Law and Finance in China: The Role of Xinfang

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Abstract

Although *xinfang* is not part of the judicial system, and therefore is largely ignored by scholars studying the law and finance in China, xinfang is a formal institution that addresses an array of commercial, contractual, property, and financial disputes and that often handles more cases than the judicial system. We construct the first cross-province, cross-time measures of xinfang effectiveness and discover that differences in xinfang are associated differences in industry and firm financing patterns that are consistent with the law and finance view.

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JEL codes: K00, G3, O16, O43, O53, K15.

I. Introduction

An extensive literature explores how legal systems shape the operation of financial markets. As discussed by La Porta et al (1998, 1999, 2008), Gennaioli and Shleifer (2007), and Levine (2005), legal systems differ in how effectively they safeguard private property from encroachments by the state or others, enforce contracts, resolve disputes, and adapt to support the evolving demands of firms and individuals in a dynamic economy. In turn, a large body of empirical work confirms that these legal system differences impact the functioning of financial systems and the financing of firms, e.g., La Porta et al (1997, 1998, 1999, 2000, 2008), Demirguc-Kunt and Maksimovic (1998), Beck et al (2003), and Djankov et al (2003, 2008), Qian and Strahan (2007), Brown et al (2013, 2017), and many others.

Evidence from China, however, challenges this law and finance view. Allen et al. (2005) find that the fastest growing firms in China do not rely on formal legal or financial systems, raising questions about the applicability of the law and finance view to China. Using a much larger database, however, Ayyagari et al. (2010) show that Chinese firms receiving bank loans experience faster growth than firms receiving informal financing. None of these authors, however, provides direct evidence on how the Chinese legal system shapes the operation of financial markets and the financing of firms.

In this paper, we (1) construct a new dataset on a central institution for protecting private property, enforcing contracts, and resolving disputes in China—the Xinfang system—and (2) use these data to reevaluate the relationship between the law and finance in China. Although the Xinfang system is not part of the judicial system, and therefore has often been ignored by western scholars studying the Chinese legal system, the Xinfang system is a formal institution that plays key roles in addressing a wide array of legal system disputes. Indeed, the Xinfang system often handles more cases than the judicial system. Therefore, ignoring Xinfang will yield only a partial view of the formal systems in China that address commercial and financial disputes and might, therefore, lead researchers to draw misleading inferences about the law and finance nexus in China. We develop cross-province, cross-time measures of the effectiveness of Xinfang institutions in protecting private property, enforcing contracts, and resolving disagreements. We believe that we are the first to construct such measures. We then evaluate whether the relationship between cross-province differences in Xinfang and corporate financing patterns are consistent with key predictions from the law and finance literature.

Xinfang has operated in China for over three thousand years (Liu, 2005). During imperial times, Xinfang served a crucial governance role: It allowed citizens to report grievances against local officials to authorities at the provincial or even central government level, helping to mitigate

agency problems between the emperor and his hierarchy of officials through provinces, prefectures, counties, townships, etc. This governance role continued after the Communist Party came to power in 1949. More recently, Xinfang has expanded its role to address disputes concerning the legal rights of individuals and the enforcement of contracts among individuals and firms. In particular, the explosive growth of the Chinese economy since the 1970s created demands for an assortment of new commercial and financial arrangements. The Chinese courts have been slow to supply these services, partially because the courts require the enactment of new bodies of law and the development of procedures for enforcing those new statutes. Xinfang, however, has evolved to address modern commercial and financial disputes in a manner that parallels, and sometimes replaces, the courts. Today, individuals and firms in China can initiate a case in the courts or Xinfang and if a plaintiff or defendant is unsatisfied with a court's decision, they can file a grievance with Xinfang to have the decision overruled[1].

To get a further sense of how omitting the Xinfang system could impede research into the law and finance in China, it is helpful to compare Xinfang and the Chinese judiciary with respect to two key legal system traits: independence and adaptability. First, La Porta, Lopez-de-Silanes, Shleifer, Pop-Eleches, and Shleifer (2004) note that independence tends to enhance the ability of legal systems to protect individuals and their property from the potentially coercive power of the state. Across much of China, Xinfang enjoys greater independence from local politics than the judiciary, potentially giving it an advance in addressing disputes. In particular, local governments (prefectures, counties, and townships) have considerable influence over local courts by setting budgets and appointing, promoting, and dismissing court officials. This influence can adversely affect the objective application of the law through the courts at the local level.[2] In contrast, local officials typically have less influence over local Xinfang bureaus, because participants in Xinfang disputes can readily appeal cases to the provincial (and national) Xinfang offices. While it would be wrong to argue that Xinfang is independent of the government, as Xinfang officials are government bureaucrats, it would also be wrong to characterize the Xinfang systems as reflecting the political preferences of local officials to the same degree as the courts. Thus, omitting Xinfang could materially affect studies of the degree to which the Chinese legal system objectively and effectively protects private property, enforces contracts, and facilitates the operation of the financial system in China.

Second, there are notable differences between the Xinfang and court systems with respect to adaptability. As emphasized by Levine (2005) and Gennaioli and Shleifer (2007), adaptability

[1] See http://www.gjxfj.gov.cn/2015-09/23/c_134650967.htm for an example (in Chinese).
[2] A survey of 632 disputants in Xinfang bureaus in Beijing shows that 78% of them regard local officials as "less trustworthy" than higher level government officials (Cai, 2002).

shapes how effectively legal institutions evolve to support the commercial and financial needs of dynamic economies. In China, the government enacts laws and courts implement them, with little avenue for the law to evolve through the court's interpretation and resolution of particular cases. Under the Xinfang system however, disputes are resolved by consulting the law, social norms, and principles of fairness articulated in the constitution. As such, the Xinfang system can adapt to changing economic conditions as it seeks efficient resolutions to particular cases. The ability of Xinfang to adapt effectively to changing economic conditions is further enhanced by the provincial-level organization of Xinfang: each province adapts to the demands of its firms and individuals. Thus, ignoring Xinfang could materially distort studies of the Chinese legal system, especially during its recent period of extraordinary growth.

The results are consistent with predictions from the law and finance literature: In provinces with stronger Xinfang institutions, more external finance flows to industries that depend heavily on external finance. This result holds when controlling for both province-year and industry-year fixed effects, reducing concerns that the results are driven by an omitted variable. The estimated coefficients suggest that the economic magnitudes are large. If a province were to move its Xinfang index from the 25th percentile to the 75th percentile of the cross-province distribution, the coefficient estimates imply that the external finance measures for industries that depend heavily on external credit would rise higher than the measures of industries with less dependence on external credit by 12%-18% of the sample means.

Finally, we show that the predictions of the law and finance view hold when examining cross-firm differences. In particular, we evaluate the hypothesis that privately-owned firms rely more on the judicial and Xinfang enforcement of contracts than state-owned firms, as stressed by Acemoglu and Johnson (2005). We therefore test whether Xinfang has a more pronounced, positive relationship with firm financing in privately-owned firms. Our findings are consistent with the hypothesis. We find that positive relationship between external finance and cross-province Xinfang effectiveness is much more pronounced among privately-owned firms than it is among state-owned firms.

Our work emphasizes the importance of institutional adaptability. Although the transformation of the Chinese economy over the last three decades created demands for—and perhaps required—the development of legal institutions to support new commercial, corporate, and financial arrangements, the legislature and courts were unable to adapt effectively by writing, enacting, and implementing new statues. Xinfang, however, evolved to satisfy these demands. Consistent with the views of Levine (2005) and Gennaioli and Shleifer (2007), the "common law" characteristics of xinfang facilitated its adaptability. Specifically, dispute resolution under the

xinfang system does not only depend on application of statutory rules but also on social norms and common views of fairness, which gives xinfang bureaus greater discretion to efficiently address emerging contractual challenges. The evidence suggests that xinfang helped reduce the gap between the contracting needs of the economy and the capabilities of the legal system (Beck and Levine, 2003).

We also provide new data about a fundamental—if not the fundamental—institution for protecting private property and enforcing contracts in China. Specifically, we first note the central role of xinfang in protecting private property rights, addressing contract disputes, and adapting to support a burgeoning array of commercial and financial interactions in China. Although xinfang is not defined as part of the judicial system, and therefore has been largely ignored by western scholars, it nevertheless provides these vital legal functions to the economy and should be incorporated into assessments of the law and finance in China.

The remainder of this paper proceeds as follows. Section II introduces the institutional background, section III describes the data, section IV presents empirical methodology and the results, section V conducts robustness tests and section VI concludes.

II. Institutional Background on the Xinfang System

Xinfang emerged about 3,000 years ago as a formal system for resolving disputes (Liu, 2005). During imperial times, the Xinfang system allowed citizens to report complaints directly to the central government. Over time, Xinfang developed into a system that parallels, and sometimes even replaces, the legal system (Minzner, 2006). For example, some provincial Xinfang regulations now require that (1) Xinfang bureaus have the ability to address the full range of legal system disputes and accept "appeals of illegal decisions" made by governments and courts (Minzner, 2006) and (2) Xinfang workers have detailed knowledge of regulations and laws, provide legal advice to citizens, and invite legal professionals to provide such counseling when Xinfang workers do not have sufficient expertise. In terms of operations, the Xinfang system addresses a wide array of disputes including those involving private property, commercial and financial contracts, whistle-blowing of illegal behaviors by government officials, and appeals of rulings by regional governments and courts in the following manner (Liu 2005; Minzer, 2006).

In addition to the notable differences between the Xinfang system and the Chinese judiciary on independence and adaptability, they also differ in terms of efficiency, costs and enforcement quality. While a Xinfang case takes up to three months to reach a judgement, a litigation case typically takes six months to receive the court decision. Xinfang system does not charge any fee in dispute resolution, but judicial system incurs court and attorney fees. Finally,

local courts often find difficult to enforce court judgements due to the lack of resources. The Xinfang judgements, however, are from the governments, which has the power to ensure they are performed. Xinfang system is widely used in China presumably because of these features. Figure 1 shows that the number of cases filed in the Xinfang system was substantially larger than those filed in the legal system during 1986-2001 period.

Recent statements by President Xi emphasize the continuing importance of the Xinfang system under his administration. For example, on the 21st of April 2016, President Xi urged that "all governments and government agencies should attach great importance to Xinfang operations, strengthen their responsibility to the Xinfang system, and combine law, state policy, economic conditions, and administrative policies to resolve Xinfang cases and meet citizens' reasonable and legitimate demands."[3] As another example, on the 20th of July 2017, President Xi stressed that "party committees, governments and officials at all levels should consider Xinfang as one of the most important tasks on their job lists. They should do everything possible to solve the cases for the people."[4] China's recent anti-corruption campaign also heavily relies on Xinfang cases to identify corrupt government officials to start inspections.[5]

III. Data

In this section, we describe the key data that we use in our examination of the link between the Xinfang system and corporate finance. We start by detailing the data sources on provincial Xinfang regulation, our codification of these regulations, and the construction of the Xinfang index.[7] We then describe the data on corporate finance at the provincial, industry, and firm levels as well as other data used in our analyses. Table A1 gives detailed variable definitions and information on data sources. Table 3 provides summary statistics.

1. The Xinfang Index

1.1. Provincial Xinfang Regulations

We first obtain the annual directories of provincial regulations published by the State Council in the Law Yearbook of China, which covers the period from 1991 through 2014.[8] The

[3] See http://politics.people.com.cn/n1/2016/0421/c1024-28295004.html.
[4] See http://dangjian.people.com.cn/n1/2017/0720/c117092-29416533.html (in Chinese)
[5] See http://www.ccdi.gov.cn/lswh/lilun/201311/t20131112_119297.html (in Chinese)
[7] The National Xinfang Bureau provides an English-translated example of the document describing the operation of the Xinfang system in a province (see http://www.gjxfj.gov.cn/2006-03/07/content_6399309.htm).
[8] The Law Yearbooks of China are available through CNKI Yearbook Database (http://nianjian.cnki.net).

directories contain important information on the titles of provincial regulations, as well as information on amendments and start dates. [9]

Since the directories only provide the titles of the provincial regulations, we obtain the content of provincial Xinfang regulations from official government websites, and three databases 1) CNKI database, 2) PKULAW database, and 3) Wanfang database.[10] We first search "province name + xinfang regulations + year" and choose the websites with the suffix of "gov.cn" and find 34 out of 60 Xinfang regulations in the official government websites. For the remaining 26 provincial Xinfang regulations, we search "province name + xinfang regulations + year" in the three databases listed above and find that 20 out of the remaining 26 provincial Xinfang regulations appear in two of the three databases (identify copies) and five appear in one of the databases. We cannot find information on Shandong Interim Xinfang Regulation (1992) in any of the listed databases, but we were able to piece these together from several other sources. Although we include data on Shandong Interim Xinfang Regulations in our analyses below, all of the results hold when excluding these data. Table A2 list the sources of the Xinfang regulations. Table 1 shows the summary of the provincial Xinfang regulations.

[Insert Table 1 about here]

1.2. Codifying Xinfang Features

To codify Xinfang regulations, we gather information on 52 features of Xinfang for each province in each year. These features reflect the Xinfang quality on three aspects: namely the efficiency of dispute resolution, the degree to which a province's Xinfang system supports individuals and firms to access Xinfang, and the degree to which Xinfang systems punish and reward Xinfang officers for treating participants well and resolving cases expeditiously and fairly. Each category is immediately described below. Table 2 shows a summary of these features.

[Insert Table 2 about here]

[9] There are two types of titles: titles of specific regulations and titles named "Notice of Amendments of Some Local Regulations." For the latter, the directories do not indicate which regulations the government intends to amend, so we trace these amendments to official government websites and identify if the amendments contain Xinfang regulations. In total, about 90% of the titles in the directories are specific regulations and the rest are amendments. In total, we obtain 48 such directories that correspond to the 24 Directories of Local Regulations and 24 Directories of Local Government Regulations.

[10]More specifically, CNKI was founded by Tsinghua University in 1999, supported by the Ministry of Education and the Ministry of Technology and Science. It can be accessed through http://cnki.net/. PKULAW was founded and operated by Peking University, School of Law. Subscription is needed to access. Website address is http://pkulaw.cn/. Wanfang database was founded by China Science and Technology Information Institute. Subscription is needed to access. Website address is http://www.wanfangdata.com/.

There are eight features that measure the speed of dispute resolution. As stressed by Djankov et al. (2003), the duration of dispute resolution is crucially associated with consistency and fairness in judicial decisions. We label this category as the *speed index*. The way a provincial Xinfang system supports citizens and firms to file complaints can take many forms. For example, a provincial Xinfang system can provide various mechanisms of dispute resolution including holding public hearings, paying visit to disputants, and holding Xinfang officers accountable for unsolved cases, etc. A province's Xinfang system can also facilitate individuals access Xinfang through providing standardized documentation files, accepting cases written in minority languages, allowing collective actions, etc. In total, there are 37 features that fall into this category and we label it as *support index*. Finally, there are seven features that aim to provide incentives to Xinfang workers. These features punish behaviors that harm the operation of the Xinfang system and reward actions that benefit the functioning of the system. We thus label this category as *incentive index*.

For 40 out of these 52 features, we assign the value of one to provinces in years where the provincial Xinfang regulations specify the feature and zero otherwise. For example, when the Xinfang systems mention the speed of dispute resolution, this is coded as a one; and when the Xinfang system discusses the rewards and punishments regarding the treatment of citizens by Xinfang workers, then this category of Xinfang regulations is coded a one. For 12 Xinfang traits, which are harmful to functioning of the provincial Xinfang system, we assign a value of zero when a provincial Xinfang regulation in a year has such trait and one otherwise. For example, we assign the value of zero if a provincial Xinfang regulation in a year requires that individuals and firms must accept the Xinfang judgment, with less ability to appeal.

1.3. Constructing Xinfang Index

To construct the xinfang index, we combine the 52 binary measures to form an overall measure of the quality of provincial xinfang systems. Following the approach used in most law and finance literature, each of the features is weighted equally in the Xinfang index (La Porta et al., 1997; 1998; 1999; 2000). The dataset covers the period of 1992-2014 and 27 provinces. Some provinces promulgated their first xinfang regulation after 1992. The total number of province-year observations is 519. After merge with financial development measures over 1998-2009, the number of observation reduces to 336. Figure 2 shows the equal-weighted Xinfang index, averaged during 1998-2009, across Chinese provinces and Table 3 provides summary statistics. The results presented in Table 4-9 are based on this measure. For robustness checks, we show that the results are materially consistent for four different weighting schemes in section V.

[Insert Figure 2 and Table 3 about here]

2. Financial Development Indicators

The provincial-, industry-, and firm-level measures of corporate financing are based on the National Statistics Bureau's *Annual Surveys of Industrial Production*. It provides firm-level data from 31 provinces over the period from 1998-2009. There are about 1.6 million observations, covering about 95% of China's total industrial output each year. The surveys provide information on the number of employees, the year that the firm was established, industry, sales, ownership type, and debt structure. The advantage of such data is its extensive firm coverage and therefore its representativeness of the functioning of the debt markets. Song et al. (2011) and Hsieh and Klenow (2009) also use this database.

It is important to note that *Annual Surveys of Industrial Production* covers industrial firms with revenue equal to or larger than 500 million RMB each year. It is likely that firms around the threshold may be included in one year, and excluded in another year. This may raise concerns that our empirical evidence may be driven by the cross-time, cross-province differences in coverage of firms. However, to bias our results, the survey coverage must change in a way that it includes more firms with higher level of debts in a province-year when the Xinfang index increases and/or includes less highly-leveraged firms in a province-year when the Xinfang index decreases. In section V, we show that firms with higher revenues are actually associated with higher level of total debts in our sample[11]. The results remain consistent after excluding observations near the near the threshold (i.e. firms with revenues between 500-550, 500-600, 500-650 or 500-800 million RMB).

At the province-level, we use four indicators. *Total liability to GDP* equals the total liabilities of firms in a province divided by the provincial gross product. It measures the extent to which a province's savings are channelled to its firms through financial institutions and inter-firm financial transactions. As shown in Table 3, *Total liability to GDP* ranges from 0.003% to 0.111%, with sample mean of 0.043% and the standard deviation of 0.02%. Similarly, *Current liability to GDP*, *Long-term liability to GDP*, and *Trade Credit to GDP* equal to the total current liability, long-term liability and account payable aggregated from firms within the same province, divided by the provincial gross product, respectively. Table 3 implies that an average firm covered in the sample has a debt structure mostly covered by current liability, as the mean of *Current liability to GDP* accounts for 74% of the mean value of *Total liability to GDP*.

At the industry-level, we use four similar access-to-finance measures. Instead of aggregating at province level, we combine firm debt at province-industry level, and then divide

[11] The elasticity between the amounts of debt and revenue is 0.67, meaning a one percent increase in revenue is associated with 0.67 percent increase in total debts.

them by their respective aggregated revenues. Specifically, *Total liability to revenue* equals the total liability aggregated from firms in the same industry, same province, then divided by the corresponding total revenues. As reported in Table 3, *Total liability to revenue* ranges from 0.07 to 16.37, with a mean of 1.26 and a standard deviation of 1.39. We also scale the industrial-aggregated debt measures by their corresponding industrial output and sale value, since revenue may not best represent industrial gross product. Parallel to the provincial measures, the mean of current liability measures accounts for about 70% of the mean value of total liability measures as shown in Table 3.

At the firm -level, we use four measures to gauge the extent to which firms get access to finance from the financial system and receive trade credit from other firms. Specifically, Total liability to total assets equals firm's total liability divide by total assets. It ranges from 0.01 to 0.98 as shown in Table 3, with a mean of 0.53 indicating that a typical firm would have a capital structure equally divide between debt and equity. Similarly, Current liability to total assets, Long-term liability to total assets, and Trade credit to total assets equal to firm's current liability, long-term liability and account payable divided by total asset, respectively.

To estimate the relation between provincial Xingfang index and the financial development measures, there is a concern on cross-province financing. We emphasize that if firms located in one province can borrow from lenders located in other provinces to the same extent as firms borrow from local lenders, the Xinfang-finance relationship we present in this paper would not change. In fact, under this strong assumption, firms across the entire China would face the same debt market and therefore potentially unobserved differences across provincial debt markets that could bias our results would no longer exist. In this scenario, however, the Xinfang-finance link may also be a result of the crowding out effects. That is, when lenders in provinces with poor Xinfang institutions give loans to firms located in provinces with better Xinfang quality, there would be less external finance available for firms in poor Xinfang provinces. However, lack of cross-province finance data, we are not able to differentiate between these effects. In section V, we conduct several sensitivity tests to assess to what extent cross-province finance might influence the interpretation of our main results. Our conclusion is not materially changed.

3. Other Province, Industry and Firm Characteristics

In the province-level analyses, we control for a large array of variables that might potentially confound our results. As stressed by La Porta et al. (1998, 1999, 2008), Gennaioli and Shleifer (2007), and Levine (2005), legal systems differ in their emphasis of property rights protection and contract enforcement, and these differences can cause financial development to

diverge. We therefore include two factors that measure cross-province variations in formal legal environment from China's National Economic Research Institute (NERI). Specifically, *Entrepreneur protection* is constructed from the answers of a survey[12] question—"how do you feel about the quality and efficiency of local legal and administrative enforcement?"—with higher values indicating better quality. It ranges from -1.91 for Tibet in 2009 to 10 for Shanghai in 2003. *Quality of legal and accounting service* is another measure of provincial legal environment. It is constructed from survey question asking how the entrepreneurs feel about the quality of the service provide by local lawyers and accountants. It ranges from -12.27 for Tibet in 2009 and 11.28 for Beijing and Shanghai in 2002.

Rajan and Zingales (2003) stress the role of political incumbents in influencing the path of financial development. We thus include two variables to account for the effects exerted by local governments. *Government scale* is measured by the number of people employed in public administration and social organization scaled by total population for each province in each year. It is constructed by NERI in a similar manner to *Entrepreneur protection* and *Quality of legal and accounting service*. The worst performer in terms of this measure is again Tibet, with an average value of about -10, and the best are Chongqing, Guangxi and Jiangsu provinces. Following Rajan and Zingales (2003), we also include province exports and imports scaled by provincial gross product to other countries (*Import and export to GDP*), because local governments may better develop their financial markets if borders are open to trade. *Import and export to GDP* ranges from 0% to 24%, with a mean of 4% and a standard deviation of 6%.

Shleifer and Vishny (1993) and Mauro (1995) emphasize the deleterious effects of corruption in government efficiency and growth. Since the two most important factors in promoting finance, namely property rights protection and contract enforcement, are both provided by government, we include two measures of government efficiency in isolating the link between xinfang and finance. *Corruption* is constructed based on the Surveys of Chinese Business Managers (1996-2010). Particularly, the survey asks around 6000 randomly-selected business managers across 31 provinces of how much extra tax they pay as a share of firm's yearly revenue. Then the answers are coded, weighted and aggregated by NERI to form a corruption index. It ranges from 0 for Hubei in 2001 and above 16 for Hainan, Tibet, and Qinghai in 2006, with higher value indicating less corruption. *Government intervention* is constructed similarly by NERI and is based on answers to question that ask how easy and convenient the business managers feel about

[12] Surveys of Chinese Business Managers 1996-2010 were conducted jointly by the State Council, the State Economics and Trade Commission, and the National Bureau of Statistics. Specifically, the Surveys were conducted through mailed questionnaires to a randomly selected group of enterprises' legal persons. The random group were selected through industry-based stratified sampling. Each survey (there were 15 during 1996-2010) covers about 6,000 enterprises and spans over all 31 provinces.

local administrative approval procedure. It ranges from -12.95 to 10.13, with higher value indicating less intervention.

In a within-country study, D'Acunto, Prokopczuk and Weber (2017) find that human capital exerts a strong, persistent effects on modern financial development. We therefore include a measure of human capital in our estimations. Specifically, *Literacy* is calculated as the number of college graduates each year in each province scaled by the size of local population. The National Bureau of Statistics collected the data on college graduates with substantial variation in sample size across years, but not across provinces. Although we observe a substantially large range of *Literacy* in our sample (0.04-2378.20), it is driven by the variation of sample size across years. In our estimation models, we include a year fixed effects to address this concern.

In the province-level analyses, we further control for macroeconomic conditions across provinces. Specifically, we include provincial gross product (*GDP*) to account for the size and provincial gross product per capita (*GDP per capita*) for the development of the provincial economy. Both variables are from CSMAR China Macroeconomic Research Database (column Gdp0101 and column Gdp0116, respectively).

In the industrial-level analyses, we follow Rajan and Zingales (1998) and differentiate industries based on the extent to which an industry depends, for technical reasons, on external credit. Specifically, *Dependence on external finance* is first calculated as the fraction of capital expenditures not financed with internally generated cash flows for firms listed in NYSE, AMEX or NASDAQ in the United States during the 1980s. We then assign the value of 1 to an industry if it is above the median and zero if it is below. Under the assumption that the U.S. has well-developed legal and financial systems with few frictions, this external financial dependence dummy variable provides information of the degree to which the industry heavily depends on external finance for technological reasons.

In the firm-level analyses, we control for the following firm specific characteristics. *Ln Number of employees* is the natural logarithm of the number of employees; *Founding year* equals the first year that a firm starts operation; *Private* equals to 1 if a firm is registered as private or foreign firm, and 0 if registered as state-owned; *Operating profit* is a firm's operating profit divided by revenue; *Ln Total assets* is the natural logarithm of the value of a firm's total assets.

IV. Xinfang and Financial Development

In this section, we assess the relationship between the xinfang system and firm access to finance across China. We conduct our analyses based on three different levels of firm financing indicators. The province-level analyses focus on provincial aggregated external credit channeled to

firms, while the firm-level and industry-level emphasize the heterogeneous patterns of firm's access to finance.

1. Overall Financial Development

1.1. Panel Regressions

We begin with cross-province, cross-time, ordinary least squares (OLS) regressions to assess the relationship between the xinfang system and provincial aggregated size of external finance. Specifically, we use the following regression specification:

$$FDI_{p,t} = \alpha + \beta Xinfang_{p,t} + \boldsymbol{\Gamma} X'_{p,t} + \Phi_p + \Psi_t + \Pi_p + \varepsilon_{p,t} \quad (1)$$

where the dependent variable, $FDI_{p,t}$, is one of the province-level (p) indicators of external finance: *Total liability to GDP*, *Current liability to GDP*, *Long-term liability to GDP* or *Trade credit to GDP*. The key explanatory variable is $Xinfang_{p,t}$ from province p. Other explanatory variables, $X'_{p,t}$, control for an assortment of province characteristics and $\boldsymbol{\Gamma}$ represents the vector of coefficients on these variables. In most specifications, we control for *Entrepreneur legal protection*, *Quality of legal service*, *Government scale*, *Import and export to GDP*, *Corruption*, *Government intervention*, and *Literacy*. In several specifications, we add control variables for *GDP*, and *GDP per capita*. We also include province and time fixed effects, as represented by Φ_p and Ψ_t, and a liner trend for each province Π_p in all analyses. Our coefficient of interest is β, which measures the relationship between the xinfang system and firm access finance. Wald t-statistics that allow homoscedasticity within province clusters are reported in parentheses[13]. We summaries our results in Figure 3.

As reported in Table 4, the xinfang system measured by $Xinfang_{p,t}$ is strongly, positively associated with financial development when either using *Total liability to GDP*, *Current liability to GDP*, *Long-term liability to GDP* or *Trade credit to GDP*. For example, consider the *Total liability to GDP* regressions. $Xinfang_{p,t}$ enters all regressions positively and significantly at least at five percent level and the estimated coefficients are economically large. If a province with a median value of xinfang index were to move to the 75th percentile of the cross-province distribution of the xinfang index, the coefficient estimates from column (9) imply that the *Total liability to GDP* ratio would increase by 9 (=4*2.25). This effect is large given the sample mean[14] of *Total liability to GDP* is only 43.04. Furthermore, the results are robust with only fixed effects in column (1) (4) (7)

[13] Our results remain robust in eleven out of twelve regressions when we cluster our standard errors at both province and year levels. The results are tabulated in Table A3 in the online appendix. We specifically address the concern with serially correlated dependent and independent variables in the next sub-section.

[14] In the provincial regressions, we inflate the dependent variables by 10000 for interpretation purpose.

and (10), when controlling for plausibly exogenous province traits in column (2) (5) (8) and (11), and when further conditioning on *GDP* and *GDP per capita* in column (3) (6) (9) and (12).

[Insert Figure 3 and Table 4 about here]

1.2. A Residual Aggregation Method

There are several potential concerns with the panel regressions: (1) the dependent variables are positively serially correlated; (2) in most provinces, the xinfang indicator only changed once during the sample period; and (3) there might be some time-variant omitted variables that drive our results. We address the first two concerns here and the third in the industrial difference-in-differences analyses in the next section.

The bias resulted from serial correlation can be severe. It can lead to serious overestimation of t-statistics and significance levels. Bertrand, Duflo, and Mullainathan (2004) estimate a false rejection rate of 0.44 (0.675 when standard errors are not clustered at state-year level) when the null hypothesis is no effects. We follow Bertrand, Duflo, and Mullainathan (2004) and use a residual aggregation method to alleviate this concern. The authors show that the false rejection rate is reduced to 0.06 with 20 clusters, corresponding to a 5% confidence level, when using residual aggregation[15].

Specifically, we first regress the dependent variable, either *Total liability to GDP*, *Current liability to GDP*, *Long-term liability to GDP* or *Trade credit to GDP*, on all the covariates including *Entrepreneur legal protection*, *Quality of legal service*, *Government scale*, *Import and export to GDP*, *Corruption*, *Government intervention*, *Literacy*, *GDP*, and *GDP per capita*, and province, time fixed effects as well as provincial linear trend. We then divide the residuals into two groups: residuals from years before the xinfang index change, and residuals after the change. We then regress the change of the xinfang index on this two-period panel with various cluster strategies. This method ignores the time series information and can significantly reduce the false rejection rates. The results are summarized in Figure 4.

As shown in Table 5, the xinfang index enters positively and significantly in all of the regressions. This holds when the dependent variable is either *Total liability to GDP*, *Current liability to GDP*, *Long-term liability to GDP* or *Trade credit to GDP*. In terms of the economic size of the coefficients, consider *Total liability to GDP* regressions. If an average province were to improve its xinfang index by one standard deviation (2.32), the coefficient estimates from column (7) imply

[15] A substantial reduction in the estimating power is the drawback of such model (from 0.663 of OLS to 0.183 of residual aggregation).

that the *Total liability to GDP* ratio would increase by 3.18 (=2.32*1.34), which accounts for about 7% of the sample mean.

[Insert Figure 4 and Table 5 about here]

1.3. Reduced Form Analyses on Industrial Production

We continue to test whether xinfang affects industrial growth through facilitating firm access to finance. Specifically, we first regress the dependent variable, either *Industrial Output to GDP*, *Sale value to GDP*, or *Revenue to GDP*, on the xinfang index and all the covariates with province, time fixed effects and province linear trend. As reported in Table 6, column (1), (5) and (9), the xinfang index enters positively and significantly at 1% significance level in all three regressions. The economic magnitude this reduced form estimate is non-trivial. Consider the estimates from column (1), if a province were to move its xinfang index from the 25th percentile to the 75th percentile of the cross-province distribution, the coefficient estimate implies that the *Industrial Output to GDP* ratio would increase by 10.88 (=4*2.72), which amounts to 25% of the sample mean.

In column (2), (6) and (10) of Table 6, we insert *Total liability to GDP* into the regression. If the xinfang system affects industrial production only through facilitating firm access to credits, we would expect the xinfang index loses its explanatory power and *Total liability to GDP* to be strongly and positively correlated with measures of province industrial production. The results from Table 6 confirm our predictions. The coefficient of *Total liability to GDP* enters positively and significantly in all three regressions, while the xinfang index becomes insignificant. The estimated economic magnitude is large. For example, if a province were to move its xinfang index from the 25th percentile to the 75th percentile of the cross-province distribution, the coefficient estimates from column (9) in Table 4 and column (2) in Table 6 imply that the *Industrial Output to GDP* ratio would increase by 9 (=4*2.25*1), which amounts to 16.44% of the mean.

In column (3), (7) and (11) of Table 6, we replace *Total liability to GDP* with *Current liability to GDP* and *Long-term liability to GDP*, and in column (4), (8) and (12), we replace *Current liability to GDP* with *Trade credit to GDP* and *(Current liability - Trade credit) to GDP*. In these analyses, we show that the xinfang system is associated with industrial production mainly via current liability. Although both informal (*Trade credit to GDP*) and formal debt (*(Current liability - Trade credit) to GDP*) are important in linking xinfang to growth, informal debt appears to exert more influence.

[Insert Table 6 about here]

2. Firm Access to Finance: Differentiating by Industry Traits

2.1. Panel Regressions

We next conduct difference-in-differences analyses to examine whether the relationship between xinfang and firm finance varies across provinces and industries in ways that are consistent with the law and finance view. In particular, the law and finance view suggests that more effective legal systems facilitate external finance, so that provinces with more effective legal systems should foster a greater flow of external finance to firms, especially firms in industries that heavily depend on external credit for technological reasons. We relate this to xinfang by testing whether xinfang has a more pronounced, positive relationship with finance in industries that heavily depend on external finance for technological reasons. If these cross-province, cross-industry predictions hold, it would reduce concerns that the previous results are spurious or reflect an omitted variable.

We follow Rajan and Zingales (1998) and calculate the degree to which U.S. industries use external finance. Specifically, *Dependence on external finance* is first calculated as the fraction of capital expenditures not financed with internally generated cash flows for firms listed in NYSE, AMEX or NASDAQ in the United States during the 1980s. We then assign the value of 1 to an industry if it is above the median and zero if it is below. Under the assumption that the U.S. has well-developed legal and financial systems with few frictions, this external financial dependence dummy variable provides information of the degree to which the industry heavily depends on external finance for technological reasons. We then test whether provinces with better xinfang institutions facilitate the flow of external finance to firms in industries that are heavily dependent on external finance.

We use the following regression specification to assess the relationship between xinfang and firm finance while differentiating by industry:

$$IFD_{p,i,t} = \alpha + \beta Xinfang_{p,t} * \Omega_i + \Gamma_i + \Phi_p + \Psi_t + \Gamma_i * \Psi_t + \Phi_p * \Psi_t + \varepsilon_{p,i,t} \qquad (2)$$

where the dependent variable, $IFD_{p,i,t}$, is either *Total liability to revenue*, *Current liability to revenue*, *Long-term liability to revenue*, or *Trade credit to revenue* for industry *i,* in province *p,* in year *t*. The key explanatory variable is the interaction term, $Xinfang_{p,t} * \Omega_i$, where Ω_i is *Dependence on external finance*. Province (Φ_p), industry (Γ_i), and year (Ψ_t) fixed effects, as well as province by year and industry by year fixed effects are included. As a result, $Xinfang_{p,t}$ and Ω_i drop as regressors. We report heteroskedasticity robust t-statistics in the parentheses, with standard errors either clustered at province and industry levels, or multi-way clustered at province, industry and year levels. Results are reported in Table 7.

As reported in Table 7, the relationships between xinfang and the firm financing indicators vary across industries in a manner that is fully consistent with the theoretical prediction articulated above. In particular, the $Xinfang_{p,t} * \Omega_i$ enters 7 out of 8 regressions positively and significantly, indicating that the relationship between xinfang and firm access finance is especially strong in industries that naturally depend heavily on external credit. In terms of the economic magnitudes, consider the estimates from column (6) of Table 7, in which the dependent variable is *Total liability to revenue*. If a province were to move its xinfang index from the 25th percentile to the 75th percentile of the cross-province distribution, the coefficient estimates imply that the *Total liability to revenue* ratio for industries that heavily depend on external credit would rise by 0.23 (=4*1*0.0572) higher than that of industries with less dependence on external credit. This magnitude is considerable, given that the sample average of *Total liability to revenue* equals 1.26. Thus the relationship between xinfang and the financing of firms holds more strongly among firms in industries that rely heavily, for technological reasons, on external credit, which is consistent with the view that the xinfang system promotes finance[16].

[Insert Table 7 about here]

2.2. Aggregated Residual Regressions

Similarly to the province-level analyses, we conduct a residual aggregation analyses to address the concerns of serial correlation in difference-in-differences analyses (Bertrand, Duflo, and Mullainathan, 2004). Particularly, we first regress the dependent variables on all the fixed effects, and then we divide the residuals into two groups: residuals from years before the xinfang index change, and residuals after the change. We then regress the two-period residuals on the change of xinfang index, *Dependence on external finance*, and their interaction. Results are reported in Table 8. Heteroskedasticity robust t-statistics are in the parentheses, with standard errors either clustered at industry level, or multi-way clustered at province and industry.

As shown in Table 8, the interaction terms enters 7 out of 8 regressions positively and significantly, confirming the results reported in Table 7. The estimated economic magnitude are even larger. Using the same example above, if a province were to move its xinfang index from the 25th percentile to the 75th percentile of the cross-province distribution, the coefficient estimates from column (6) Table 8 imply that the *Total liability to revenue* ratio for industries that heavily depend on external credit would jump by 0.41 (=4*1*0.1037) higher than that of industries with less

[16] The results are similar when we use sales value and industrial output to scale these debt measures. In both sets of regressions, the coefficient of the interaction term between xinfang and dependence on external finance enters 6 out of 8 regressions positively and significantly. Results are tabulated in Table A4 and Table A5 in the online appendix.

dependence on external credit. These results confirm the view that the xinfang system exerts positive influence on the financial institutions.

[Insert Table 8 about here]

3. Firm Access to Finance: Differentiating by Firm Ownership Type

We next conduct difference-in-differences analyses to examine whether the relationship between xinfang and firm finance varies across ownership type. Theoretically, if a firm is owned by the government, it would encounter less difficulties in protecting its property rights and enforcing a contract since the government is the ultimate arbiter of property and contracts (Acemoglu and Johnson, 2005; Acemoglu, 2003). We therefore predict that xinfang has a more (less) pronounced, positive relationship with finance in private-owned (state-owned) firms because they do not have the state protection as government-owned firms. If this cross-firm prediction holds, it would add further evidence to the xinfang-finance nexus.

Specifically, we use the following OLS model to examine the relationship between xinfang and firm access to finance, while differentiating by firm ownership type:

$$FFD_{p,i,f,t} = \alpha + \beta Xinfang_{p,t} * Private_{f} + \boldsymbol{\Gamma} X'_{p,i,f,t} + \boldsymbol{\Sigma} + \varepsilon_{p,i,f,t} \quad (3)$$

where the dependent variable, $FFD_{p,i,f,t}$, is either *Total liability to total assets*, *Current liability to total assets*, *Long-term liability to total assets*, or *Trade credit to total assets* for firm *f,* industry *i,* in province *p,* in year *t*. The key explanatory variable is the interaction term, $Xinfang_{p,t} * Private_{f}$, where $Private_{f}$ is a binary variable that equals 1 if a firm is registered as private or foreign owned, and 0 if is state-owned. $X'_{p,i,f,t}$ controls for an assortment of time-variant and –invariant firm characteristics and $\boldsymbol{\Gamma}$ represents the vector of coefficients on these variables. Specifically, we control for *Private*, *Operating profit*, *Founding year*, *Ln Total assets*, and *Ln Number of employees*. $\boldsymbol{\Sigma}$ includes province, industry, year, province by year and industry by year fixed effects. As a result, $Xinfang_{p,t}$ drops as a regressor. We report heteroskedasticity robust t-statistics in the parentheses, with standard errors clustered at firm level.

As reported in Table 9, the relationships between xinfang and the firm financing indicators vary across ownership type in a manner that is fully consistent with the theoretical prediction elucidated above. The interaction term enters 6 out of 8 regressions positively and significantly. The economic magnitude is non-trivial. For example, if a province were to move its xinfang index from the 25th percentile to the 75th percentile of the cross-province distribution, the coefficient estimates from column (8) in Table 9 imply that the *Trade credit to total assets* ratio for firms that are

privately owned would rise by 0.36 (=4*1*0.089) higher than that of state-owned firms. This magnitude accounts for 2.4% of the sample mean.

[Insert Table 9 about here]

V. Robustness Checks

In this section, we conduct several robustness tests in attempt to address concerns regarding the weighting methods used in construction the Xinfang index, the sample coverage of our data on firm financing, and cross-province finance.

1. Different Weighting Schemes in Xinfang Index Construction

Each of the 52 features are weighted equally in the Xinfang index following the standard approach in the law and finance literature (La Porta et al., 1997; 1998; 1999; 2000). However, it is possible that certain features are relatively more important than others. Besley (1995), Milgrom and North (1990) and Messick (1999) suggest that providing multiple dispute resolution mechanisms and facilitating access to Xinfang can lower the costs of disputants, and therefore are first-order important to the operation of the Xinfang system. Djankov et al. (2003) emphasize the importance of the speed of dispute resolution to the functioning of the system. Although the literature does not take the relative importance into consideration when constructing indices, we explore whether the results are robust to unequal weights allocated to the *support, speed* and *incentive sub-indices* as defined in section III.

To do so, we firstly run the following regression specification:

$$FDI_{p,t} = \alpha + \beta_1 Support_{p,t} + \beta_2 Speed_{p,t} + \beta_3 Incentive_{p,t} + \Phi_p + \Psi_t + \Pi_p + \varepsilon_{p,t} \quad (4)$$

where the dependent variable, $FDI_{p,t}$, is one of the province-level (p) indicators of external finance: *Total liability to GDP*, *Current liability to GDP*, *Long-term liability to GDP* or *Trade credit to GDP*. The key explanatory variables are $Support_{p,t}$, $Speed_{p,t}$, and $Incentive_{p,t}$ from province p. We include province and time fixed effects, as represented by Φ_p and Ψ_t, and a liner trend for each province Π_p in all analyses. Our coefficients of interest are β_1, β_2, and β_3, which measures the relative importance of features in *support, speed* and *incentive* categories. Wald t-statistics that allow homoscedasticity within province clusters are reported in parentheses. Results are presented in Table 10. It is worth noting that the *incentive index* is not significant in Table 10. This does not necessarily mean that incentive features in Xinfang system are not important. It is plausible that

some of the incentive effects are already captured by the *support* and *speed indices*, since the incentives can motivate Xinfang workers process and resolve cases more efficiently. Similarly, it is also difficult to unbundle the effects of *support* and *speed indices*, since the efficiency effect is likely to be reflected in the entire operation of the Xinfang system. The exercise here merely aims to provide alternative weighting schemes.

Secondly, we assign weights for each category based on the regression estimates. In particular, we calculate the magnitude of each coefficient by multiplying the coefficients with one standard deviation of the indices, and then divide each by the total magnitude of the three to get the weights. Take column 1 in Table 10, the magnitudes for the *support, speed* and *incentive indices* are 4.88 (=2.15*2.27), 4.13 (=3.25*1.27) and 0.97 (=0.81*1.20). Their weights are, therefore, 0.489 (=4.88/(4.88+4.13+0.97)), 0.414, and 0.097.

Finally, we multiply the *support, speed* and *incentive indices* by the empirically derived weights, and sum them up to construct an alternative Xinfang index. Our preferred empirical weighting scheme is based on the estimates from column 1 in Table 10, because it has the second highest R-squared. Compared to column 4 in Table 10, the coefficients are more precisely estimated since both the *support* and *incentive* indices are statistically significant. We re-do our empirical analyses using this alternative Xinfang index and tabulate the results in Table A6-Table A11 in the online appendix. Our results are not changed. Adjusting weights using estimates from column 2, 3, 4 of Table 10 does not materially alter our results either. These results are tabulated in Table A12 – Table A29 in the online appendix.

[Insert Table 10 about here]

2. Sample Coverage

As noted in section III, our main dataset, *Annual Surveys of Industrial Production,* includes firms with revenues equal to or larger than 500 million RMB each year. This could potentially introduce sample selection bias, if firms with revenues near the cut-off point tend to have better access to external financing. In this sub-section, we make several attempts to address this concern.

Firstly, we estimate the relation of between revenue and total debts and find that firms with revenues that are close to the 500 million RMB cut-off are unlikely to have larger debts compared to firms with revenues well beyond the threshold. The coefficient from regressing the natural logarithms of total debt and revenue is 0.67, suggesting a one percent increase in firm revenue is associated with 0.67 percent increase in debt. This implies that firms that cause the sample coverage difference in the survey are unlikely to be the main driver of our results.

Secondly, we limit our sample to firms with revenues that are further away from the 500 million RMB threshold. Specifically, we re-conduct our main analyses in samples excluding firms with revenues fall into 500-550 million RMB, 500-600 million RMB, 500-650 million RMB, or up to 500-800 million RMB. Our results rarely change. We tabulate these results in Table A30-Table A34 in our online appendix.

3. Cross-province Finance

In this sub-section, we discuss the issue of cross-province financing. To manage risks, provincial regulations are issued by Bureaus of Banking Supervisions to restrict cross-province lending[17]. Firms are therefore unlikely to borrow from outside provinces to the same extent as they borrow locally. Only the largest firms tend to have cross-province financing opportunities because of lower monitoring costs (checking assets and verifying collaterals in different provinces) for the lenders. We therefore conduct analyses to examine how the presence of cross-province finance in large firms may change our interpretation of the results. Specifically, we exclude firms with revenues that fall into the top 2%, 4%, 6%, 8% and 10% of the revenue distribution in each province-year, and re-do our main analyses. The results are tabulated in Table A35-Table A39.

The results in Table A36 show that excluding the top 2% firms in terms of revenue reduces the estimated Xinfang-finance magnitude by a half when using current liability to provincial GDP as dependent variable (column 1). When using long-term debt to provincial GDP as dependent variable, the coefficients lose their statistical power. This provides suggestive evidence that the largest firms tend to borrow long-term loans from other provinces. From lender's perspective, they tend to value institutional quality more when making long-term investments.

The presence of cross-province financing does not change the Xinfang-finance relationship. Local Xinfang quality still matters in the lending decision of banks from other provinces. In fact, if firms were able to borrow from other provinces to the same extent as they borrow from local lenders, firms in China would face the same debt market. This would alleviate the concern that potentially unobserved differences across provincial debt markets may confound our results and reinforce the Xinfang-finance link.

VI. Conclusion

This paper explains theoretically and assesses empirically the impact of a fundamental institution in China, xinfang, on the development of financial markets. We find that *ceteris paribus* regions with more developed xinfang system have more advanced financial markets in terms of

[17] See http://www.cbrc.gov.cn/hubei/docPcjgView/EC34BB1B0AE34485A3FF77A786AB2160/601309.html

their debt market size and depth. Our explanation for this outcome rests on xinfang system's stronger capabilities in adapting to the changing demands of the economy, protecting property rights, and providing checks on government expropriations. We then show that places where both legal and xinfang institutions are more advanced enjoy a correspondingly better developed financial market. Our results also show that that regions with larger size of private economy, less corrupt governments, and stronger formal legal institutions experience more pronounced influence of the xinfang system. At the industry level, we show that industries that have more non-current assets and are more dependent on external finance experience more pronounced xinfang effects. The evidence from our firm-level analyses also confirm our theoretical prediction that firms with state ownership and political connections are less influenced by the xinfang system.

These findings offer an explanation to the puzzle presented by recent development of Chinese financial market. While the formal legal institutions remain relatively weak, China had become one of the largest financial market in 2012. By taking alternative legal institutions into account, we show that the law-finance nexus applies to China.

Although the discussion in this study is specific to the Chinese xinfang system, the circumstances of this Chinese case extend to other types of government influence and may apply to many other countries with alternative legal institutions that protect the rights of private property owners, facilitate private contracts, and provide checks and balances on the state. Since the formal legal institutions tend to be highly persistent and difficult to reform (Acemoglu and Robinson, 2012), the alternative legal institutions may serve as another channel to improve the financial market and the economy.

This paper contributes to previous research on law-finance nexus (LLSV, 1997, 1998, 1999, 2000; Beck, Demirgüç-Kunt, and Levine, 2001, 2003a, b; Levine, 2005; Beck and Levine, 2008). Building on the law and finance view as well as dynamic law and finance view, we present a new perspective to study law-finance nexus: the alternative legal institutions and finance view. While this paper links the alternative legal institutions to finance, future research may show their impact on valuations of listed firms, size of dividend pay-outs, ownership structure, private benefits of control, and so on.

We also contribute to the literature by constructing an index of the regional xinfang quality (Cumming et al.,2011; LLS, 2006). The within country setting naturally exclude the impact of legal origins and initial endowment. We show that differences in alternative institutions explain cross-sectional variations in financial institutions.

This study also relates to Ayyagari, Demirgüç-Kunt, and Maksimovic (2010). While they find that firms perform better with funds from formal financing channels, we show that alternative

institutions are at least equally crucial in promoting finance and growth in developing countries. While the discussion in this paper is specific to China, arguably the circumstances of this Chinese case apply to many other countries with alternative legal institutions.

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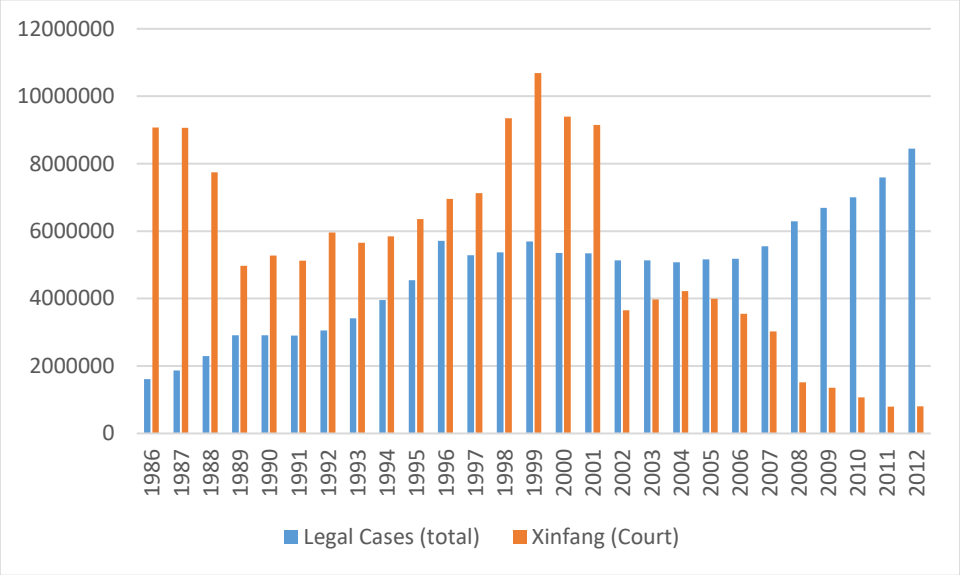
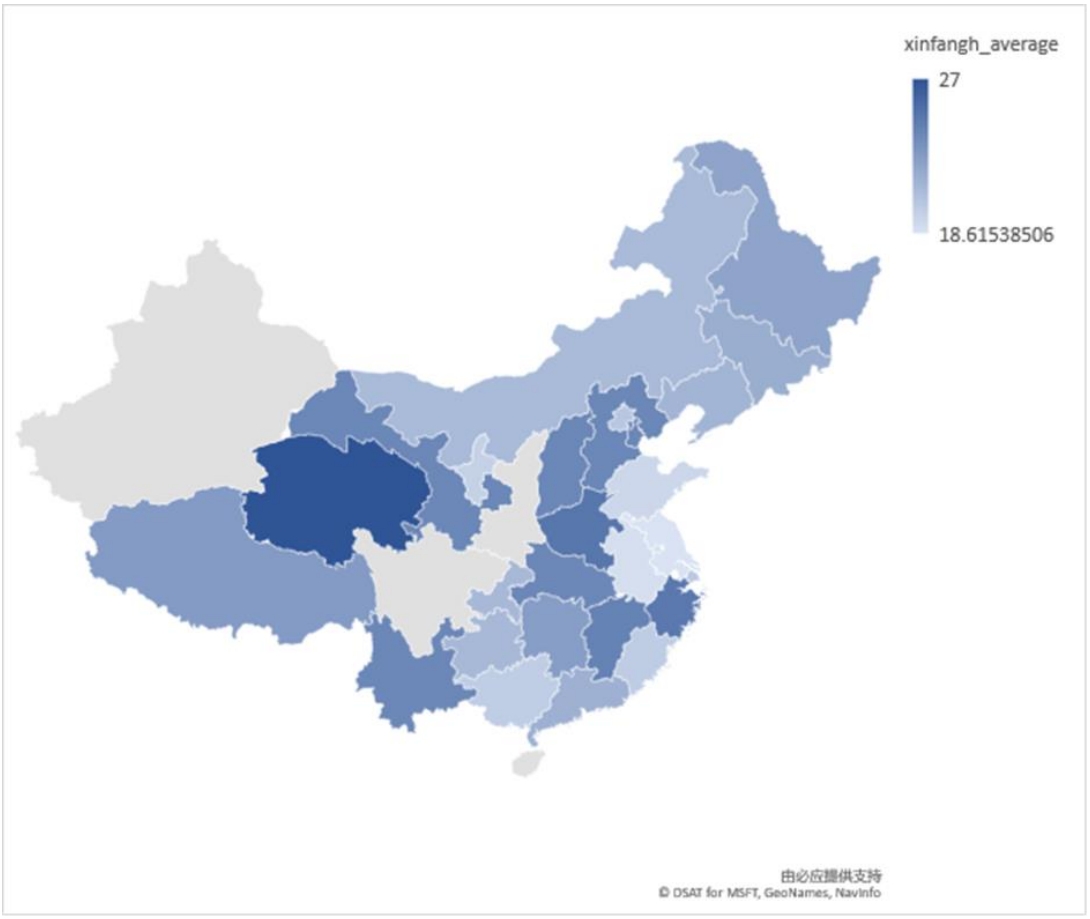
Figure 1 Number of Cases in Legal and Xinfang System



Data is from Work Reports of Supreme People's Court, Supreme People's Procuratorate, Ministry of Public Security, and People's Congress (1987-2013)

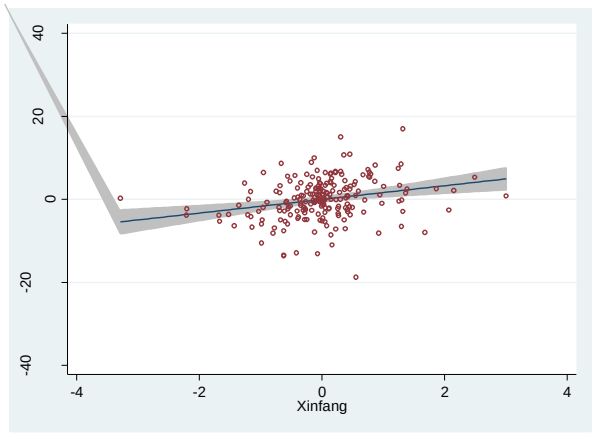
Figure 2 Spatial Distribution of Average Xinfang Index 1999-2009



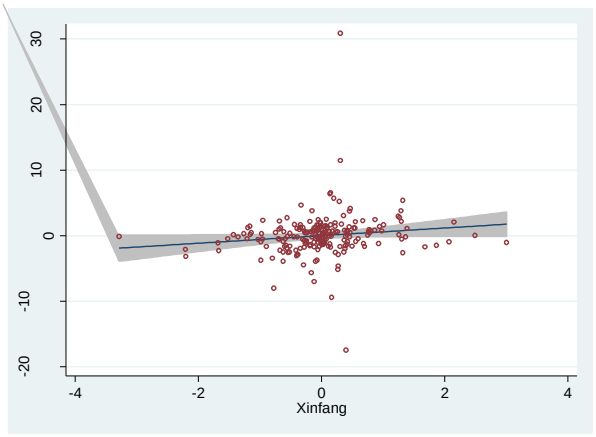
This figure plots the distribution of the Xinfang score for each province, averaged over 1998-2009. The Xinfang score is calculated by aggregating 52 Xinfang features for each province-year, using an equal-weight method. Higher score corresponds to better Xinfang institutions.

Figure 3 Xinfang and Financial Development: Panel Regressions

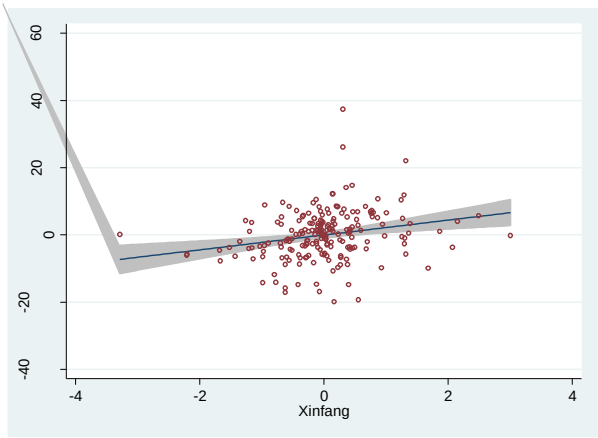
Panel A: Current liability and xinfang



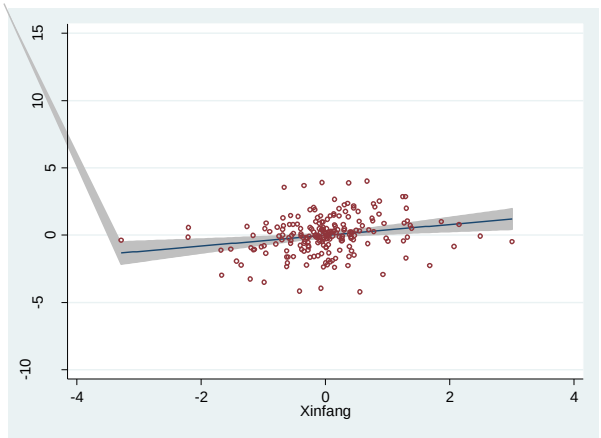
Panel B: Long-term liability and xinfang



Panel C: Total liability and xinfang



Panel D: Trade credit and xinfang



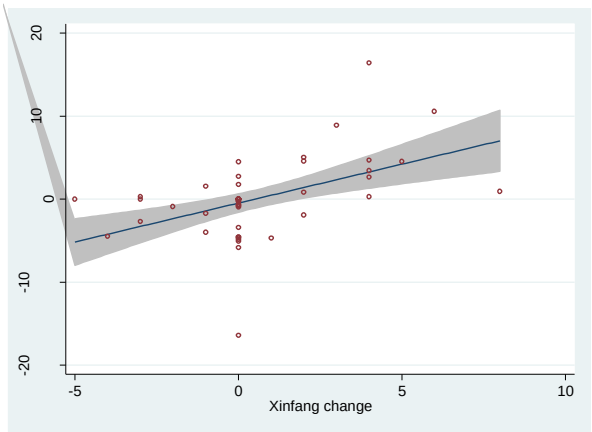
This figure shows the relationship between xinfang and financial market development at province-level. Specifically, it plots the following panel regressions:

$$FDI_{p,t} = \alpha + \beta Xinfang_{p,t} + \boldsymbol{\Gamma} X'_{p,t} + \Phi_p + \Psi_t + \Pi_p + \varepsilon_{p,t}$$

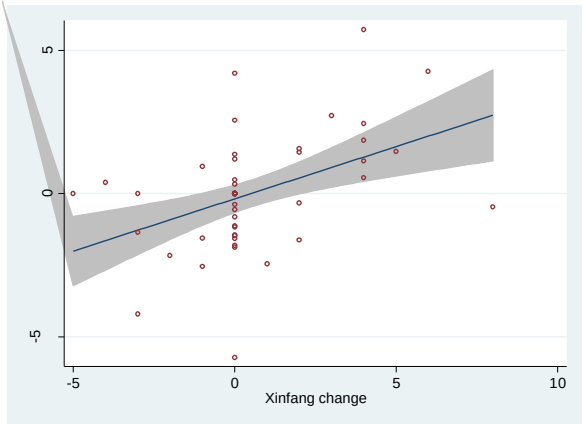
where the dependent variable is *Current liability to GDP* in Panel A, *Long-term liability to GDP* in Panel B, *Total liability to GDP* in Panel C and *Trade credit to GDP* in Panel D. Control variables include *Entrepreneur legal protection, Quality of legal service, Government scale, Import and export to GDP, Corruption, Government intervention, Literacy*, *GDP* and *GDP per capita.* Province, year fixed effects and province linear trend are also included. All dependent variables are inflated by a factor of 10,000 for interpretation purpose. The x-axis is the residual of regressing *Xinfang* on all control variables, fixed effects and linear trends. The y-axis is the residual regressing dependent variables on all control variables, fixed effects and linear trends.

Figure 4 Xinfang and Financial Development: Residual Aggregation

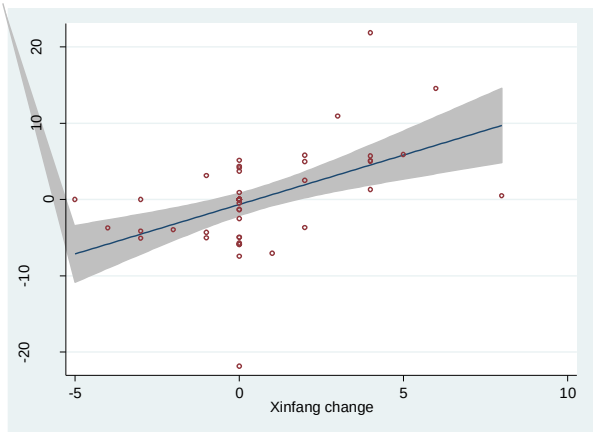
Panel A: Current liability and xinfang



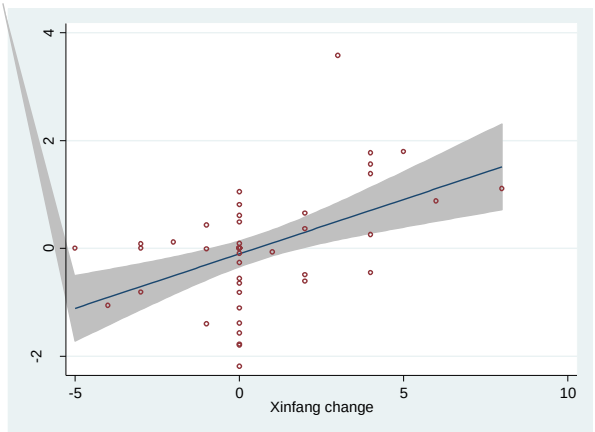
Panel B: Long-term liability and xinfang



Panel C: Total liability and xinfang



Panel D: Trade credit and xinfang



This figure shows the relationship between the change of xinfang and the change of financial market development at province-level. Specifically, we first regress the dependent variable, either *Total liability to GDP*, *Current liability to GDP*, *Long-term liability to GDP* or *Trade credit to GDP*, on all the covariates including *Entrepreneur legal protection*, *Quality of legal service*, *Government scale*, *Import and export to GDP*, *Corruption*, *Government intervention*, *Literacy*, *GDP*, and *GDP per capita*, and province, time fixed effects as well as provincial linear trend. We then divide the residuals into two groups: residuals from years before the xinfang index change, and residuals after the change. We then regress the change of the xinfang index on this two-period panel with various cluster strategies. All dependent variables are inflated by a factor of 10,000 for interpretation purpose. The x-axis is the residual of regressing *Change of Xinfang* on all control variables, fixed effects and linear trends. The y-axis is the residual regressing dependent variables on all control variables, fixed effects and linear trends.

Table 1 Summary of the Provincial Xinfang Regulations

Province	No.	Name	Year of Promulgation	Version
Beijing	1	Beijing Xinfang Regulations	01/01/1995	First
Beijing	2	Beijing Xinfang Regulations	01/01/2007	Second
Tianjin	3	Tianjin Xinfang Regulations	01/11/1994	First
Tianjin	4	Tianjin Xinfang Regulations	01/12/2005	Second
Hebei	5	Hebei Xinfang Regulations	01/09/1995	First
Hebei	6	Hebei Xinfang Regulations	30/07/2010	Second
Shanxi	7	Shanxi Xinfang Regulations	01/08/1996	Second
Shanxi	8	Shanxi Xinfang Regulations	01/07/2010	Third
Inner Mongolia	9	Inner Mongolia Xinfang Regulations	31/05/1994	First
Inner Mongolia	10	Inner Mongolia Xinfang Regulations	17/09/2010	Second
Liaoning	11	Liaoning Xinfang Regulations	25/09/1994	First
Liaoning	12	Liaoning Xinfang Regulations	01/08/2003	Second
Liaoning	13	Liaoning Xinfang Regulations	25/05/2007	Third
Liaoning	14	Liaoning Xinfang Regulations	30/07/2010	Fourth
Jilin	15	Jilin Xinfang Regulations	14/09/1992	First
Jilin	16	Jilin Xinfang Regulations	01/01/2002	Second
Heilongjiang	17	Xinfang Provisions on Sheltering	23/10/1991	Second
Heilongjiang	18	Xinfang Provisions on Sheltering	01/07/1998	Third
Shanghai	19	Shanghai Xinfang Regulations	15/12/1993	First
Shanghai	20	Shanghai Xinfang Regulations	01/10/2003	Second
Shanghai	21	Shanghai Xinfang Regulations	01/04/2013	Third
Jiangsu	22	Jiangsu Xinfang Regulations	17/10/1997	First
Jiangsu	23	Jiangsu Xinfang Regulations	01/10/2006	Second
Zhejiang	24	Zhejiang Xinfang Regulations	01/12.1994	First
Zhejiang	25	Zhejiang Xinfang Regulations	01/02/1997	Second
Zhejiang	26	Zhejiang Xinfang Regulations	01/03/2004	Third
Zhejiang	27	Zhejiang Xinfang Regulations	30/12/2009	Fourth
Zhejiang	28	Xinfang Provisions on Retrials	01/03/2012	Fifth
Anhui	29	Anhui Xinfang Regulations	01/01/1996	First
Anhui	30	Anhui Xinfang Regulations	01/05/2006	Second
Fujian	31	Fujian Xinfang Regulations	25/04/1996	First
Jiangxi	32	Jiangxi Xinfang Regulations	01/05/2004	First

Jiangxi	33	Jiangxi Xinfang Regulations	01/01/2010	Second
Shandong	34	Shandong Interim Xinfang Regulations	16/11/1992	First
Shandong	35	Shandong Xinfang Regulations	01/03/2001	Second
Shandong	36	Xinfang Provisions on Retrials	01/07/2008	Second
Henan	37	Henan Xinfang Regulations	01/03/1997	First
Henan	38	Henan Xinfang Regulations	29/11/2012	Second
Hubei	39	Hubei Xinfang Regulations	01/02/2006	First
Hunan	40	Hunan Xinfang Regulations	04/08/1998	First
Hunan	41	Hunan Xinfang Regulations	01/10/2006	Second
Guangdong	42	Guangdong Xinfang Regulations	11/10/1996	First
Guangdong	43	Guangdong Xinfang Regulations	01/01/2007	Second
Guangdong	44	Guangdong Xinfang Regulations	01/07/2014	Third
Guangxi	45	Guangxi Xinfang Regulations	25/09/1996	First
Guangxi	46	Guangxi Xinfang Provisions on Hearing	01/09/2007	Second
Chongqing	47	Chongqing Xinfang Regulations	01/07/1995	First
Chongqing	48	Chongqing Xinfang Regulations	01/01/2002	Second
Chongqing	49	Chongqing Xinfang Regulations	01/05/2009	Third
Guizhou	50	Guizhou Xinfang Regulations	01/11/2006	Second
Yunnan	51	Yunnan Xinfang Regulations	28/09/2003	Second
Tibet	52	Tibet Xinfang Regulations	01/05/1995	First
Tibet	53	Tibet Xinfang Regulations	01/08/2008	Second
Gansu	54	Gansu Xinfang Regulations	30/06/1992	First
Gansu	55	Gansu Xinfang Regulations	26/07/2002	Second
Gansu	56	Gansu Xinfang Regulations	28/09/2006	Third
Ningxia	57	Provisions on Step-by-step Filing	11/02/1995	First
Ningxia	58	Xinfang Provisions on Monitoring	02/09/1999	Second
Qinghai	59	Qinghai Xinfang Regulations	01/01/1997	First
Qinghai	60	Qinghai Xinfang Regulations	01/07/2011	Second
Shanxi	61	Shanxi Interim Xinfang Regulations	10/01/1985	First
Heilongjiang	62	Heilongjiang Xinfang Regulations	10/01/1984	First
Guizhou	63	Guizhou Xinfang Regulations	27/11/1990	First
Yunnan	64	Yunnan Xinfang Regulations	26/04/1993	First

Table 2 Features of the Xinfang Index

No.	Name
Speed features	
1	Within 15 days limit on notifying xinfangers whether the case is accepted
2	Within 60 days limit on resolving a xinfang case
3	Within 60 days limit on extension in resolving a xinfang case
4	Within 10 days limit on transferring a case
5	Within 60 days limit on resolving a transferred case
6	Within 60 days limit on time extension in resolving a transferred xinfang case
7	Within 60 days limit on resolving a re-checked xinfang case
8	Within 60 days limit on time extension in resolving a re-checked or third-time-checked xinfang case
Support features	
1	Leadership responsibility system
2	Hearing system
3	Disclosure of hearing participants information
4	Visiting xinfangers system
5	Case-review system
6	Hearing costs
7	Public hearing
8	Avoid conflict of interest in public hearing
9	Follow-up responsibility
10	Case accountability
11	Confidentiality
12	Verified hearing notes
13	First-responsibility
14	Hearing committee ID
15	Formatted proposal
16	Reply letter
17	Reply language
18	(-) Force to accept
19	(-) Limit on stay
20	(-) Limit on place
21	(-) Limit on number of xinfangers
22	(-) Xinfanger ID
23	(-) Ban on bypassing
24	(-) Limit on multiple filing
25	(-) Discourage xinfangers
26	(-) Detention of elderly, disabled, and injured
27	(-) Put detention into work assessment
28	Flexible xinfang time and location
29	Xinfang language
30	Case support
31	Disabled facilities
32	Security of xinfang funding
33	Allow cases filed against legal violations of xinfangers

34	Prohibition of xinfanger with infectious disease
35	Prohibition of xinfanger with psychiatric disorder
36	(-) Criticize xinfangers
37	(-) Limit on time to apply for appeal
Incentive features	
1	Punish-cover-up unqualified behavior
2	Punish-fail to act
3	Punish-fail to refrain
4	Punish-fail to file
5	Punish-threats, retaliation
6	Reward-improve national organs
7	Reward-report of violations

Table 3 Summary Statistics

Variable	N	Mean	SD	Min	P25	P50	P75	Max
Province-level variables								
Xinfang	336	22.04	2.67	17.00	20.00	22.00	24.00	27.00
Speed	336	1.92	1.27	0	1.00	2.00	3.00	5.00
Support	336	16.28	2.27	11.00	15.00	16.00	17.00	24.00
Incentive	336	3.85	1.20	0	3.00	4.00	5.00	6.00
Current liability to GDP	233	0.032%	0.016%	0.002%	0.020%	0.030%	0.039%	0.083%
Long-term liability to GDP	233	0.011%	0.007%	0.001%	0.006%	0.009%	0.014%	0.060%
Total liability to GDP	233	0.043%	0.020%	0.003%	0.028%	0.041%	0.054%	0.111%
Trade credit to GDP	233	0.005%	0.006%	0.000%	0.000%	0.003%	0.008%	0.024%
Industrial Output to GDP	233	0.055%	0.046%	0.000%	0.020%	0.041%	0.078%	0.188%
Sale value to GDP	233	0.053%	0.045%	0.000%	0.020%	0.039%	0.077%	0.184%
Revenue to GDP	233	0.057%	0.043%	0.002%	0.023%	0.040%	0.076%	0.184%
Entrepreneur protection	307	3.88	2.03	-1.91	2.69	3.84	5.08	10.00
Quality of legal and accounting service	307	3.35	2.77	-12.27	1.10	2.86	5.34	11.28
Government scale	284	4.90	3.64	-13.47	3.54	5.60	7.11	10.56
Import and export to GDP	336	0.04	0.06	0.00	0.01	0.02	0.05	0.24
Corruption	284	10.86	4.22	0.00	7.09	12.68	14.52	16.46
Government intervention	307	4.25	3.31	-12.95	2.61	4.17	6.12	10.13
GDP (in 100,000,000 RMB)	336	7124	7542	91	2129	4766	9236	46013
GDP per capita	336	17700	14800	2364	7259	12920	22453	78989
Literacy	341	101.70	336.86	0.04	1.35	1.75	3.20	2378.20
Industrial-level variables								
Current liability to revenue	8648	0.91	0.96	0.04	0.39	0.65	1.09	11.79
Long-term liability to revenue	8648	0.31	0.51	0.00	0.04	0.12	0.37	5.10
Total liability to revenue	8648	1.26	1.39	0.07	0.47	0.84	1.58	16.31
Trade credit to revenue	8648	0.07	0.11	0.00	0.00	0.04	0.12	1.42
Current liability to sale value	7723	0.89	0.93	0.03	0.38	0.64	1.07	9.56
Long-term liability to sale value	7723	0.31	0.50	0.00	0.04	0.12	0.36	4.77

Total liability to sale value	7723	1.24	1.34	0.06	0.46	0.82	1.56	14.15
Trade credit to sale value	7723	0.06	0.09	0.00	0.00	0.02	0.10	0.66
Current liability to industrial output	7722	0.85	0.84	0.03	0.37	0.62	1.03	7.83
Long-term liability to industrial output	7722	0.30	0.48	0.00	0.03	0.11	0.35	4.35
Total liability to industrial output	7722	1.18	1.24	0.07	0.44	0.79	1.50	13.16
Trade credit to industrial output	7722	0.06	0.09	0.00	0.00	0.02	0.10	0.65
Firm-level variables								
Current liability to total assets	1428689	0.47	0.27	0.00	0.25	0.48	0.70	0.97
Long-term liability to total assets	1470434	0.05	0.12	0.00	0.00	0.00	0.02	0.64
Total liability to total assets	1410736	0.53	0.26	0.01	0.33	0.56	0.75	0.98
Trade credit to total assets	1275877	0.15	0.18	0.00	0.01	0.08	0.22	0.79
Private	1466515	0.87	0.34	0.00	1.00	1.00	1.00	1.00
Operating profit	1599290	0.02	0.23	-4.68	0.00	0.03	0.07	0.44
Founding year	1474054	1997	12	1600	1995	2001	2004	2009
Ln Total assets	1474585	9.79	1.41	5.46	8.80	9.63	10.63	15.11
Ln Number of employees	991652	4.61	1.09	1.61	3.85	4.50	5.29	8.66
Industrial-level variables								
Dependence on external finance	5155	0.53	0.50	0.00	0.00	1.00	1.00	1.00

Table 4 Xinfang and Provincial Financial Development: Panel Regressions

This table reports OLS regression results of provincial financial development on the xinfang index. The dependent variable is *Current liability to GDP* in columns 1-3, *Long-term liability to GDP* in columns 4-6, *Total liability to GDP* in columns 7-9 and *Trade credit to GDP* in 10-12. The key explanatory variable, *Xinfang*, is a province-year index that measures the quality of the functioning of xinfang system. *Entrepreneur legal protection* measures the quality of provincial legal environment. It is constructed by National Economic Research Institute from survey data that specifically asks entrepreneurs how well their formal legal rights are protected. *Quality of legal service* measures the quality of local accounting and legal services. It is constructed by National Economic Research Institute from survey data that specifically asks entrepreneurs the quality of services provided by local law and accounting firms. *Government scale* measures the size of local government. It is constructed by National Economic Research Institute and calculated by dividing the number of government employees by the number of local population. *Import and export to GDP* is calculated by dividing the value of both import and export by provincial gross product. *Corruption* measures the degree to which a government is corrupted. It is constructed by National Economic Research Institute from survey data that specifically asks entrepreneurs how much extra tax they pay as a share of firm's yearly revenue. *Government intervention* measures the degree to which a government intervenes business procedures. It is constructed by National Economic Research Institute from survey data that specifically asks entrepreneurs how easy and convenient the business managers feel about local administrative approval procedure. Literacy is calculated by dividing the number of people who graduated from college or above by the provincial population. The data of number of people who graduated from college or above is from annual census conducted by the National Statistics Bureau. The sampling size differs greatly each year but varies little across province. *GDP* and *GDP per capita* are the gross provincial product and gross provincial product per capita, and are from CSMAR/GTA database. All dependent variables are inflated by a factor of 10,000 for interpretation purpose. See the Table A1 in the Online Appendix for more detailed variable definitions and data sources. T-statistics calculated using clustered standard errors are reported in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1%.

	Dependent variable											
	Current liability to GDP Mean: 31.25			Long-term liability to GDP Mean: 10.85			Total liability to GDP Mean: 43.04			Trade credit to GDP Mean: 5.21		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Xinfang	2.17***	1.85***	1.69**	0.55*	0.64*	0.56*	2.72***	2.49***	2.25**	0.49***	0.47***	0.47***
	[3.27]	[3.35]	[2.70]	[2.03]	[2.00]	[1.82]	[3.17]	[3.09]	[2.49]	[3.76]	[4.21]	[3.41]
Entrepreneur legal protection		-0.26	-0.12		0.99	0.99		0.67	0.81		-0.03	0.01
		[-0.26]	[-0.12]		[1.37]	[1.29]		[0.47]	[0.54]		[-0.18]	[0.05]
Quality of legal and accounting service		-0.18	-0.37		-0.93	-0.95		-0.94	-1.16		-0.10	-0.15
		[-0.20]	[-0.39]		[-1.34]	[-1.20]		[-0.64]	[-0.73]		[-0.49]	[-0.71]
Government scale		-0.57	-0.84		-0.94	-0.99		-1.49	-1.82		0.54	0.48
		[-0.25]	[-0.38]		[-1.26]	[-1.15]		[-0.52]	[-0.62]		[0.97]	[0.88]
Import and export to GDP		0.00	0.00		-0.00	-0.00		-0.00	-0.00		-0.00	-0.00
		[0.01]	[0.12]		[-0.62]	[-0.58]		[-0.14]	[-0.00]		[-0.69]	[-0.72]
Corruption		-1.27*	-1.14*		-0.30	-0.28		-1.55*	-1.39		-0.18	-0.15

		[-1.94]	[-1.75]		[-0.96]	[-0.99]		[-1.74]	[-1.59]		[-0.90]	[-0.72]
Government intervention		-0.29	-0.33		-0.17	-0.18		-0.42	-0.48		0.13	0.12
		[-0.41]	[-0.47]		[-0.53]	[-0.55]		[-0.43]	[-0.48]		[0.63]	[0.62]
Literacy		11.48	12.68		-21.58	-23.25		-9.88	-10.68		5.12	6.88
		[0.47]	[0.49]		[-0.87]	[-0.93]		[-0.25]	[-0.26]		[1.04]	[1.43]
GDP			0.00			0.00			0.00			0.00
			[0.94]			[0.04]			[0.71]			[0.83]
GDP per capita			-0.00			0.00			0.00			-0.00
			[-0.11]			[0.94]			[0.27]			[-0.89]
Province FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Linear trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	233	208	208	233	208	208	233	208	208	233	208	208
R-squared	0.837	0.876	0.875	0.672	0.690	0.686	0.809	0.838	0.837	0.929	0.928	0.929
Level of cluster	Province	Province	Province	Province	Province	Province	Province	Province	Province	Province	Province	Province
Clusters	27	27	27	27	27	27	27	27	27	27	27	27
Specifications	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS

Table 5 Xinfang and Provincial Financial Development: Residual Aggregation

This table reports OLS regression results of provincial financial development on the xinfang index, using a residual aggregation method. The dependent variable is *Current liability to GDP* in columns 1-3, *Long-term liability to GDP* in columns 4-6, *Total liability to GDP* in columns 7-9 and *Trade credit to GDP* in 10-12. The key explanatory variable is the change of *Xinfang*, a province-year index that measures the quality of the functioning of xinfang system. We first regress the dependent variables on all the covariates, fixed effects and time trends. Then we divide residuals into two groups: residuals from years before the xinfang index change, and residuals after the change. We then regress the change of the xinfang index on this two-period panel with various cluster strategies. The controls variables include: including *Entrepreneur legal protection*, *Quality of legal service*, *Government scale*, *Import and export to GDP*, *Corruption*, *Government intervention*, *Literacy*, *GDP*, and *GDP per capita*. *Entrepreneur legal protection* measures the quality of provincial legal environment. It is constructed by National Economic Research Institute from survey data that specifically asks entrepreneurs how well their formal legal rights are protected. *Quality of legal service* measures the quality of local accounting and legal services. It is constructed by National Economic Research Institute from survey data that specifically asks entrepreneurs the quality of services provided by local law and accounting firms. *Government scale* measures the size of local government. It is constructed by National Economic Research Institute and calculated by dividing the number of government employees by the number of local population. *Import and export to GDP* is calculated by dividing the value of both import and export by provincial gross product. *Corruption* measures the degree to which a government is corrupted. It is constructed by National Economic Research Institute from survey data that specifically asks entrepreneurs how much extra tax they pay as a share of firm's yearly revenue. *Government intervention* measures the degree to which a government intervenes business procedures. It is constructed by National Economic Research Institute from survey data that specifically asks entrepreneurs how easy and convenient the business managers feel about local administrative approval procedure. Literacy is calculated by dividing the number of people who graduated from college or above by the provincial population. The data of number of people who graduated from college or above is from annual census conducted by the National Statistics Bureau. The sampling size differs greatly each year but varies little across province. *GDP* and *GDP per capita* are the gross provincial product and gross provincial product per capita, and are from CSMAR/GTA database. All dependent variables are inflated by a factor of 10,000 for interpretation purpose. See the Table A1 in the Online Appendix for more detailed variable definitions and data sources. T-statistics calculated using clustered standard errors are reported in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1%.

	Dependent variable											
	Current liability to GDP Mean: 31.25			Long-term liability to GDP Mean: 10.85			Total liability to GDP Mean: 43.04			Trade credit to GDP Mean: 5.21		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Change of Xinfang	0.98***	0.98***	0.98***	0.36***	0.36**	0.36***	1.34***	1.34***	1.34***	0.24***	0.24***	0.24***
	[3.12]	[3.47]	[3.17]	[2.77]	[2.76]	[2.73]	[3.16]	[3.43]	[3.20]	[3.71]	[4.30]	[3.68]
Observations	54	55	54	54	55	54	54	55	54	54	55	54
R-squared	0.225	0.225	0.254	0.183	0.183	0.213	0.237	0.237	0.265	0.236	0.236	0.265
Level of cluster	Province	Time	Both	Province	Time	Both	Province	Time	Both	Province	Time	Both
Clusters	27	2	27, 2	27	2	27, 2	27	2	27, 2	27	2	27, 2
Specifications	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS

Table 6 Xinfang and Provincial Industrial Output

This table reports OLS regression results of provincial industrial output on the xinfang index and provincial financial development measures. The dependent variable is *Industrial Output to GDP* in columns 1-3, *Sale value to GDP* in columns 4-6, and *Revenue to GDP* in columns 7-9. *Xinfang* is a province-year index that measures the quality of the functioning of xinfang system. *Total liability to GDP, Current liability to GDP, Long-term liability to GDP* and *Trade credit to GDP* are provincial aggregated total liability, current liability, long-term liability and account payable divide by provincial gross product. *Entrepreneur legal protection* measures the quality of provincial legal environment. It is constructed by National Economic Research Institute from survey data that specifically asks entrepreneurs how well their formal legal rights are protected. *Quality of legal service* measures the quality of local accounting and legal services. It is constructed by National Economic Research Institute from survey data that specifically asks entrepreneurs the quality of services provided by local law and accounting firms. *Government scale* measures the size of local government. It is constructed by National Economic Research Institute and calculated by dividing the number of government employees by the number of local population. *Import and export to GDP* is calculated by dividing the value of both import and export by provincial gross product. *Corruption* measures the degree to which a government is corrupted. It is constructed by National Economic Research Institute from survey data that specifically asks entrepreneurs how much extra tax they pay as a share of firm's yearly revenue. *Government intervention* measures the degree to which a government intervenes business procedures. It is constructed by National Economic Research Institute from survey data that specifically asks entrepreneurs how easy and convenient the business managers feel about local administrative approval procedure. Literacy is calculated by dividing the number of people who graduated from college or above by the provincial population. The data of number of people who graduated from college or above is from annual census conducted by the National Statistics Bureau. The sampling size differs greatly each year but varies little across province. *GDP* and *GDP per capita* are the gross provincial product and gross provincial product per capita, and are from CSMAR/GTA database. All dependent variables are inflated by a factor of 10,000 for interpretation purpose. See the Table A1 in the Online Appendix for more detailed variable definitions and data sources. T-statistics calculated using clustered standard errors are reported in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1%.

	Dependent variable											
	Industrial Output to GDP Mean: 54.73				Sale value to GDP Mean: 53.30				Revenue to GDP Mean: 56.73			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Xinfang	2.72***	0.47	-0.11	-0.24	2.68***	0.47	-0.10	-0.23	2.48***	0.27	-0.32	-0.52
	[2.99]	[0.49]	[-0.13]	[-0.29]	[2.98]	[0.49]	[-0.11]	[-0.28]	[2.88]	[0.34]	[-0.49]	[-0.86]
Total liability to GDP		1.00***				0.98***				0.98***		
		[4.20]				[4.19]				[4.25]		
Current liability to GDP			1.73***				1.69***				1.72***	
			[14.61]				[14.26]				[13.16]	
Long-term liability to GDP			-0.17	-0.12			-0.17	-0.12			-0.20	-0.12
			[-1.22]	[-0.86]			[-1.19]	[-0.84]			[-1.28]	[-0.82]
Trade credit to GDP				2.73***				2.67***				3.20***

				[6.51]				[6.23]				[7.68]
(Current liability - Trade credit) to GDP				1.43***				1.40***				1.27***
				[8.86]				[8.46]				[8.52]
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Linear Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	208	208	208	208	208	208	208	208	208	208	208	208
R-squared	0.942	0.972	0.981	0.982	0.941	0.971	0.981	0.981	0.937	0.971	0.982	0.984
Level of cluster	Prov.	Prov.	Prov.	Prov.	Prov.	Prov.	Prov.	Prov.	Prov.	Prov.	Prov.	Prov.
Clusters	27	27	27	27	27	27	27	27	27	27	27	27
Specifications	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS

Table 7 Xinfang and Firm Access Finance: Differentiating by Industrial Traits, Panel Regression

This table shows the heterogeneous effects of xinfang on firm access finance by differentiating industries by their dependence on external finance. The dependent variable is *Current liability to revenue* in columns 1-2, *Long-term liability to revenue* in columns 3-4, *Total liability to revenue* in columns 5-6 and *Trade credit to revenue* in 7-8. The key explanatory variable is the interaction term of *Xinfang* and *Dependence on external finance*. *Xinfang* is a province-year index that measures the quality of the functioning of xinfang system. *Dependence on external finance* is first calculated as the fraction of capital expenditures not financed with internally generated cash flows for firms listed in NYSE, AMEX or NASDAQ in the United States during the 1980s. We then assign the value of 1 to an industry if it is above the median and zero if it is below. See the Table A1 in the Online Appendix for more detailed variable definitions and data sources. T-statistics calculated using clustered standard errors are reported in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1%.

	Dependent variables							
	Current liability to revenue		Long-term liability to revenue		Total liability to revenue		Trade credit to revenue	
	Mean: 0.91		Mean: 0.31		Mean: 1.26		Mean: 0.07	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Xinfang * Dependence on external finance	0.0375**	0.0375*	0.0133***	0.0133**	0.0572**	0.0572**	0.0021**	0.0021
	[2.08]	[1.91]	[2.64]	[2.42]	[2.18]	[2.03]	[2.19]	[1.60]
Province FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province * Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry * Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5154	5154	5154	5154	5154	5154	5154	5154
R-squared	0.449	0.449	0.346	0.346	0.452	0.452	0.571	0.571
Level of cluster	Province, Industry	Pro., Ind., Year	Province, Industry	Pro., Ind., Year	Province, Industry	Pro., Ind., Year	Province, Industry	Pro., Ind., Year
Clusters	27, 46	27, 46, 11	27, 46	27, 46, 11	27, 46	27, 46, 11	27, 46	27, 46, 11
Specifications	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS

Table 8 Xinfang and Firm Access Finance: Differentiating by Industrial Traits, Residual Aggregation

This table shows the heterogeneous effects of xinfang on firm access finance by differentiating industries by their dependence on external finance, using a residual aggregation method. The dependent variable is *Current liability to revenue* in columns 1-2, *Long-term liability to revenue* in columns 3-4, *Total liability to revenue* in columns 5-6 and *Trade credit to revenue* in 7-8. The key explanatory variable is the interaction term of change of *Xinfang* and *Dependence on external finance*. *Xinfang* is a province-year index that measures the quality of the functioning of xinfang system. *Dependence on external finance* is first calculated as the fraction of capital expenditures not financed with internally generated cash flows for firms listed in NYSE, AMEX or NASDAQ in the United States during the 1980s. We then assign the value of 1 to an industry if it is above the median and zero if it is below. See the Table A1 in the Online Appendix for more detailed variable definitions and data sources. T-statistics calculated using clustered standard errors are reported in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1%.

	Dependent variables							
	Current liability to revenue Mean: 0.91		Long-term liability to revenue Mean: 0.31		Total liability to revenue Mean: 1.26		Trade credit to revenue Mean: 0.07	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Change of Xinfang * Dependence on external finance	0.0663*	0.0663*	0.0339**	0.0340	0.1036*	0.1037*	0.0174***	0.0174***
	[1.67]	[1.78]	[1.98]	[1.37]	[1.91]	[1.74]	[3.63]	[3.39]
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1213	1209	1213	1209	1213	1209	1213	1209
R-squared	-0.001	0.002	-0.001	0.002	-0.001	0.002	0.009	0.012
Level of cluster	Industry	Pro., Ind.	Industry	Pro., Ind.	Industry	Pro., Ind.	Industry	Pro., Ind.
Clusters	46	27, 46	46	27, 46	46	27, 46	46	27, 46
Specifications	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS

Table 9 Xinfang and Firm Access Finance: Differentiating by Firm Ownership Type

This table shows the heterogeneous effects of xinfang on firm access finance by differentiating firms by their registered ownership type. The dependent variable is *Current liability to total assets* in columns 1-2, *Long-term liability to total assets* in columns 3-4, *Total liability to total assets* in columns 5-6 and *Trade credit to total assets* in 7-8. The key explanatory variable is the interaction term of *Xinfang* and *Private*. *Xinfang* is a province-year index that measures the quality of the functioning of xinfang system. *Private* is a binary variable that equals to 1 if a firm's controlling shareholder is private or foreign enterprise, and 0 if it is state entity. Firm controls include *Private, Operating profit, Founding year, Ln Total assets*, *and Ln Number of employees.* All dependent variables are inflated by a factor of 100 for interpretation purposes. See the Table A1 in the Online Appendix for more detailed variable definitions and data sources. T-statistics calculated using clustered standard errors are reported in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1%.

	Dependent variable							
	Current liability to total assets		Long-term liability to total assets		Total liability to total assets		Trade credit to total assets	
	Mean: 47.40		Mean: 4.85		Mean: 53.29		Mean: 14.96	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Xinfang * Private	-0.026	-0.095	0.205***	0.302***	0.228***	0.284***	0.146***	0.089**
	[-0.56]	[-1.49]	[6.66]	[7.42]	[4.75]	[4.41]	[4.38]	[2.27]
Frim controls	No	Yes	No	Yes	No	Yes	No	Yes
Province FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province * Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry * Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1419291	799795	1460763	808803	1401560	796090	1291053	776401
R-squared	0.111	0.155	0.117	0.096	0.084	0.127	0.067	0.083
Level of cluster	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm
Clusters	573395	442175	584714	446828	567612	440141	503237	425668
Specifications	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS

Table 10 Xinfang and Provincial Financial Development: Sub Index Analyses

This table reports OLS regression results of provincial financial development on three Xinfang sub-indices. The dependent variable is either *Current liability to GDP* in column 1, *Long-term liability to GDP* in column 2, *Total liability to GDP* in column 3 or *Trade credit to GDP* in column 4. The key explanatory variables, *Speed*, *Support* and *Incentive* are province-year indices that measure the speed of dispute resolution, the degree to which a province's Xinfang regulations support individuals and firms to access the Xinfang system, and the degree to which Xinfang motivates its workers to treat participants well and resolve cases expeditiously and fairly. All models include province and year fixed effect. Linear trend for each province is also included. All dependent variables are inflated by a factor of 10,000 for interpretation purpose. See the Table A1 in the Online Appendix for more detailed variable definitions and data sources. T-statistics calculated using clustered standard errors are reported in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1%.

	Dependent variable			
	Current liability to GDP	Long-term liability to GDP	Total liability to GDP	Trade credit to GDP
	Mean: 31.25	Mean: 10.85	Mean: 43.04	Mean: 5.21
	(1)	(2)	(3)	(4)
Support Index	2.15***	0.55*	2.73***	0.68***
	[3.84]	[2.03]	[3.54]	[5.02]
Speed Index	3.25**	0.73	3.91*	0.40
	[2.13]	[1.08]	[2.03]	[1.46]
Incentive Index	0.81	0.30	1.17	0.22
	[0.78]	[0.63]	[0.89]	[0.65]
Province FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Linear trend	Yes	Yes	Yes	Yes
Observations	233	233	233	233
R-squared	0.836	0.668	0.808	0.930
Level of cluster	Province	Province	Province	Province
Clusters	27	27	27	27
Specifications	OLS	OLS	OLS	OLS

VIII. Online Appendix

Table A1 Variable Definition and Sources

Variable	Definition	Source
Province-level variables		
Xinfang	Xinfang is a measure of the efficiency of the operation of provincial xinfang system. The index is derived from the provincial xinfang regulations during 1998-2009. It contains three components, including speed, support, and incentive indices described immediately below.	Authors' coding and calculation.
Speed	Speed is a measure of the speed of dispute resolution in Xinfang system. It is calculated as adding up the eight Xinfang features that measure the duration of dispute resolution during 1998-2009.	
Support	Support is a measure of the extent to which the Xinfang system supports citizens and firms to file complaints. It is calculated as adding up the 37 Xinfang features that measure the extent to which the provincial Xinfang system facilitates and supports disputants during 1998-2009.	
Incentive	Incentive is a measure of the extent to which the Xinfang system motivates Xinfang workers. It is calculated as adding up the seven Xinfang features that measure the incentives a provincial Xinfang system provides during 1998-2009.	
Current liability to GDP	Current liability to GDP is the ratio of current liability to provincial gross product. Current liability is calculated by aggregating the current liability of industrial firms located in the same province. Provincial gross product is a provincial equivalent measure of gross domestic product and is from CSMAR/GTA.	National Bureau of Statistics' Annual Surveys of Industrial Production (1998-2008); CSMAR/GTA

Long-term liability to GDP	Long-term liability to GDP is the ratio of long-term liability to provincial gross product. Long-term liability is calculated by aggregating the long-term liability of industrial firms located in the same province.	
Total liability to GDP	Total liability to GDP is the ratio of total liability to provincial gross product. Total liability is calculated by aggregating the total liability of industrial firms located in the same province.	
Trade credit to GDP	Trade credit to GDP is the ratio of trade credit to provincial gross product. Trade credit is calculated by aggregating the account payables of industrial firms located in the same province.	
Industrial output to GDP	Industrial output to GDP is the ratio of industrial output to provincial gross product. Industrial output is calculated by aggregating the industrial out of firms located in the same province. Firm's industrial output is the total output of all the facilities producing goods within a firm.	
Sale value to GDP	Sale value to GDP is the ratio of sales value to provincial gross product. Sales value is calculated by aggregating the sale value of industrial firms located in the same province. Sale value includes revenue and the value of products provided within the firm.	
Revenue to GDP	Revenue to GDP is the ratio of revenue to provincial gross product. Revenue is calculated by aggregating the revenue of industrial firms located in the same province.	
Entrepreneur protection	Entrepreneur protection measures the quality of provincial legal environment. It is constructed by National Economic Research Institute from survey data that specifically asks entrepreneurs how well their formal legal rights are protected.	National Economic Research Institute (2011)

Quality of legal and accounting service	Quality of legal and accounting service measures the quality of local accounting and legal services. It is constructed by National Economic Research Institute from survey data that specifically asks entrepreneurs the quality of services provided by local law and accounting firms.	
Government scale	Government scale measures the size of local government. It is constructed by National Economic Research Institute and calculated by dividing the number of government employees by the number of local population.	
Corruption	Corruption measures the degree to which a government is corrupted. It is constructed by National Economic Research Institute from survey data that specifically asks entrepreneurs how much extra tax they pay as a share of firm's yearly revenue.	
Government intervention	Government intervention measures the degree to which a government intervenes business procedures. It is constructed by National Economic Research Institute from survey data that specifically asks entrepreneurs how easy and convenient the business managers feel about local administrative approval procedure.	
Import and export to GDP	Import and exports to GDP is calculated by dividing the value of both import and export by provincial gross product.	CSMAR/GTA
GDP (in 100,000,000 RMB)	GDP is the gross provincial product and is from CSMAR/GTA database.	
GDP per capita	GDP per capita is the per capita level of gross provincial product and is calculated by dividing the gross provincial product by the provincial population.	

Literacy	Literacy is calculated by dividing the number of people who graduated from college or above by the provincial population. The data of number of people who graduated from college or above is from annual census conducted by the National Statistics Bureau. The sampling size differs greatly each year but varies little across province.	
Industrial-level variables		
Current liability to revenue	Current liability to revenue is calculated by dividing the value of aggregated current liability at province-industry level by the value of aggregated province-industry revenue. The value of aggregated current liability (revenue) is calculated by adding the current liability (revenue) of firms in the same industry within a province.	National Bureau of Statistics' Annual Surveys of Industrial Production (1998-2008)
Long-term liability to revenue	Long-term liability to revenue is calculated by dividing the value of aggregated long-term liability at province-industry level by the value of aggregated province-industry revenue.	
Total liability to revenue	Total liability to revenue is calculated by dividing the value of aggregated total liability at province-industry level by the value of aggregated province-industry revenue.	
Trade credit to revenue	Trade credit to revenue is calculated by dividing the value of aggregated account payable at province-industry level by the value of aggregated province-industry revenue.	
Current liability to sale value	Current liability to sale value is calculated by dividing the value of aggregated current liability at province-industry level by the value of aggregated province-industry sale value. The value of aggregated current liability (sale value) is calculated by adding the current liability (sale value) of firms in the same industry within a province. Firm's sale value differs from revenue because it also includes the value of products provided within a firm.	

Long-term liability to sale value	Long-term liability to sale value is calculated by dividing the value of aggregated long-term liability at province-industry level by the value of aggregated province-industry sale value.	
Total liability to sale value	Total liability to sale value is calculated by dividing the value of aggregated total liability at province-industry level by the value of aggregated province-industry sale value.	
Trade credit to sale value	Trade credit to sale value is calculated by dividing the value of aggregated account payable at province-industry level by the value of aggregated province-industry sale value.	
Current liability to industrial output	Current liability to industrial output is calculated by dividing the value of aggregated current liability at province-industry level by the value of aggregated province-industry industrial output. The value of aggregated current liability (industrial output) is calculated by adding the current liability (industrial output) of firms in the same industry within a province. Firm's industrial output is the total output of all the facilities producing goods within a firm.	
Long-term liability to industrial output	Long-term liability to industrial output is calculated by dividing the value of aggregated long-term liability at province-industry level by the value of aggregated province-industry industrial output.	
Total liability to industrial output	Total liability to industrial output is calculated by dividing the value of aggregated total liability at province-industry level by the value of aggregated province-industry industrial output.	
Trade credit to industrial output	Trade credit to industrial output is calculated by dividing the value of aggregated account payable at province-industry level by the value of aggregated province-industry industrial output.	
Firm-level variables		
Current liability to total assets	Current liability to total assets is calculated as firm's current liability divided by total assets.	National Bureau of Statistics' Annual Surveys of Industrial Production (1998-2008)
Long-term liability to total assets	Long-term liability to total assets is calculated as firm's long-term liability divided by total assets.	

Total liability to total assets	Total liability to total assets is calculated as firm's total liability divided by total assets.	
Trade credit to total assets	Trade credit to total assets is calculated as firm's account payable divided by total assets.	
Private	Private is a binary variable that equals to 1 if a firm's controlling shareholder is private or foreign enterprise, and 0 if it is state entity.	
Operating profit	Operating profit is defined as operating profit divided by firm's revenue.	
Founding year	Founding year is the year when a firm is founded.	
Ln Total assets	Ln Total assets is the natural logarithm of a firm's total assets.	
Ln Number of employees	Ln Number of employees is the natural logarithm of a firm's number of employees.	
Industrial-level variables		
Dependence on external finance	Dependence on external finance is the fraction of capital expenditures not financed with internally generated cash flows for firms listed in NYSE, AMEX or NASDAQ in the United States during the 1980s. The median level of dependence on external finance for ISIC industries is used.	Rajan and Zingales (1998)

Table A2 Sources of Xinfang Regulations

For xinfang regulations that are recorded by the State Council, 34 of 60 can be obtained from official government websites. For the rest, 35 can be obtained through the law databases. Here we only provide the database website because the databases require subscription to get access to the content. With subscriptions to those databases, the xinfang regulations can be easily obtained. For the one left, we list three distinctive web sources that provide the content. Numbers "2" and "3" indicate the second and third source respectively.

Province	No.	Time Accessed	Sources
Beijing	1	21/09/2016	http://www.gjxfj.gov.cn/xffg/2009-11/24/c_1395084.htm
Beijing	2	21/09/2016	http://www.gjxfj.gov.cn/xffg/2009-11/24/c_1395089.htm
Tianjin	3	21/09/2016	http://www.tjrd.gov.cn/rdzlk/system/1994/12/01/000004292.shtml
Tianjin	4	21/09/2016	http://www.tjxfb.gov.cn/Showit/52b8e75b-9f78-419b-9f0d-a8bb3b1f3a0b
Hebei	5	21/09/2016	http://www.gjxfj.gov.cn/2014-05/12/c_133327640.htm
Hebei	6	21/09/2016	http://fgk.chinalaw.gov.cn/article/dffg/201007/20100700337163.shtml
Shanxi	7	21/09/2016	http://www.pkulaw.cn; 2. http://d.wanfangdata.com.cn/Claw/D140009715
Shanxi	8	21/09/2016	http://fgk.chinalaw.gov.cn/article/dffg/201005/20100500336945.shtml
Inner Mongolia	9	21/09/2016	http://www.hhxc.gov.cn/xcjg/zf/xfj/zcfg/ZFXW1027.html?InfoORG=AGA039
Inner Mongolia	10	21/09/2016	http://govinfo.nlc.gov.cn/nmgfz/xxgk/nmgzzqwht/201308/t20130801_3806234.shtml?classid=346
Liaoning	11	21/09/2016	http://fgk.chinalaw.gov.cn/article/dffg/199409/19940900316394.shtml
Liaoning	12	21/09/2016	http://www.pkulaw.cn; 2. http://d.wanfangdata.com.cn/Claw/D210000187
Liaoning	13	21/09/2016	http://www.pkulaw.cn; 2. http://d.wanfangdata.com.cn/Claw/D210002470
Liaoning	14	21/09/2016	http://www.pkulaw.cn; 2. http://d.wanfangdata.com.cn/Claw/D220014453
Jilin	15	21/09/2016	http://www.pkulaw.cn
Jilin	16	21/09/2016	http://www.jlrd.gov.cn/zwgk/gzzd/201005/t20100514_717831.html
Heilongjiang	17	21/09/2016	http://www.gsfzb.gov.cn/FLFG/Print.asp?ArticleID=7682
Heilongjiang	18	21/09/2016	http://www.cnki.com.cn/Journal/G-G1-HLZB-1998-12.htm
Shanghai	19	21/09/2016	http://www.pkulaw.cn; 2. http://d.wanfangdata.com.cn/Claw/D310017591
Shanghai	20	21/09/2016	http://www.12333sh.gov.cn/201412333/xxgk/flfg/dfxfg/xgsrdfg/201405/t20140506_1181039.shtml
Shanghai	21	21/09/2016	http://www.shanghai.gov.cn/nw2/nw2314/nw3124/nw3134/nw3140/u6aw195.html
Jiangsu	22	21/09/2016	http://www.pkulaw.cn; 2. http://d.wanfangdata.com.cn/Claw/D320018955
Jiangsu	23	21/09/2016	http://www.gjxfj.gov.cn/2014-05/12/c_133327651.htm

Zhejiang	24	21/09/2016	http://www.pkulaw.cn; 2. http://d.wanfangdata.com.cn/Claw/D330021397
Zhejiang	25	21/09/2016	http://www.pkulaw.cn; 2. http://d.wanfangdata.com.cn/Claw/D330021064
Zhejiang	26	21/09/2016	http://www.cnki.com.cn/Article/CJFDTotal-ZJRG200401003.htm
Zhejiang	27	21/09/2016	http://www.tzsjs.gov.cn/Resource/ContentShow/ItemHtml/2012-02/1667094703/1258798766.html
Zhejiang	28	21/09/2016	http://www.mlr.gov.cn/zwgk/flfg/dfflfg/201206/t20120607_1107745.htm
Anhui	29	21/09/2016	http://www.pkulaw.cn; 2. http://d.wanfangdata.com.cn/Claw/D340022432
Anhui	30	21/09/2016	http://www.ah-n-tax.gov.cn/publicfiles/business/htmlfiles/ahtax2009/xfzc/201003/970590.html
Fujian	31	21/09/2016	http://www.pkulaw.cn
Jiangxi	32	21/09/2016	http://www.gjxfj.gov.cn/2014-05/12/c_133327638.htm
Jiangxi	33	21/09/2016	http://www.jiangxi.gov.cn/awz/ldxx/xgwj/201410/t20141013_1082468.html
Shandong	34	21/09/2016	2. http://law.lawtime.cn/d585367590461.html; 3. http://www.110.com/fagui/law_266354.html; http://www.law-lib.com/lawhtm/1992/55447.htm
Shandong	35	21/09/2016	http://www.zqxf.gov.cn/nzcms_show_news.asp?id=2910
Shandong	36	21/09/2016	http://www.pkulaw.cn; 2. http://d.wanfangdata.com.cn/Claw/D370012261
Henan	37	21/09/2016	http://www.pkulaw.cn; 2. http://d.wanfangdata.com.cn/Claw/D410029765
Henan	38	21/09/2016	http://www.pkulaw.cn
Hubei	39	21/09/2016	http://www.gjxfj.gov.cn/xffg/2009-11/24/c_1395086.htm
Hunan	40	21/09/2016	http://www.pkulaw.cn; 2. http://d.wanfangdata.com.cn/Claw/D430032011
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