that they use and develop. To accommodate these conflicting demands, China has developed a whole spectrum of ad hoc institutional arrangements, varying by strength of their rights and formal status. At the low end, farming collectives, who are not allowed to create any rights to land classified by zoning laws as rural, may still grant usage (for a payment) to an industrial company. Since the arrangement has no legal standing, the "right" is neither transferable nor pledgeable. At the high

[15] It could be argued that the socialist tenure system draws on older communal traditions, but the analysis of this argument falls beyond the scope of the current paper.

end, local government can "sell" land classified as urban as a *conveyance*, effectively a fixed term leasehold (typically, for a duration of thirty to fifty years). There exists no formal procedure to extend the lease before it expires. Such a conveyance is transferred to a third party and, also, pledgeable as collateral against credit. In China, such conveyances are commonly called "titles", misleadingly. The entire process is administrative in nature, so the de-facto strength of the right often depends on how diligently the bureaucracy of the local government handled the process. Of major importance is the documentation of the right, whether by some communication with a local official or through a public register (so that the right can be observed and verified by any third party). In the latter case, public registers vary, significantly by the quality of their administration.[16]

Of the 906 companies in our working sample, only 494 or 55%, have titles. Even for those (in-province) companies, the value of assets pledged as collateral is just 35% of total asset value. Pre 2012, the amount of credit secured on those assets was just 17% of total asset value, implying a loan-to-value ratio of 49%, highlighting the SME credit-shortage problem; Section 4 provides a more rigorous analysis. Adding unsecured credit, the total amount of bank lending to titled companies was just 32% of total assets; untitled companies got about a half of that amount. Section 4 provides a more elaborate analysis of the effect of the 2012 reform.

Our narratives provide two interesting examples of the problems created by inadequate registration of titles. A private steel trader pledged some rolling stock as collateral. The steel was stored with a specialist warehouse and the receipt was pledged as collateral. In this case, however, the trader had colluded with the warehouse to issue duplicate receipts, which were both pledged in order to secure two bank loans (against the same stock). Although TB recorded the value of the collateral at 2.35 million RMB, when the company defaulted the recovery amounted to only 0.2 million RMB. In another case, a shipping operator borrowed 24 million RMB from TB, secured by three tugboats worth 20 million RMB. However, when TB tried to repossess the collateral, the owner claimed that the signature, of his daughter on the pledging document, was not authentic. Eventually, TB managed to recover 11 million RMB.

3.2 Idiosyncratic enforcement

Historically, China treated its legal system as just one part, not necessarily the most important or prestigious part, of the State apparatus. This attitude is well exemplified by Mao Zedong's words, in 1957, cited by

[16] This paragraph draws, heavily, on Ho (2001) and Li and Ho (2003), where much additional detail can be found.

Ho (2005): "you cannot rely on law to rule the majority of the people ... I took part in establishing the Constitution, but I do not remember it. Every one of our resolutions is a law; when we hold a meeting, that's law too." One implication of that attitude is that judicial service was considered a "job" that required no particular skill or training. Judges, many still serving during our sample period, were recruited from the ranks of the army, the Party or the bureaucracy. Even in the 1990s, when the administration of justice improved considerably, it was estimated that only 25% of judges had a law degree. Even in the more developed coastal provinces qualifications were often obtained by "televised education" or through some "specialized colleges"; see Zhang (2003). Apart from concerns about judges' independence and integrity[17], it is clear that lack of professionalism meant that certain legal rights were not treated with the same level of attention and diligence that they would receive in a Western court. Of critical importance to our analysis is the haphazard enforcement of priority rights among the creditors of a defaulted company.

Again, the narratives provide useful illustrations. A private IT company "purchased" some land on which it constructed a plant. Local zoning laws defined the land as rural, so although the transaction was executed in cash, no title could be pledged. As a result, with assets of 258 million RMB, the company could secure bank credit of only 75 million RMB, of which 14.8 million RMB were provided by TB against a mortgage on the owner's residential property, valued at 20 million RMB.[18] Upon default, TB filed for repossession in a court located in the province's capital city, where TB's own head office was also located. However, another *unsecured* creditor, also a bank, filed earlier in another court, in the same city, for repossession of the same residential property. TB's officers report that the court in which they filed was "unable to initiate a compulsory auction, and the communication has been fruitless, [because] the first seizing court ... refused to initiate the auction process" on TB's behalf. Since Chinese law recognized the right to create seniority through the pledge of security, the court dealing with the claim of the junior creditor should have relinquished the case to the court dealing with the senior claim. In fact, the dispute between the two courts centered on the question of which creditor took steps first to "seal off" the property, rather than which creditor's right was senior to the other. The implication of this state of affairs is a built-in first-mover advantage, to be

[17] See, for example, Peerenboom (2008) and Wang (2013).

[18] In most cases, residential property is pledged via intermediaries, who obtain title from the debtor and guarantee the loan vis-a-vis the bank, saving the bank the political embarrassment of evacuating residents from their homes and, at the same time, allowing the intermediary to use more extreme measures to achieve the same end. The use of personal guarantees is widespread in China. Our impression is that they are not very effective or, at least, are a much less effective means of enforcing recovery via pledging a title. For that reason, and due to shortage of data, we have decided to ignore their presence.

analyzed in great detail in Section 4 below.[19]

3.3 Informal credit market

One of the main points made by AQ&Q is that informal credit markets might provide a good substitute for formal markets. Tsai (2004) quotes survey results documenting that farmers obtain four times more credit from informal markets than from formal ones. Ayyagari Demirgüç-Kunt and Maksimovic (2010), although rejecting the association between informal credit markets and enhanced performance[20], still describe them as benign institutions that "rely on relationships and reputation" with superior monitoring capacity that allow them to provide funding to borrowers that are rejected by the banks. Our data reveal a very different and less benign picture of the non bank sources of finance: the mean interest rate premium, over and above the Bank of China's base rate, is around 20%; see Section 4 for a more detailed analysis. Even more significantly, enforcement is often accompanied by significant levels of criminality. The narratives speak of debtors placed in "private confinement" by credit sharks. In one case, a businessman and his wife surrendered to the police and asked to be held in custody for their own safety. Such voluntary custody suggests that the police are unable or unwilling to do much to protect debtors and their families from harassment by loan sharks. Our data suggests that around 30% of untitled defaulting borrowers in TB's province fled their city and vanished, to escape harassment and possible violence from the non bank lenders or loan-sharks.

Violence results in further violations of the priority of debt claims. In one case, TB lent 25 million RMB to a textile company. "Private creditors" who lent 35 million RMB must have been threatening enough so that the owner "disappeared and could not be contacted". For some reason, local government was willing to contribute additional funding, but all those funds were used to pay the informal (unsecured) creditors who were repaid in full, while TB managed to recover only 9.4 million RMB. This is in spite of the fact that the informal loans charged an interest rate of 30%, compared with only 6.3% charged by TB. Hence, even if the concept of seniority is well understood, the asymmetry in effective enforcement power between bank and non bank creditors may change the effective order of seniority in favor of the latter.

[19] We came across the following anecdote talking to lawyer involved in much repossession work for TB, whom we met while collecting our data. An elderly debtor refused to evacuate a residential property that he had previously pledged as collateral. On humanitarian grounds, a judge refused to issue an eviction order, but did grant TB an injunction that banned the debtor from traveling on the State's train grid. Alas, the borrower was of such poor health that he no longer traveled to visit his daughter, making the injunction worthless.

[20] They also report much smaller magnitudes: while banks fund 20.5% of companies' new investments, informal resources fund 1.9%.

3.4 Unlimited liability

It follows that although many SME names are followed by the letters "Ltd.", in practice, liability is often unlimited. It is worth articulating how the inadequate management of property rights actually undermines this basic legal instrument. Once businesses lack pledgeable titles, they can no longer pledge their fixed assets as collateral, so the provision of bank credit is restricted. They have no choice but to apply for credit in the "informal" or non bank market accompanied by personal guarantees. Once that is done, they cannot shield personal assets from business failure, and they are potentially subject to serious harassment. Moreover, there is still no personal bankruptcy law in China that will allow debtors to write-off debt in default. Although the Supreme Court released a plan to establish such a law,[21] implementation has been slow.[22]

3.5 The role of local government

The description above implied that business, law and regional politics are interwoven, rather than clearly separated as they are (or supposed to be) in many Western countries. Given the wide powers that they possess, local governments have been resourceful in "helping" companies that they deem worthy. An interesting case is that of a private manufacturing company located in TB's own province that borrowed, unsecured, 35 million RMB from TB. Though not an SOE, the narrative speaks of a preferential treatment by the local government. Help came in the form of hastily initiating a process to convert the company's land zoning status from industrial to residential, thereby sharply increasing the value of land on which the company is settled, generating considerable cash. As a result, TB was repaid 32.5 million RMB, an almost full recovery.

There is, however, an upside to such close relationship between business and politics: once the provincial government identifies the need for change, it can act promptly, decisively and effectively. In April 2012, the enforcement department of the High Court in TB's own province used its semi legislative powers in order to issue some "Answers to questions regarding disputes in the enforcement of creditors' rights when multiple creditors apply for the liquidation of the same debtor's asset".[23] No new legislation was required because, in theory, privately contracted security interests were legal and enforceable under existing Chinese law. Notwithstanding, these "answers" did deliver a strong message that the existing law needed to be

[21] See The Guidelines for People's Courts on Enforcement Work (2019-2023) (http://news.sina.com.cn/sf/news/fzrd/2019-06-12/doc-ihvhiews8261703.shtml)

[22] Two cities, Wenzhou and Shenzhen, enacted personal bankruptcy procedures independently of the national government.

[23] See http://www.360doc.com/content/18/0205/12/30598038_727853750.shtml

implemented as intended.[24] In particular, they implied that a court that is asked to seize an asset on behalf of a junior creditor should transfer the case to the court where the senior creditor has filed for repossession, regardless of who filed first. In case the first-moving court refused to comply, the Province Supreme Court can enforce the transfer of the case (within the province). In China, higher courts are powerful since they are part of the nomination process of judges in subordinate courts and also approve part of the their expenditures.

It is notable that the intervention by the provincial supreme court was not part of a more comprehensive reform to resolve the many other problems that affect the Chinese credit market, such as the unsatisfactory state of titles and the high incidence of violence by credit sharks.

4 Formal analysis

In this section we exploit the 2012 reform in order to study the interaction between property, credit markets and economic performance. First, we document the existence of a significant pre-2012 first mover advantage, which is virtually eliminated following the 2012 reform.

4.1 First-mover advantage and creditors runs

In some important respects, the theory of creditors runs works much like Diamond-Dybvig (1983) bank runs: the creditors (depositors) are lined-up in a queue and, then, "served sequentially", i.e. paid at par until the debtor runs out of money. Clearly, in such a situation, those who are close to the head of the line have an advantage over those who are located further down. It is therefore in the best interest of each and every creditor to move first in an attempt to "grab" an advantageous position in the queue. The equilibrium outcome is a creditors run.

In another respect, creditors runs are very different from bank runs, in that sequential servicing is a much less plausible assumption. Diamond and Dybvig (1983) motivate it on grounds that it "capture[s] the flavor of continuous time" with depositors realizing a shortage of liquidity "at different random times". However, corporate (particularly SME) debt is not meant to serve as a liquid instrument. Absent the element of immediacy that is associated with the demand for liquidity, there is enough time to implement a mechanism that removes the first-mover advantage; c.f. Green and Lin, (2003). Indeed, this is a crucially important

[24] Other provinces such as Jiangsu or Fujian have followed.

function of title pledging: to distribute the recovery value according to a scheme contracted upon ex-ante rather than on an ex-post rush to the head of the queue.

Hence our first testable hypothesis: that in an environment where seniority rules are ineffective, there is a strong correlation between the position of the creditor in the queue and their recovery rate. That correlation vanishes once the environment changes to one where the pledge of a title does create an order of seniority. We take 2012 as the year when the environment changed. The treatment group contains in-province companies with a pledgeable title over their assets. The rest are used as a control groups, either in-province companies without a title and out-of-province companies with a title. We use the timing of court filing in order to identify the creditor's position in the queue.

Because we have recovery data only for TB, we utilize the fact that TB extends loans both in and out of province, with and without titles. Loans to titled in-province companies, i.e. the treatment group, may be either secured or unsecured. In the former case we predict that the reform protects TB from early filing by junior creditors attempting to jump the queue. In the latter case, as title is pledged to another bank, we predict that the reform limits TB's ability to file early in an attempt to undermine more senior lenders. Notice that some TB loans are classified into the treated group while others are classified as the control group.

Insert Table 3 here

Evidence in Table 3 is consistent with this prediction. Columns (1) and (3) report clear evidence that pre-2012 first-movers can obtain an advantage over second-movers across all borrower classes. Thus, for example, even in-province, where TB is secured and files first, its mean recovery rate is 77%; but once it fails to file first, its mean recovery rate drops to just 45%. At the same time, in-province and pre 2012, where TB is unsecured, by filing first it can increase its mean recovery rate from 26% to 67%.

Post 2012, the first-mover advantage virtually vanishes for treated borrower, namely borrowers with titles in-province; see Column 2. Where TB is secured, whether it files first or not, its mean recovery rates are between 80% and 82%. Where TB is unsecured, whether it files first or not, its mean recovery rates are between 26% and 35%. Notice that within the control group, the first-mover advantage remains post 2012. In-province, for borrowers without titles, by moving first TB can increase its mean recovery rate from 29% to 69%: absent titles, there is no mechanism to prioritize the creditors and the first mover advantage remains even after the 2012 reform. Out-of-province, even where borrowers have title, by moving first, an unsecured

TB can increase its mean recovery rate (post 2012) from 31% to 68%: the reform does not apply, priority is not enforced, so TB can still gain an advantage by filling first.

In order to establish statistical significance, we split the sample to the treatment group – in province with titles, using the rest as a control group, and estimate the triple difference-in-difference (DiD) regressions:

$$RR_i = \alpha + \beta_{P12} \times P12_i + \beta_{SCR} \times SCR_i + \beta_{1ST} \times 1ST + \beta_{INT} \times INT_i + \theta \times \boldsymbol{X}_i + \eta \times FE_i + \varepsilon_i. \quad (1)$$

RR is TB's recovery rate on loans extended to debtor i. $P12$ is a dummy for post-2012 defaults, SCR is a dummy for TB's secured position (assuming that where TB is unsecured, title is handed to another bank) and $1ST$ is a dummy for TB filing first. INT is vector that includes all possible interactions of these dummies, though only interactions that are deemed economically interesting are reported (though all interactions are included). X is a vector of additional control variables such as total assets or return on assets, and FE is a vector of fixed effects. Ideally, one would add two additional differences, for in and out of province debtors, with and without titles, and estimate the equation on the entire working sample, a fifth-order DiD, for which our sample is far too small.

Insert Table 4 here

Table 4 reports the results, with the treatment group (titled in-province debtors) in column (1) and the rest (in province without titles, out of province with and without title) in column (2). The results confirm earlier observation. There is a strong first-mover advantage in both the treatment and the control groups: TB's recovery rate is higher where it files first for repossession. However, within the treatment group, that first-mover advantage drops sharply post 2012 for loans where TB is not secured. Post 2012 there is also a sharp increase in recovery rates on secured loans in-province as junior creditors cannot undermine the secured creditor by filing first. Relatedly, post 2012, in province where TB is secured, filing first no longer carries any extra advantage. No difference in performance is present in the control group.

Next, we investigate the creditors' responses to the first-mover advantage. We predict that following the 2012 reform creditors of treated companies are more patient and wait longer before initiating repossession procedures. If secured, they have less of a reason to worry about junior creditors getting ahead of them. If unsecured, they realize that early action to seize assets or demand early repayment will likely accelerate

liquidation but, then, their position on the priority ladder would leave them with lower recoveries, as it is the senior creditor who would be first in line for the recovery value. As a result, the reform operates to stabilize the debt structure of treated companies.

Insert Table 5 here

As already noted above, Chinese bank loans are extended via staggered fixed-term loans, but it is relatively easy for a creditor to demand early repayment, particularly if there is a default event against any other creditor. Consistent with our prediction, columns (9) and (10) of Table 5 report a sharp drop, post 2012, in the share of early-recalled loans among treated companies. For in-province titled borrowers, where TB is secured, the reform reduced the call-back rate from 13% to 1%. The result is equally strong for unsecured bank loans where the call-back rate dropped from 16% to 3%; indeed, even among private (alternative) lenders, the call-back rate dropped from 26% to 6%. No discernible effect can be detected in the control group.

Insert Table 6 here

In order to establish statistical significance, Columns (1) to (3) in Table 6 report regression results of a DiD specification similar to equation (1) above (the first to file variable is no longer relevant). The results are consistent with those shown in columns (9) and (10) of Table 5. The dependent variable is a dummy that receives a value of one if any lender within the respective credit class recalls its loan. Creditor classes include secured banks, unsecured banks and private (alternative) non-bank lenders. Only titled companies can issue secured loans, which truncates the sample size in column (1). It follows that the Titled variable equals one for all 431 observations in column (1), so that the triple interaction reduces to just a double interaction in that column. To put it less technically, the control group in column (1) is just out-of-province titled companies, while in columns (2) and (3) the control group also includes non-titled in-province companies. All three columns confirm the statistical and economic significance of the sharp drop of recall rates post reform, as reported above.

Most importantly, the stabilizing effect of the 2012 reform can be detected in the sharp rise in survival rates within the treatment group. For in-province titled companies, the prospects of surviving a distress episode increases from just 9% to 19%; see columns (13) and (14) of Table 5 – a direct consequence of a diminished first-mover advantage and, therefore, a lower propensity of creditors to seize assets. Column (4), in Table 6 shows statistical significance.

4.2 Debt concentration

All else equal, including debt structure, the 2012 reform reallocated both cash and control rights from the unsecured to the secured creditors. Obviously, all else is not equal, because debt structure is endogenously determined. Textbook theory draws on the following tradeoff: on the one hand, more concentrated debt facilitates coordination when the company is genuinely distressed. On the other hand, more dispersed debt makes strategic default (when the debtor defaults just in order to negotiate better terms) more difficult as it might trigger a creditors run; c.f. Berglöf and von Thadden (1994), Bolton and Scharfstein (1996). By making strategic default less attractive, companies could increase their debt capacity – or harden their budget constraint. Hypothetically, pre 2012, "efficient runs" could have been part of an optimized debt structure along the lines of Calomiris and Kahn (1991). In which case treated companies should have responded by dispersing their debt structure post 2012, so as to undo the direct debt-concentration effect of the reform. Rejecting the hypothesis, actually observing an increased concentration post 2012 among treated companies, indicate that pre reform borrowers were constrained by the absence of legal instruments that would allow them to optimize their debt structure through concentration.

Table 5 reports two measures of concentration: the number of banks and the share of the secured bank as a proportion of all bank credit. Columns (3) and (4) show that the number of unsecured bank lenders to titled in-province borrowers decreased from 2.8 before 2012 to 2.3 after 2012. At the same time, columns (5) and (6) report an increase in the share of the secured bank's lending relative to total bank lending from $(0.172/(0.172+0.146)=)54\%$ before 2012 to 65% after 2012, based on roughly the same value of pledged collateral; see Columns (1) and (2). Notice, also that total bank credit to treated companies increased by 15%. At the same time, the number of private (alternative) lenders decreased from 3.9 to 2.8, while the volume of their lending more than halved, from 4.9% of total assets to just 0.8%.

Insert Table 7 here

In order to establish statistical significance,Table 7 reports regression results of a DiD specification similar to that reported in Table 6 above. In Columns (1) to (4) the dependent variable is the amount of credit measured against total assets, while in columns (5) and (6) it is the number of unsecured and private creditors. The results are in line with the observations made above: following the reform, treated companies increased their reliance on secured bank credit at the expense of unsecured bank credit, with a lower dependence on

private credit, albeit with no significant change in the number of creditors.

4.3 Additional responses to the 2012 reform

The significant change in the composition of bank credit was matched by changes in interest rates. Columns (7) and (8) of Table 5 report that the cost of secured bank credit for treated companies fell by $(0.585-0.181 =)40bp$ (measured against the Bank of China's base rate) while the cost of unsecured credit increased by $80bp$. That is, TB quickly recognized that the reform reduced the risks of secured lending at the expense of unsecured lending.

It is important to note that, while the reform operated to the advantage of titled companies, it made things worse for untitled companies. While the availability of bank credit fell by 13% (from 0.172 of total assets to 0.142), the price of bank credit has increased by $(1.446 - 0.899 =)\, 55bp$. In addition, their reliance on private (alternative) credit has increased from 9% of total assets to 12%.

Another important effect of the reform is the sharp reduction in the incidence of violence against distressed companies. According to TB records, pre-2012, 24% of titled in-province debtors felt sufficiently harassed by private creditors that they had to flee town and hide. With the lower reliance on private credit, that rate fell to just 8% post 2012. Again, the burden fell on untitled debtors, whose incidence of fleeing increased from 28% to 34%. While not being part of standard welfare measures of economic performance, this effect highlights a substantial human cost of and inadequate property rights.

Insert Table 8 here

In order to establish statistical significance, Columns (1) to (3) in Table 8 report regression results of a DiD specification similar to those reported in Table 7 above. In Columns (1) to (3) the dependent variable is the interest rate spreads (over the Bank of China's base rate). For treated companies secured credit became less costly, although unsecured credit increased in price. In Column (4) the dependent variable is a dummy that identifies debtors who fled the province and lost contact with TB. It confirms a sharp drop in such incidents post 2012 for titled in-province debtors.

Insert Table 9 here

Of particular interest are those companies that managed to survive the distress episode. Table 9 reports some key performance indicators, for treated (titled in province) and non-treated survivors, in distress time

$\tau = -2, ..., 2$, measured in years, 0 being the distress year. Companies in the two groups are of similar size, but those in the treatment group are better funded: their initial bank debt, is 43% $(= 36.3 + 6.3)$ of total assets against only 27% for companies in the control group. In addition, debt structure is more concentrated in the treatment group relative to the control group. Both treated and non-treated companies were probably healthier pre distress relative to companies that did not survive, indicated by the fact that, initially, they have no private debt. The most dramatic difference between the two groups is that between year -2 and year 0 secured bank lending contracts only 10% in the treatment group, against a contraction of 51% in the control group. Although companies in both groups are forced to sell assets (probably under pressure from the secured bank) total assets contract only 24% in the treatment group against 56% in the treatment group, with a respective effect on sales. Interestingly, in-province unsecured bank lending is hardly affected in line with the argument above: with a reasonable chance of survival, it is not in the best interest of the unsecured to "rock the boat".

5 Robustness checks and extensions

Two concerns can affect our analysis: that title is an endogenous variable that captures certain properties, e.g. productivity, that affect performance in distress. The second concern is that the results may be explained by some other factor that affects a trend in the data, observable before and after 2012 – as well as in other points of time. These concerns are dealt with in Section 5.1 through IV and falsification robustness testing. Section 5.2 extends earlier results, demonstrating that the effect of the reform on total bank lending is increasing in the size of titled assets. Section 5.3 extends the analysis to highlight the role of political connections in gaining access to formal bankruptcy or informal government-sponsored resolution mechanism.

5.1 Robustness checks

Insert Table 10 here

To instrument titles, one would look for a variable that creates entitlement across debtors, without any affecting outcomes in any other manner. Section 3 already hints that location might provide such an instrument. As explained there, titles can be created only on land that is classified by existing zoning laws as urban. Notwithstanding, province government grants city administrations (who control much rural land

in their metropolitan area) a quota for the conversion of rural land to urban land, with titles that can be sold to local businesses. Cities have discretion to select locations for such conversions according to long-term considerations of urban planning. We therefore treat location as an exogenous variable correlated with a company's likelihood of having a title, yet largely independent of characteristics that affect the company's performance in distress. Hence, the first-stage variable, Urban in Table 10, is a dummy that receives a value of 1 if the debtor is located in an area where titles are available and zero otherwise. To strengthen the argument, we restrict the instrument to debtors who were already located in the area for at least two years prior to it receiving the status.[25] The exclusion tests are intended to rule out additional channels that could raise concerns about exogeneity.

Insert Table 11 here

Second-stage IV results are reported in Table 11. For brevity, we limit the analysis to just three key performance indicators of major importance, already studied above: a dummy variable for the survival of the debtor, a dummy variable for the debtor fleeing – a proxy for the threat of violence, and total bank credit; see Columns (1) to (3). No reversal in signs or magnitude is detected, compared with the OLS DiDs results above.

Columns (4) to (6) report the results of a falsification test, using the same three performance indicators, designed to detect a trend with similar effects to those detected in 2012. The placebo is placed in the year 2010 and covers the period before the 2012 reform. Had such a trend been detected, it would falsify the claim that the changes post 2012 result from the reform. Evidently, the test rejects the existence of a trend.

5.2 The magnitude of the reform on total bank credit

Insert Table 12 here

Tables 5 and 7 point out that the reform did have a positive, statistically-significant effect on total bank credit to treated (titled in province) companies, but the economic significance of the effect is somewhat week. In Table 12 we test the hypothesis that the effect depends not just on the whether the borrower has a title but, also on the size of the of the titled asset. In Column (1), titled assets as a percentage of total assets, is allocated into quartile dummies; for example, Title25-50 equals 1 if the that percentage is between

[25] The results are robust to dropping this limitation on the definition of the urban variable.

25% and 50%. In Columns (2) to (4), the dummies are defined by that percentage exceeding the quartile threshold; for example, Title>50 equals 1 if that percentage exceeds 50%. All interactions are included, but only the triple interaction is included. Evidently, there is a strong increase in the magnitude of the effect as we progress from lower to higher quartiles.

5.3 Government-sponsored resolution mechanisms

As noted above, China does have a corporate bankruptcy law which is beyond the reach of most SMEs. In addition, filing for bankruptcy requires special permission from local government. A related mechanism is for domestic government officials to call a conference in order to coordinate the creditors of a company whose rescue is deemed to be in the public interest. It is understood that the Government will find a way to penalize a creditor that deviates from the policy agreed in the conference. Clearly, the process is highly politicized. As noted above, of 969 distressed companies in our sample, only 21 went into formal bankruptcy while for 42 an informal conference was called.

Insert Table 13 here

As expected, Table 13 confirms that being an SOE strongly increases the likelihood of a government-sponsored resolution process. So is the affiliation with an industrial group. Interestingly, the likelihood of a government-sponsored resolution also increases with the number of creditor banks, which makes coordination more necessary, but also easier to implement as the government has a degree of influence on local banks. For the opposite reason, private creditors makes informal coordination more difficult.

6 Discussion and conclusions

The coincidence of strong performance and weak property rights have puzzled many students of the Chinese economy. Allen Qian and Qian (2005), observe that China "is an important counterexample to the findings in the law, institutions, finance, and growth literature: Neither its legal nor financial system is well developed." That the private sector has played such a pivotal role in the country's economic development "challenges the view that property rights and the lack of government corruption are crucial in determining financial and economic outcomes". Instead, they hypothesize that an alternative economic model "based on reputation

and relationships may be behind" China's success. However, neither the zeal of creditors to exploit the first-mover advantage, nor the ruthless methods used by "alternative lenders" is consistent with this hypothesis. Instead of an alternative relationship-based model, we document a system of institutional arrangements that are largely based on the concept of property rights, albeit instituted in a haphazard manner and, often, inadequately implemented, but still capable of incentivizing a fiercely competitive, at times opportunistic, behavior.

To further indicate that one need not invoke the notion of an alternative economic model in order to understand present-day China, we point out some interesting similarities with 18thcentury England and 19th-century United States, both on the cusp of becoming the world's dominant industrial powers, yet operating rudimentary financial systems. In the former case, we have already mentioned the violent conflicts around the conversion of communal land to private ownership, referred to as the system of enclosures. It is also worth mentioning that private incorporation was illegal in Britain before the repeal of the Bubble act in 1825; see Franks and Sussman (2005). We also document for the US violations of the property rights of some secured creditors in a landmark US railroad-insolvency case. In successive railroad bankrupties concepts of a stay on debt repayments, debtor in possession, and supra priority financing were developed by the Federal Courots, with hardly any assistance from central government. Only in the 20 th Century were these innovations standardized. Thus, the ad hoc nature of reforms bears much similarity to those in China in recent years. thus, the current sophistication of both countries' financial systems, built on the sound foundations of clearly defined property rights, was achieved through a lengthy process of piecemeal reforms over a remarkably long period of time.

Additionally, the outstanding performance of China's economy needs to be viewed in the historical context of the country's earlier implosion. For the better part of the previous millennium, China's share in world GNP was about a quarter, collapsing to just 5% by the 1950's; see Figure 1. A quick recovery from such self-inflicting harm is an implication of standard models of economic growth. This should not diminish the share of government, central and regional, in facilitating that remarkable recovery, through piecemeal market reforms, mostly of benign and local nature. One example is the 2012 reform analyzed in this paper. Another, perhaps more important is Deng Xiaoping reforms in the 1960's that allowed farmers to privately cultivate plots of communal land and, then, take their product to market. Rather than some "alternative economic model", China may owe its success to the accumulated effect of a multitude of such ad hoc, sometimes small,

reforms.

However, such a view of China's performance does call for a certain modification of our understanding of the concept of private property, including its relation to economic growth. In theory, the right to property is the right to use, deploy or alienate an asset in whatever manner the owner pleases. In practice the right to property is broken down to a cluster of separate rights: the right of usage does not imply a right to pledging, the right to pledge does not imply the right to alienate etc. In that respect, the views of North and Thomas (1973), that property rights are a necessary condition for a significant process of economic growth may seem somewhat simplistic. For that part of the cluster that binds in the later stage of economic development may not bind at an earlier stage; for example, absent a right to pledge was not binding in early agricultural reform, but did become binding at a more advanced stage of industrialization. Implementing the entire bundle at the onset of development may be an elegant solution in theory, but may be infeasible in practice. We point out a severe shortage of legally-trained human capital as an important impediment to instituting a fully-fledged system of property rights at the very early stage of economic development. We refer to the reader to the more evolutionary approach of the great English jurist, Henry Maine (1861).

In addition to historical insights, the study of economies at an earlier stage of institutional development can offer a valuable perspective into the working of mature markets. In an influential work, Jackson (1986) characterizes the condition of the distressed company using the metaphor of the common pool, prone to economically inefficient over-fishing in the form of a rush by creditors to grab as many assets as they can. It is implied that dealing with creditors runs is one of the main functions of corporate bankruptcy law. Our results expose the weakness of the common-pool argument. Remember that the companies in our sample had no access to bankruptcy law; their distress was handled, purely, through the enforcement of debt contracts and, in particular, clauses that deal with the repossession of collateral. For the basic function of such contracts is to allocate property rights on the distressed company's assets, thereby "privatizing the common pool" and resolving the over-fishing problem. Our results also explain the scarcity of evidence of creditors runs. Though many developed markets, from where most of the data for financial research originates, have certain deficiencies in their property rights, they are rarely so severe as to allow a party to establish possession of an asset just because it was the first to claim ownership.

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7 Tables and Figures

Figure 1: China, Western Europe and the United Stats

China, Western Europe and the United States, share in total world outpit, from the year 1000 to 2015. Quadratic time scale. Source: the Maddison Project, Bolt et. al. (2018).

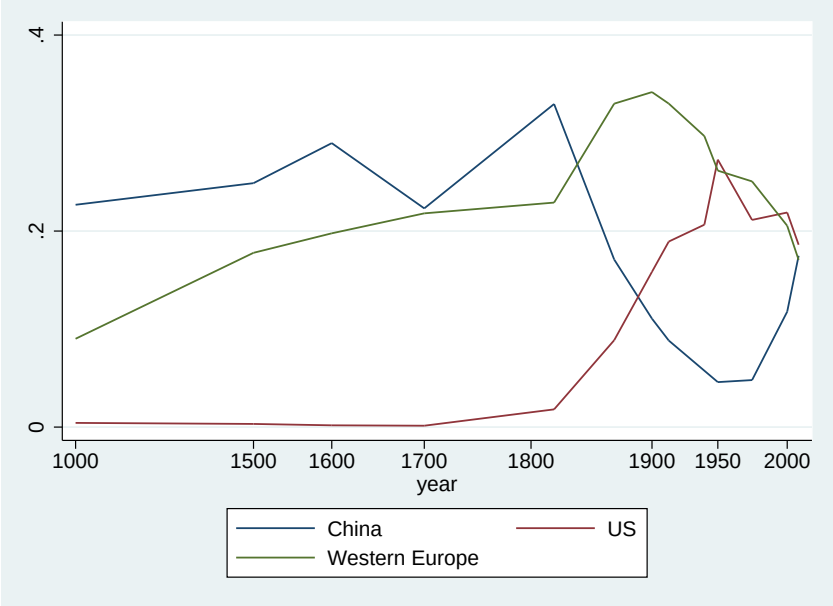

Table 1: Descriptive statistics, non-distressed sample versus distressed sample, 2008-2015

Descriptive statistics for the non-distressed sample versus the distressed, "working sample". The non-distressed sample aggregates more than half a million term loans at the level of the company and the year for the 2008-2015 period. There are 21,860 companies and 78,343 company years. The working sample includes 906 privately-resolved distressed companies, that is 969 distressed companies less 63 companies resolved via government-sponsored channels. The reported financial indicators in the working sample cover the year before default.

Pre-distressed sample, 21,860 companies, 78,343 company years			
	Mean	Median	S.D.
Total assets (Million RMB)	94.8	22.2	138.4
Sales (Million RMB)	87.6	32.3	158.3
ROA(%)	9.66	6.53	9.76
Total bank lending/Tot. assets	0.342	0.319	0.176
Distressed (working) sample, 906 companies, pre default			
Total assets (Million RMB)	86.5	37.3	132.3
Sales (Million RMB)	92.1	34.3	252.3
ROA(%)	9.73	6.65	9.32
Total bank lending/Tot. assets	0.335	0.296	0.159

Table 2: The response of TB to pending default

Panel regressions the non-distress sample of company years. Dependent variables are TB's interest rate and volume of lending. Default(-τ) is a dummy variable that receives the value of 1 τ year before default, $\tau = 1, 2$,and zero otherwise. Controls include Total Assets, leverage (total bank debt/total assets) and ROA. Firm and Year FEs also included. Standard errors in parenthesis; *, ** and *** indicate statistical significance at the at the 10%, 5% ans 1%, respectively.

	Interest rate (1)	log of TB lending (2)
Default(-1)	0.254***	-0.187**
	(0.032)	(0.083)
Default(-2)	0.152***	-0.041
	(0.042)	(0.110)
Firm FE	Yes	Yes
Year FE	Yes	Yes
Controls	Yes	Yes
N	73,675	73,675
R^2	0.049	0.287

Table 3: TB's recovery rates by debtor's entitlement, TB's seniority, the time of filing for recovery and applicability of the 2012 reform

Mean recovery rates on TB loans to 906 distressed debtors (the working sample). A debtor is classified as in-province if it operates in the same province as TB's and out of province otherwise. Titled debtors have titles on their productive assets, mainly land and buildings. TB is considered secured where the title is pledged to it and unsecured otherwise, assuming that the title was pledged to another bank. Whether secured or unsecured, TB may file first for recovery in an attempt to progress its position up the seniority ladder. The sample is also split by the time that the debtor entered distress, before or after the 2012 reform, and by the timing of court action, whether TB filed for recovery first, or not.

	In province debtors		Out of province debtors	
	Before	After	Before	After
	(1)	(2)	(3)	(4)
Titled debtors				
TB secured, filed first	0.765	0.820	0.753	0.739
TB secured, did not file first	0.449	0.804	0.538	0.492
TB unsecured, filed first	0.671	0.353	0.661	0.676
TB unsecured, did not file first	0.263	0.256	0.282	0.308
Untitled debtors				
TB unsecured, filed first	0.670	0.685	0.725	0.753
TB unsecured, did not file first	0.262	0.288	0.296	0.289

Table 4: The effect of the 2012 reform on TB's recovery rate, conditional on first-filing for repossession

Difference-in-difference regressions, testing the effect of the 2012 reform on TB's recovery rates, by security and time of filing, using 906 distressed debtors (the working sample). The sample is split to the treatment group – titled borrower in province, in Column (1), and the control group, both untitled debtors in province and all out of province debtors, in column (2). Post12 is a dummy variable that equals 1 if the company enters distress post 2012 and 0 otherwise; TB-secured is a dummy variable that equals 1 if title is pledged to TB and 0 otherwise. (It is assumed that titled borrowers who did not pledge a title to TB have done so to another bank.) Filed First is a dummy variable that equals to 1 if TB file for repossession ahead of all other creditors. All interactions are included in the regressions but only the economically interesting ones are reported. Controls include: total assets, leverage ratio, ROA, local GDP and employment rate. FEs include for the city where the borrower is located, time and industry.. *, **, and *** are corresponding to significant level of 10%, 5% and 1%.

	TB's recovery rate	
	Treatment: titled in province	Control: the rest
	(1)	(2)
Filed First	0.417***	0.490***
	(0.105)	(0.141)
Post12 ×Filed First	-0.333***	-0.059
	(0.138)	(0.155)
Post12 ×TB-Secured	0.399***	-0.071
	(0.109)	(0.178)
Post12×TB-Secured×Filed First	0.018	0.046
	(0.170)	(0.259)
Controls	Yes	Yes
Years FE	Yes	Yes
Industry FE	Yes	Yes
R^2	0.533	0.346
N	318	588

Table 5: Debt structure and resolution for the distressed firms before and after the 2012 legal change for both borrowers within and outside the province

Debt structure and performance, for in/out of province borrowers, before and after 2012, with and without titles for 906 TB borrowers in default (the working sample). Titled (untitled) borrowers (don't) have titles on their productive assets, mainly land and structures. Bank lending against a pledged title is defined as secured; all other bank lending is classified as unsecured, even though some forms of guarantees exist in many. (In a few rare cases, the titles was pledged to more than one lender, in which case the junior one is classified as unsecured). Private lending is by non banks finance operators. Column (1)-(2) reports the number of providers within each category. Column (3)-(4) reports the amount of lending within each category, divided by the borrower's total assets. Column (5)-(6) reports the interest-rate spread, above the Bank of China base rate.Column (7)-(8) reports the value of the collateral, divided by the borrower's total assets. Column (9)-(10) report the share of loans called back by the lender before loan maturity. Column (11)-(12) reports the share of borrowers who fled. Column (13)-(14) reports the share of borrowers who survived bankruptcy.

Panel A: In-province borrowers														
	Collateral/Tot. assets		#(creditors)		Lending/Tot. assets		Interest spread (%)		Loan called		Share of fleeing		Share of surviving	
	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Titled borrowers											0.242	0.082	0.094	0.189
Secured bank lending	0.345	0.349	1	1	0.172	0.237	0.585	0.181	0.13	0.011				
Unsecured bank lending			2.818	2.275	0.146	0.130	0.881	1.688	0.16	0.034				
Private lending			3.857	2.785	0.049	0.008	17.542	19.482	0.255	0.059				
Untitled borrowers											0.28	0.338	0.095	0.074
Unsecured bank lending			3.722	3.518	0.172	0.142	0.899	1.446	0.177	0.183				
Private lending			2.98	3.185	0.09	0.116	19.185	19.853	0.245	0.253				

Panel B: Out-of-province borrowers														
	Collateral/Tot. assets		#(creditors)		Lending/Tot. assets		Interest spread (%)		Loan called		Share fleeing		Share surviving	
	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9	(10)	(11)	(12)	(13)	(14)
Titled borrowers											0.223	0.234	0.09	0.092
Secured bank lending	0.373	0.381	1	1	0.179	0.193	0.658	0.698	0.087	0.078				
Unsecured bank lending			2.495	2.718	0.124	0.121	1.073	1.059	0.167	0.169				
Private lending			3.303	3.499	0.044	0.046	19.382	19.189	0.252	0.255				
Untitled borrowers											0.282	0.293	0.101	0.091
Unsecured bank lending			3.284	3.452	0.152	0.148	0.96	0.958	0.173	0.179				
Private lending			2.999	2.952	0.09	0.092	19.47	19.357	0.244	0.271				

Table 6: The impact of the 2012 reform on creditors calling back loans and company survival

Difference-in-difference regressions testing the effect of the 2012 reform on the probability that creditors call back their loans, by creditor class, using 906 distressed debtors (the working sample). Post12 is a dummy variable that equals 1 if the default occurred post 2012 and 0 otherwise; Titled is a dummy variable that equals 1 if the debtor has title on her productive assets and 0 otherwise. In-province is a dummy variable that receives a value of 1 if the debtor is located within TB's province and 0 otherwise. All interactions are included in the regressions but only the economically interesting ones are reported. In columns (1) to (3) the dependent variable is a dummy that equals one if any creditor within the class calls back the loan before maturity. Creditor classes are secured banks, unsecured banks and private (alternative) non-bank lenders. Only titled companies can issue secured loans, which truncates sample size in column (1). It follows that Titled=1 for all 431 observations in column (1), so that the triple interaction reduces to just a double interaction in that column. In column (4), the dependent variable is a dummy that equals 1 if the debtor survived distress. Controls include: total assets, leverage ratio, ROA, local GDP, employment rate. FEs include time and industry. *, **, and *** are corresponding to significant level of 10%, 5% and 1%.

	Prematurely called by creditor class:			debtor survives
	secured	unsecured	private	
	(1)	(2)	(3)	(4)
Post12×Titled×In-province	-0.126**	-0.127**	-0.213**	0.112**
	(0.059)	(0.062)	(0.101)	(0.051)
Interactions	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
FEs	Yes	Yes	Yes	Yes
R^2	0.101	0.107	0.149	0.059
N	431	906	906	906

Table 7: The impact of the 2012 reform on bank and private lending

Difference-in-difference regressions testing the effect of the 2012 reform on lending by different classes of creditors, using 906 distressed debtors (the working sample). Creditor classes are secured banks, unsecured banks and private (alternative) non-bank lenders. Post12 is a dummy variable that equals 1 if the debtor entered distress post 2012 and 0 otherwise; Titled is a dummy variable that equals 1 if the debtor has title on her productive assets and 0 otherwise. In-province is a dummy variable that receives a value of 1 if debtor is located within TB's province and 0 otherwise. All interactions are included in the regressions but only the economically interesting ones are reported. In columns (1) to (4) the dependent variable is the amount of credit provided by each creditor class as a percentage of total assets. Only titled companies can issue secured loans, which truncates sample size in column (1). It follows that Titled=1 for all 431 observations in column (1), so that the triple interaction reduces to just a double interaction in that column. In columns (5) and (6), the dependent variable is the total number of unsecured and private creditors, respectively. Controls include: total assets, leverage ratio, ROA, local GDP, employment rate. FEs include for the city where the borrower is located, time and industry. *, **, and *** are corresponding to significant level of 10%, 5% and 1%.

	Lending/Tot. assets				Number of creditors	
	Secured	Unsecured	Total bank lending	Private	Unsecured	Private
	(1)	(2)	(3)	(4)	(5)	(6)
Post12×Titled×In-province	0.073**	-0.008	0.083***	-0.021**	-0.633	-1.015
	(0.027)	(0.038)	(0.026)	(0.011)	(0.951)	(0.953)
Interactions	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.562	0.091	0.276	0.282	0.203	0.106
N	431	906	906	906	906	906

Table 8: The impact of the 2012 reform on the cost of credit and the incidence debtors fleeing

Difference-in-difference regressions testing the effect of the 2012 reform on the interest rate charged by various classes of creditors as well as a proxy for violence against debtors, using 906 distressed debtors (the working sample). Creditor classes are secured banks, unsecured banks and private (alternative) non-bank lenders. Post12 is a dummy variable that equals 1 if the debtor entered distress post 2012 and 0 otherwise; Titled is a dummy variable that equals 1 if the debtor has title on her productive assets and 0 otherwise. In-province is a dummy variable that receives a value of 1 if the debtor is located within TB's province and 0 otherwise. All interactions are included in the regressions but only the economically interesting ones are reported. In columns (1) to (3) the dependent variable is the spread charged by the respective credit class over and above the Bank of China base rate. Only titled companies can issue secured loans, which truncates sample size in column (1). It follows that Titled=1 for all 431 observations in column (1), so that the triple interaction reduces to just a double interaction in that column. In column (4), the dependent variable is a dummy that equals 1 if the debtor flees the province, her whereabouts unknown to TB. Controls include: total assets, leverage ratio, ROA, local GDP, employment rate. FEs include time and industry. *, **, and *** are corresponding to significant level of 10%, 5% and 1%.

	Interest-rate spread (%)			Owner fleeing
	Secured	Unsecured	Private	
	(1)	(2)	(3)	(4)
Post12×Titled×In-province	-0.461*	0.818*	2.201*	-0.168***
	(0.246)	(0.427)	(1.235)	(0.054)
Interactions	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
R^2	0.596	0.051	0.182	0.134
N	431	906	906	906

Table 9: Key performance indicators, in distress time, for 101 survivors, not/treated by the 2012 reform

Key performance indicators, for 101 debtors who survived distress, along a distress time path. Distress time, τ, is measured in years, with $\tau = 0$ being the year when the debtor entered distress. Survival is defined by still being active and banking with TB 2 at $\tau = 2$. Loans and ROA are measured against total assets at $\tau = -2$.

Distress time, τ, years	-2	-1	0	1	2
Treatment group: titled survivors, in province, post 2012 ($N = 35$)					
Total assets (RMB, millions)	152.3	147.2	115.3	128.3	142.4
Sales (RMB, millions)	132.4	121.3	93.7	115.35	125.32
ROA (% of Total Assets at $\tau = -2$)	6.1	6.1	2.5	5.3	6.2
Secured loans (% of Total Assets at $\tau = -2$)	36.3	35.0	32.5	34.3	36.3
Unsecured loans (% of Total Assets at $\tau = -2$)	6.3	6.3	6.0	6.9	6.9
Private loans (% of Total Assets at $\tau = -2$)	0	0.1	1.3	1.4	0.8
Control group: other survivors ($N = 66$)					
Total asset (RMB, millions)	140.4	136.0	61.7	89.1	117.2
Sales (RMB, millions)	126.1	118.4	37.5	93.5	98.8
ROA (% of Total Assets at $\tau = -2$)	5.9	6.1	-3.0	1.3	5.6
Secured loans (% of Total Assets at $\tau = -2$)	14.4	11.6	7.1	11.7	13.0
Unsecured loans (% of Total Assets at $\tau = -2$)	12.6	10.1	9.1	10.5	11.2
Private loans (% of Total Assets at $\tau = -2$)	0.0	1.4	3.5	3.3	2.3

Table 10: First stage IV

First-stage regression and and some exclusivity tests of the instrumental variable using 906 borrowers in default (the working sample). The instrument variable, Urban equals 1 if the titled debtor was operating out of her respective locality already 2 years before zoning laws were changed so as to allow an operators in that locality to acquire title. The exclusivity tests in columns (2)-(7) demonstrate that the instrumental is likely to operate through other channels, such as the size, profitability, or the industry distribution. We control for total assets, leverage ratio, ROA, FEs time and industry. *, **, and *** are corresponding to significant level of 10%, 5% and 1%.

	First stage	Exclusivity tests					
	Titled	Size	Profitability	Government	Industry Profitability	Post12	In Province
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Urban	0.612***	0.125	0.016	0.003	0.043	-0.001	0.121
	(0.040)	(0.080)	(0.157)	(0.016)	(0.033)	(0.033)	(0.147)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
City FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.228	0.363	0.010	0.158	0.350	0.020	0.395
N	906	906	906	906	906	906	906

Table 11: Instrumental variable and falsification tests

Robustness tests for three key performance variables. In columns (1) and (4), the dependent variable is a dummy that receives a value of 1 if the debtor survives and 0 otherwise. In columns (2) and (5) the dependent variable is a dummy that receives the value of 1 if the debtor flees and 0 otherwise. In columns (3) and (6) survival the dependent variable is total bank credit. In columns (1) to (3) we perform an IV estimation using Table 10's Urban variable as an instrument. In columns (4) to (6) we perform a falsification test using the pre-reform period. For the falsification test, Post10 is a dummy variable that equals 1 if the debtor entered distress post 2010 and 0 otherwise; Titled is a dummy variable that equals 1 if the debtor has title on her productive assets and 0 otherwise. In-province is a dummy variable that receives a value of 1 if the debtor is located within TB's province and 0 otherwise.All interactions are included in the regression but only the two below are reported. We control for total assets, leverage ratio, ROA, FEs for the city where the borrower is located, time and industry. *, **, and *** are corresponding to significant level of 10%, 5% and 1%.

	IV			Falsification test		
	Debtor survives	Owner flees	Total bank credit	Firm survives	Owner flees	Total bank credit
	(1)	(2)	(3)	(4)	(5)	(6)
Post12×Titled	0.168***	-0.361***	0.325**			
	(0.062)	(0.119)	(0.160)			
Post10×Titled×In-province				-0.070	0.094	-0.003
				(0.097)	(0.990)	(0.259)
Controls and Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.226	0.130	0.204	0.148	0.505	0.336
N	675	675	675	111	111	111

Table 12: Effect of the reform on bank landing - by the amount of titled assets

OLS regressions, refining results in Table 7 column (3) regarding the effect of the 2012 reform on total bank credit, by the amount of titled assets. The dependent variable is the Total bank lending/Total Assets. In Column (1), titled assets as a percentage of total assets, is allocated into quartile dummies; for example, Title25-50 equals 1 if the that percentage is between 25% and 50%. In Columns (2) to (4), the dummies are defined by that percentage exceeding the quartile threshold; for example, Title>50 equals 1 if that percentage exceeds 50%. All interactions are included, but only the triple interaction is included. Controls include: total assets, ROA, local GDP, employment rate. FEs include time and industry. *, **, and *** are corresponding to significant level of 10%, 5% and 1%.

	Total bank lending/Total assets			
	(1)	(2)	(3)	(4)
Titled25-50	0.058***			
	(0.017)			
Titled50-70	0.116***			
	(0.017)			
Titled75+	0.345***			
	(0.017)			
Titled $>$ 25		0.172***		
		(0.017)		
Titled $>$ 50			0.201***	
			(0.014)	
Titled $>$ 75				0.282***
				(0.015)
Interactions	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
R^2	0.517	0.318	0.395	0.475
N	906	906	906	906

Table 13: State-sponsored resolutions and firm characteristics

OLS regressions that correlate government-sponsored resolution, applied to 63 cases, with certain company characteristics using 969 distressed debtors. In column (1) the dependent variable is a dummy that equals 1 if the debtor enters a formal bankruptcy and 0 otherwise. In column (2) the dependent variable is a dummy that equals 1 if the creditor banks organize a conference to coordinate a resolution and zero otherwise. Affiliated to a group is a dummy variable that equals 1 if the borrower is a subsidiary of a large conglomerate. We control for the total asset, leverage ratio, ROA, year, industry, city fixed effects. *, **, and *** are corresponding to significant level of 10%, 5% and 1%.

	Bankruptcy	Conference
	(1)	(2)
SOE	0.059***	0.101**
	(0.022)	(0.041)
Affiliated to group	0.136***	0.070**
	(0.016)	(0.031)
Number of bank creditors	0.000	0.011***
	(0.001)	(0.002)
Number of private creditor	0.000	-0.006**
	(0.001)	(0.003)
Control	Yes	Yes
Year dummy	Yes	Yes
Industry dummy	Yes	Yes
City dummy	Yes	Yes
R^2	0.196	0.119
N	969	969