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# The Effectiveness of Law, Financial Development, and Economic Growth in an Economy of Financial Repression: Evidence from China

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**Summary.** — In an economy characterized by financial repression, enhancing the legal system may hinder the development of some aspects of the financial sector, especially informal arrangements aiming at circumventing the repression. Using Chinese provincial data in the 1990s, we find that enhanced legal system suppresses private investment and has no effect on financial depth although it increases the private share of bank credits and bank competition. We interpret these findings as evidence showing the existence of the leakage effect that moves financial resources from the privileged state sector to the rationed private sector. In addition, we find that enhanced legal system does not have a significant effect on the average GDP growth rate. We conclude that the smooth functioning of the legal system requires other institutions to complement.
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*Key words* — legal system, financial development, financial repression, economic growth

## 1. INTRODUCTION

Financial development is a key factor to promote economic growth (Beck, Levine, & Loayza, 2000; Levine, 1997). Recent research identifies the written law as a prominent determinant of financial development and economic growth (Beck, Demirguc-Kunt, & Levine, 2003; Beck, Demirguc-Kunt, & Maksimovic, 2004; La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1998; Levine, 1998, 2003). However, this view has been challenged by Berkowitz, Pistor, and Richard (2003), Pistor, Raiser, and Gelfer (2000), and Pistor (2002) who have found that the effectiveness of law is more important than the written law in promoting financial development in transition and developing countries. While these studies focus on the gross effect of the law on financial development, this paper aims at moving the study one step forward to decompose the channels by which the effectiveness of law influences financial development when financial repression is a significant characteristic of the economy. Financial repression widely exists in developing and transition countries (Mckinnon, 1973, 1993; Shaw, 1973). One consequence of financial repression is the creation of a privileged sector and an unprivileged sector with the former having access to cheap credits and the latter being rationed out. Under this situation, the relationship between the legal system and financial development may be more complicated than what it first looks like.

The Chinese provinces provide a good case for the test of this relationship. While they are subjected to the same written law, both the effectiveness of law and financial development in these provinces show remarkable variations. The Chinese financial system has a clear flavor of repression. The interest rate is set by the central bank to be much lower than the market rate, and the banking sector is overwhelmingly dominated by four large state-owned banks. A consequence is serious credit rationing that favors the state sector and suppresses the private sector. However, the private sector has been China's growth engine in the last 15 years, so there is a clear mismatch between the allocation of financial resources and the forces of economic growth.

Among a few studies on law and economic development in China, Allen, Qian, and Qian (2005) study the Chinese legal system by using the La Porta *et al.* (1998) legal indices and find that the Chinese system is incomplete compared with La Porta *et al.'s* sample countries; nevertheless, they find that China's economic growth has been largely sustained by the informal sector where the formal legal system only plays a marginal role. Pei (2001) also finds that a gap exists between China's remarkable growth records and its weak enforcement of commercial contracts although the latter has been improved in the 1990s. Alford (2000) points out the insufficiency to just look at China's formal laws when one evaluates the Chinese legal system; instead, he directs researchers to attend to the interplay of the formal law and informal enforcement mechanisms. [1]

This paper extends the above studies by providing a case study of the interplay between the formal legal system and informal arrangements that are conducive to economic growth in China's distorted financial system. Our key argument is that there exists a leakage process that moves financial resources from the state sector to the private sector. This movement circumvents the rationing imposed on the

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private sector and provides a mechanism for informal financing arrangements to support the growth of the private sector. So it is a socially efficient movement. A lax legal system allows for risk-sharing between the bank and the state sector when it comes to risks associated with the investment diverted to the private sector. Enhancing court enforcement shifts more risk to the managers in the state sector who will then reduce investment in the private sector. As a result, private investment will fall, so probably will the total amount of credits issued by the bank because the state sector's demand for credit may fall. Therefore, enhancing court enforcement may hurt financial development and becomes detrimental to economic growth when the private sector's access to credits is rationed.

In this paper, we study the effects of enhancing one key element of the effectiveness of law, the enforcement of court rulings, on economic growth as well as four key indicators of financial development, that is, share of private investment, share of private bank credit, financial depth, and bank competition. These indicators are frequently studied in the literature (Levine, 1997). One innovation of this paper is that we construct a unique objective measure of the effectiveness of law, that is, the ratio of closed cases (abbreviated as RCC in subsequent text) in all commercial court cases in a year. China has been notorious in enforcing court ruling; RCC thus is a good measure for the quality of court enforcement.

Our work is closely related to an emerging literature on the value of law in transition countries. Recent works show that law has played an increasingly positive role in protecting business transactions in these countries, including China (Murrell, 2001). Nevertheless, it is hard to deny that law in China is still weak and certainly does not match her remarkable growth record to the degree expected by the conventional wisdom. Our work complements two lines of research. One, represented by Berkowitz *et al.* (2003), emphasizes the local conditions for the legal system to work. For most transition countries, law is a transplanted institution so the readiness of the recipient country is crucial to make the transplanted law work. The other line of research emphasizes the role of informal arrangements in the absence of a sound legal system. The explanations put forward by Alford (2000) and Allen et al. (2005) on China's success are but two examples. Other researchers find similar results in other transition countries. For example, McMillan and Woodruff (1999) find in Vietnam that private entrepreneurs succeed in their businesses by relying on self-helping actions such as building reputations, trade credits, and reinvestment of profits. To the extent that financial repression is an intrinsic characteristic of the Chinese economy, our work reinforces the argument of the first line of research that local conditions are critical for law to function properly; and to the extent that the leakage effect is a result of private agents' self-helping actions, our work complements the second line of research.

The rest of the paper is organized as follows: Section 1 introduces the Chinese background and discusses the mechanism of the leakage effect under financial repression. Section 2 proposes several testable hypotheses regarding the effects of the effectiveness of law on the four indicators of financial development as well as on economic growth. Section 3 introduces the data and discusses the variables. Section 4 provides empirical results of the tests of the hypotheses proposed in Section 2 using RCC as the measure for the effectiveness of law. Two sets of robustness checks are then performed, one using a smaller sample of the period 1991–96 and the other using an alternative measure for the effective of law. Section 5 concludes the paper.

## 2. FINANCIAL REPRESSION AND THE LEAKAGE EFFECT

### (a) *Financial repression in China*

Financial repression is an intrinsic characteristic of the Chinese banking system. In the planning period of 1952–78, low interest rates were adopted to provide low-cost finance for China's heavy industry-oriented industrialization (Lin, Cai, & Li, 1996). Financial repression has continued after the open-door policy was adopted in the late 1970s. The official interest rates have been consistently lower than the rates found in the informal credit market by 50–100% (Garnaut, Song, Yao, & Wang, 2001). In recent years, a band of 10% below and 50% above the official benchmark rate has been allowed for banks when they lend to small- and medium-sized firms. But the market rate is still 50% above the higher bound. Aggravating the situation, the Chinese banking system is overwhelmingly dominated by the four large state-owned banks.[2] In the early 1990s, credits issued by these four state-owned banks consisted of more than 90% of the total amount of formal bank credit in the country. This ratio was kept at 77% by 2000 (PBOC, 2000). Three of the four big banks, CBIC, BOC, and CCB, have been partially listed in overseas markets in recent years. But their dominance has still been overwhelming. By 2005, their share of the credits was still 60% (Sun, 2007). These banks suffer from serious problems caused by huge non-performing loans and inefficient operation. The whole banking system was virtually in a bankrupt position by the end of the 1990s as its net worth had become negative (Lardy, 1998, pp. 109–111). The amount of non-performing loans reached 2.5 trillion yuan at the end of the 1990s. In recent years, the performance of the banking sector has been improved due to governance changes through public listing. In addition, several asset management companies have been established to take up the bad loans of the four largest state banks. However, as of the first quarter of 2007, the amount of outstanding non-performing loans was still 1.25 trillion yuan, or 6.63% of the total amount of outstanding loans.[3] Financial repression and the dominance of inefficient state banks have led to serious credit rationing in the banking sector. The non-state sector has suffered the most. Although its share in China's total GDP has surpassed 60%, this sector has received less than 20% of the formal bank credit in most of the last decade, and the other 80% has all gone to the state sector (Garnaut *et al.,* 2001). As of 1998, 94% of all state bank loans went to state enterprises even though one-third of them were loss-making (Dwight, 2004).

The non-state sector becomes the target of rationing for both political and economic reasons. On the political side, the rationing can arise from the government's intention to maintain employment in the state sector (Brandt & Zhu, 2000). Because many SOEs are inefficient, cheap credits are needed to keep them float. Under the constraint of limited resources, the private sector is often sacrificed. In addition, while a default by an SOE is tolerable in the Chinese banking system, a default by a private firm will surely raise the concern as to whether the loan officer has received under-the-table benefits from the firm. It is therefore rational for a loan officer to be highly cautious when he decides on a loan to a private firm. The economic reason is more practical. Cull and Xu (2000) find that the state banks were able to identify good firms even in the early 1990s indicating that making profits was a goal of the banks. Most of the firms in the non-state sector are small and medium-sized firms that intrinsically have a higher risk of default than the SOEs, which are usually large and have a lower risk of failure. Therefore, banks' discrimination on non-

state firms is essentially a discrimination based on firm size. When information asymmetry exists, this is a rational choice on the part of the banks. Lastly, credit rationing has been aggravated by the Chinese regulatory authority's imposition of a restrictive lending policy and discipline on the commercial banks. The most stringent policy, perhaps, is the "life-time responsibility" introduced in 1998, which may lead to the dismissal of a loan officer if a single loan passed through him is ever defaulted. Under this policy, it is natural to find that banks refrain from lending to any firms. This has been exactly what has been happening since 1998.[4]

Both theories and empirical evidence have shown that financial repression hurts economic growth (Levine, 1997; McKinnon, 1973). Then why has China been different? Despite the debate surrounding China's GDP statistics of the recent years,[5] it is undeniable that China has trimmed most other countries in terms of the rate of economic growth. One certainly can argue that China could have achieved higher growth rates if financial repression had been removed. However, it is hardly possible for a country with China's size to maintain double-digit growth rates for 20 years. There must exist some ways that have compensated the loss caused by financial repression. While explanations have been proposed outside the realm of financial development,[6] Li (2001) provides an interesting insight regarding financial repression itself. Li believes that China's financial repression has been mild and helped China's economic growth by maintaining financial stability and gaining political supports for reform.[7] While Li's insight can be disputed, here we turn to proposing and testing another explanation that deals with the self-helping actions taken by private agents to remedy financial repression. This explanation is centered at the leakage effect that moves financial resources from the state sector to the private sector.

### (b) *Channels of the leakage*

The leakage effect is central to the argument of this paper. There are three channels of the leakage, all coming into existence in response to China's repressed financial system.

The first channel is trade credit. This practice gives rise to China's "triangle debts" problem—that is, firms owe trade credits for each other and delay their repayments—that troubled almost all firms through the late 1990s and early 2000s. By 2001, triangle debts reached 1.5 trillion yuan (People's Daily, 2002). However, evidence suggests that trade credit is a means for firms to get finance for their working capital. For example, Gao (2000) shows that the amount of triangle debts increased when the economy was overheated, especially in the mid-1990s, and decreased when the economy slowed down. Gao believes that the need for credit was the major cause for the observed pattern. What is relevant to this study is that evidence suggests that the private sector is a net receiver of trade credit (Ge & Qiu, 2005). That is, financial resources are being channeled from the state sector to the private sector in the form of trade credit.

The second channel of leakage is the diversion of assets and bank credits from the state sector to the private sector. Brandt and Zhu (2000) find evidence for this kind of leakage at the initial stage of credit allocation. They show that banks tend to divert credits to the private sector whenever the central government does not enforce administrative allocation of credits that strongly favor the state sector. We would add to their finding that credit diversion also happens at the secondary stage, that is, the stage after the state sector obtains credits from the bank. Cull, Xu, and Zhu (2006) provide direct evidence for this claim by finding that SOEs with more bank credit are more likely to be suppliers of trade credit. An SOE may divert its assets and bank credits into the private sector in several ways. It can legally set up a joint venture with a domestic private firm or an international firm to release its assets into the private sector. However, there are also illegal ways to divert assets and investment. One is to divert bank loans designated for certain projects to other purposes that are realized in the private sector. For instance, there has been a consistent trend of rerouting of bank credits from the inland provinces to the coastal provinces. Since the inland provinces are dominated by SOEs and the coastal provinces are more privatized (Garnaut, Song, Tenev, & Yao, 2003), this rerouting effectively results in a diversion of funds from the state sector to the private sector. The leakage from the state sector also happens through the stock markets that are dominated by SOEs. It is an open secret that listed companies divert the funds raised in the stock market for other purposes. Although no systematic statistics exist, it is fair to believe that part of the diverted funds has gone to the private sector because it is this sector that has a higher return.

A third way of leakage is managerial "tunneling," a word coined by studies on post-privatization Russia and other former Soviet Union countries and meant to describe managers' diversion of firm assets for personal gains. This practice is also widely observed in China although the tunneling is not necessarily done by the manager alone. This is no more evident in the process of *gaizhi*, a Chinese expression for firm restructuring whose scope ranges from incorporation to sale through auction of SOEs. A widely observed means of restructuring is spinning off by which the old SOE spins off a new private firm. Most of the productive assets of the old SOE would be transferred to the new firm, leaving the old SOE with only debts, useless equipment, and old workers (Garnaut *et al.,* 2003).

## 3. TESTABLE HYPOTHESES

Keeping in mind the background information introduced in the last section, we turn in this section to deduce several testable hypotheses regarding the relationship between law and financial development and economic growth. While it has a system of relatively complete and reasonable written laws, China is notorious for its weak implementation of the law (Garnaut *et al.,* 2001; Pei, 2001). Pistor *et al.* (2000) show in a sample of 19 transition countries that the effectiveness of law is more significant than the completeness of the written law to enhance economic growth. While this result may generally hold at the aggregate level, more careful studies are needed to analyze the channels by which the effectiveness of law could potentially improve economic efficiency. In terms of the purpose of this paper, a more effective legal system may block the leakage process that moves financial resources from the state sector to the private sector. To the extent that the private sector is more efficient than the state sector (Brandt & Zhu, 2000; Song & Yao, 2006), the leakage helps improve economic efficiency in China.

To carry out the discussion, we need a structured framework, which is described in Figure 1. We set the scene in the banking sector, ignoring the stock market for simplicity (our empirical tests will also focus on the banking sector). The state sector is assumed to get finance only through bank credit, and the private sector is assumed to get finance both through bank credit and other sources such as self-financing and borrowing from friends and the informal credit market. Bank credit allocated to the private sector is rationed, though.

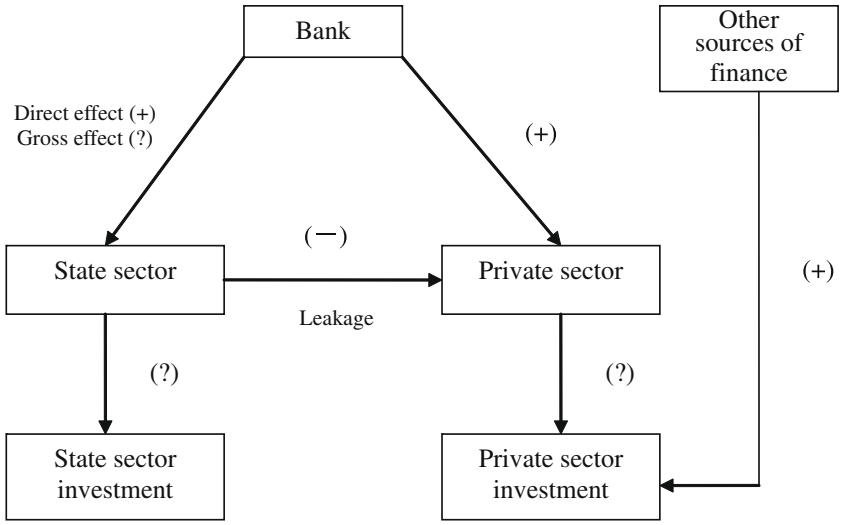


Figure 1. *The effectiveness of law and financial development (symbols in parentheses indicate the effects of enhanced law).*

(a) *Financial development*

We are concerned with four indicators of financial development, financial depth (DEPTH, thereafter), bank competition (COMP), share of private credit (PRIVATE), and share of private investment (PRIINV). DEPTH is adapted from King and Levine (1993). While King and Levine define this measure as the liquid liabilities of the financial system divided by GDP, here we define it as the size of the outstanding loans of the financial system divided by GDP. Our definition is narrower than King and Levine's because we do not include banks' capital and interest-bearing assets such as treasury bonds and savings in the central bank. We adopt this narrower definition because of the limitation of the available data. Nevertheless, it is reasonable to believe that our definition of the financial depth is highly correlated with King and Levine's definition. COMP is a new measure, which is the share of credit issued by banks and financial institutions other than the four major state banks. King and Levine (1993) define a measure, BANK, to measure the degree to which the central bank *versus* commercial banks is allocating credit. Since our study unit is on provinces, this measure is not adequate. Instead, we use COMP to measure the competitiveness of the banking system. The smaller and regional banks are more flexible and provide more services to firms. PRIVATE is defined the same as King and Levine's, equaling the share of credit allocated to private enterprises in the total domestic credit. PRIINV is a new measure. It is introduced specifically to accommodate the leakage effect, which the measure PRIVATE does not capture.

With the above setup, we can proceed to derive several testable hypotheses. We say that the effectiveness of law is improved if court rulings over disputes of commercial contracts become more accurate, expedited, and effectively enforced. Our key argument rests on the leakage effect running from the state sector to the private sector. Central to the argument is the risk-sharing function provided by a lax legal system under financial repression. Investment in the private sector has a higher expected return, but also has a larger risk than investment in the state sector. When the legal system is perfectly effective, managers in the state sector foot all the risk created by the failure of the leaked investment. In this case, the incentive of SOE managers to divert investment into the private sector is low. In contrast, when the legal system is not so effective, the bank cannot fully enforce loan contracts so it shares with SOE managers part of the risk associated with diversion. As a result, SOE managers' incentive to divert investment increases. Of course, when the legal system is very ineffective, for example, close to being unable to enforce any contracts, the bank will not be willing to lend to anyone at all. Therefore, there exists a medium range of contract enforcement where the bank issues loans to the state sector and the state sector diverts part of the loans to the private sector. Implicitly, the bank maintains a mixed loan portfolio, which can be optimal for its operation. With risk being shared by the bank, SOE managers' mixed investment portfolio is also optimal.

The above argument depends on the assumption of credit rationing toward the private sector. If rationing does not exist, the bank can design an explicit loan portfolio mixing loans to the state sector with loans to the private sector. In this case, the leakage of funds from the state sector to the private sector becomes redundant.

The above argument also has an implicit assumption that SOE managers would face real legal punishments should they default a loan. It is true that banks, especially the four big state banks, have been quite lenient toward SOEs because one of their tasks has been to keep SOEs float. However, banks' commercial interests have been enhanced since 1994 when the central bank decided to commercialize the state banks (Garnaut *et al.,* 2003). Clearly, the two roles of the banks conflict with each other. In this process, the legal system is on the banks' side when they want to protect their commercial interests. At the minimum, banks can use the legal system as a strategic move against defaulters in order to deter more defaults.

Test of the above story would be easy if we had data on the magnitude of leakage. Unfortunately, we do not have such data. Consequently, we have to resort to indirect methods to conduct the test. This is done by studying PRIINV, the share of private investment. We notice that three factors determine the magnitude of PRIINV: the private sector's share of credit directly allocated by the banking system (PRIVATE), the leakage, and finance through other sources such as internal profits, informal financial markets, and personal borrowings. With the other two factors controlled for, we expect that the leakage effect would lead to a negative impact of the enhanced legal system on PRIINV. This is our first testable hypothesis:

**H1.** Enhancing the effectiveness of law reduces the share of private investment if the share of private credit and the other sources of finance are controlled for.

If this hypothesis is proved, enhancing the effectiveness of law may or may not increase the share of private investment, which leads to our second hypothesis:

**H2.** The share of private investment may not increase as the effectiveness of law is enhanced.

With the above hypotheses established, we can move up one level to study the expansion of credit. An improvement in the law gives the bank more confidence to lend to both the state sector and the private sector. Because part of the reason for the rationing on the private sector is information asymmetry, stricter enforcement of the contract helps alleviate the problem by providing *ex post* remedies should a default ever happen. Therefore, we expect that the credit to the private sector will increase when the law is improved. The same thing may happen to the state sector, but the improvement is not likely to be as strong as in the case of the private sector because the state sector is not rationed. Therefore, although the direct effect of improved effectiveness of law is positive for both sectors, we nevertheless expect that the share of the credit to the private sector will increase as the legal system becomes more effective. This trend is enhanced when we take into account the leakage effect. Since H1 shows that the leakage is negatively affected by the enhancement of law, the state sector's demand for credit becomes smaller as the law improves. The gross effect of enhanced law on the state sector thus is unclear. As a result, the total amount of credit issued by the banking system may or may not increase as the legal system becomes more effective. The outcome depends on the magnitude of the leakage effect and the relative size of the state sector *versus* the private sector.

The discussion in the above paragraph leads us to our next two testable hypotheses:

**H3.** The share of credit to the private sector will increase as the legal system becomes more effective.

**H4.** Financial depth may not increase as the effectiveness of law is enhanced.

Lastly, as the smaller and regional banks target more on private firms than the four major state banks do, enhanced law will increase their incentive to issue more credit to the private sector for the same reasons that have established H3. We then expect the following hypothesis:

**H5.** A more effective legal system leads to more competition in the banking system.

### (b) *Economic growth*

An enhanced legal system may help economic growth either by enhancing the financial sector or through other non-financial channels. Judging by the hypotheses established above, we do not have *a priori* assessment on its effect through the financial channel. It is equally uncertain as to whether an enhanced legal system has a positive effect through non-financial channels because they may be subjected to similar arguments that we took to establish our earlier hypotheses. We leave open the conclusion in the following hypothesis:

**H6.** A more effective legal system may or may not facilitate economic growth in an environment of credit rationing.

## 4. DATA AND VARIABLES

The data for testing our hypotheses are assembled for 29 Chinese continental provincial administrative units in the period of 1991–2001.[8] Most of our data come from official Chinese publications, such as *China Statistical Yearbook* (CSY), *China Financial Statistical Yearbook* (CFSY), *China Legal Yearbook* (CLY), and individual provincial statistical yearbooks.

### (a) *Data for financial development indicators*

The four indicators for financial development, DEPTH, PRIVATE, COMP, and PRIINV, were defined earlier. Data for DEPTH come from the local chapters in CFSY. We include the credit issued by all the financial institutions, that is, the national and regional banks and the officially "non-banking financial institutions" such as the urban and rural credit cooperatives and the trust and investment companies. It is well known that there is a considerable amount of non-performing loans in the Chinese banking system, so the strength of DEPTH as a measure of financial depth may be weakened. However, there are no published data on the exact amount of non-performing loans in each province and there is no way to find them by personal efforts. We therefore have to rely on this imperfect measure of financial depth. Nevertheless, we believe that the true financial depth in each province is closely correlated with our measure as the amount of non-performing loans is likely to be proportional to the total amount of outstanding loans.

Data for PRIVATE come from the provincial statistical yearbooks. In our measurement, private credit largely coincides with the credit issued to the non-state sectors, which include agriculture, domestic private firms, township and village enterprises (TVEs), and foreign-invested firms. Agriculture in China is household based so it is primarily privately operated. TVEs are legally owned by local governments or village collectives, but they are constantly treated differently from the SOEs in the access to bank credits. In Chinese official statistics, private firms are only the firms owned by a single private owner and do not include incorporated and partnership firms. As a result, our measure of private credit does not include all credits issued to the real private sector. But this is the best proxy that we can get.

Data for COMP come from CFSY. Credit issued by regional banks and other financial institutes is calculated by subtracting the credit issued by the four major state banks from the total amount of credit. PRIINV is obtained by subtracting the fixed-asset investment made by SOEs and collective firms from the total amount of fixed-asset investment in a province (data are from the fixed-asset investment chapter of CSY). This is not a perfect measure for private investment because some collective firms are actually privately operated (these are those so-called "red hat" firms), but should serve our purpose with reasonable accuracy.

In Table 1 where the basic descriptive statistics are given for all the variables, one finds that the distribution of each of the four indicators is in reasonable range. Figure 2 then shows their trends in terms of provincial averages. Financial depth decreased in the early 1990s but picked up in the later years. The share of private investment and bank competition

Table 1. *Descriptive statistics of the variables (290 cases)*

| | Minimum | Maximum | Mean | Std. dev. |
|---|---|---|---|---|
| DEPTH | 0.54 | 2.53 | 1.03 | 0.31 |
| PRIVATE | 0.04 | 0.35 | 0.16 | 0.07 |
| COMP | 0.00 | 0.59 | 0.36 | 0.12 |
| PRIINV | 0.00 | 0.70 | 0.39 | 0.14 |
| RCC | 0.54 | 1.09 | 0.95 | 0.09 |
| CRMP | 21.27 | 315.32 | 102.42 | 62.76 |
| GOV | 0.05 | 0.24 | 0.12 | 0.04 |
| STATE | 0.10 | 0.85 | 0.49 | 0.18 |
| FDI | 0.00 | 0.89 | 0.41 | 0.51 |
| TRADE | 0.03 | 0.79 | 0.31 | 0.42 |
| ENROLL | 0.84 | 1.00 | 0.98 | 0.03 |
| ASSOCs | 0.03 | 0.30 | 0.16 | 0.06 |

increased in the early 1990s but stagnated since 1994. The share of private credit increased steadily, albeit with a very small growth rate.

### (b) *Measures of the effectiveness of the legal system*

While other studies rely on surveyed subjective opinions to construct the measures for the effectiveness of the legal system (e.g., Pistor *et al.,* 2000), our measure, RCC, is an objective one. In China, a commercial case is declared by the court as "closed" only after the court rule is implemented or after it is verified that the implementation cannot be carried out because of uncontrollable forces (such as the debtor does not have enough funds, the debtor is dead or officially declared disappeared). The time span for a case to be closed depends both on the speed of the court ruling and on the effectiveness of the implementation of the ruling. While court ruling takes time in certain circumstances, it is the implementation stage that takes most of the time and is complained the most by entrepreneurs. In some cases, it takes years for the ruling to get implemented and the case closed. The qualification of the judges, the sufficiency of funds allocated to the court, the degree of corruption in the legal system, as well as the consciousness of the business sector in recognizing the rule of law, all influence the time span to settle a case. Therefore, RCC provides a comprehensive measure to help assess some important aspects of the effectiveness of the legal system in each province. [9] Data for this variable come from the authors' own collection as well as from CLY. In the regression, we use the logarithm of RCC to facilitate our interpretation of the scale of its effects.

However, RCC may be a biased measure for assessing the effectiveness of law because of two reasons. One is that the court may deliberately take cases that it believes are easy to close, and the other is that the court may give arbitrary and fast verdicts. In addition, RCC does not measure the extent of the rule of law; neither does it measure the trust of the public in the court system. [10] In particular, a larger RCC may imply the infringement of the rule of law because the court may sacrifice procedural rigor and even some principles for speedy handling of court cases. Therefore, we will use an alternative measure, the number of commercial cases received by the court per million of population, abbreviated as CRMP subsequently, to complement and check the results of RCC. [11] CRMP serves several purposes. First, it controls the court's selection of easy cases. Second, to the extent that people in a province with low trust in the court system tend not to use it as a way to solve conflicts, CRMP controls the public's trust in the court system. Third, because arbitrary court rulings tend to deter people from taking cases to the court, CRMP also controls the court's intention of arbitrary rulings.

The average of RCC in the sample is 0.95 (Table 1), [12] which is high. Nevertheless, this high ratio should not be interpreted as an indicator showing that the legal system is close to perfect. Rather, RCC should be taken as a scaled up index for the general effectiveness of the legal system. [13] Figure 3 shows the provincial average trends of RCC and CRMP. RCC was low in the early 1990s but had kept a strong trend of improvement subsequently and reached a high level in the later years. CRMP increased in the early 1990s and reached the highest in the period 1996–99. But since 1999, there was a sharp drop.

Significant regional diversities remained, though. Four provinces/municipalities, Beijing, Guangxi, Hainan, and Shannxi, had an almost perfect RCC (close to 1) throughout the years, but their CRMPs were relatively low. In contrast, Shanghai, Zhejiang, and Jiangsu had very high average CRMPs, but relatively low RCCs. Other provinces were in between. Figure 4a and b compares the time trends of RCC and CRMP of three representative provinces/municipalities: Beijing, Shanghai, and Zhejiang. Zhejiang maintained the highest share of private investment. Its 11-year average of PRIINV was 0.64, whereas the provincial average was only 0.39. Its RCC was only 0.54 in 1991, but quickly improved to close to perfect. Its CRMP was high at the beginning and further increased in the later years (but dropped in 2000 and 2001). Beijing had close to perfect RCC throughout the years. Its CRMP started low, improved later, but was still much behind Zhejiang by 2001. Beijing's average share of private investment was only 0.32. So a higher RCC does not mean a higher PRIINV. Shanghai had an earlier improved RCC and a higher

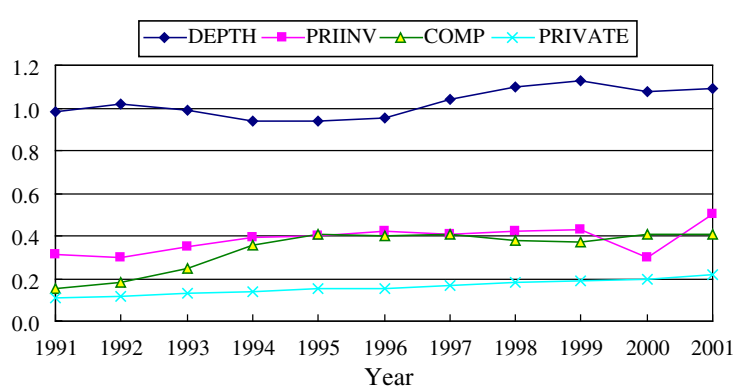


Figure 2. *Trends of financial development.*

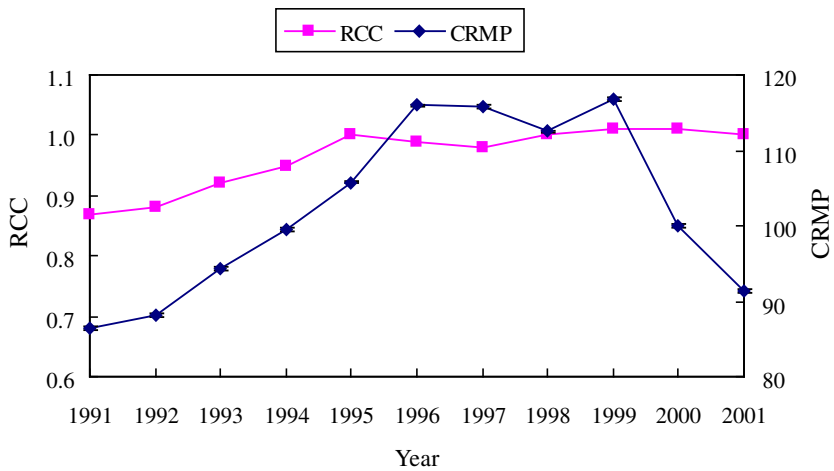


Figure 3. *Trends of RCC and CRMP: provincial average.*

CRMP than Zhejiang before 1999, but its average share of private investment was 0.45, also much behind Zhejiang's (although it is higher than Beijing's). Therefore, a higher CRMP does not imply a higher PRIINV either.

In the mid-1990s, the Supreme Court began to emphasize the ratio of closed cases. As a result, the variation of RCC was low in the late 1990s, as shown in both Figures 3 and 4a. This may undermine the power of the tests of our hypotheses. We will conduct a robustness check of our results by using data from the period 1991–96.

(c) *Control variables*

In our regressions, we will also include a set of control variables that describe a province's general economic conditions and social development. They are the ratio of government spending in total GDP (GOV), the share of the state sector's industrial output in total industrial output (STATE), foreign direct investment divided by GDP (FDI), international trade (the sum of imports and exports) divided by GDP (TRADE), primary school enrollment (ENROLL), and the number of associations (business chambers, industrial associations, and other voluntary or government-sponsored associations) in 1,000 of the population (ASSOCs). Except ASSOCs whose data are from CLY, all other variables obtain data from CSY and provincial statistical yearbooks. It has been established in the literature that government expenditure slows down while FDI, trade, and better education promote economic growth (e.g., Barro & Sala-i-Martin, 1995; Dollar, 1992). So it is reasonable to believe that these variables also

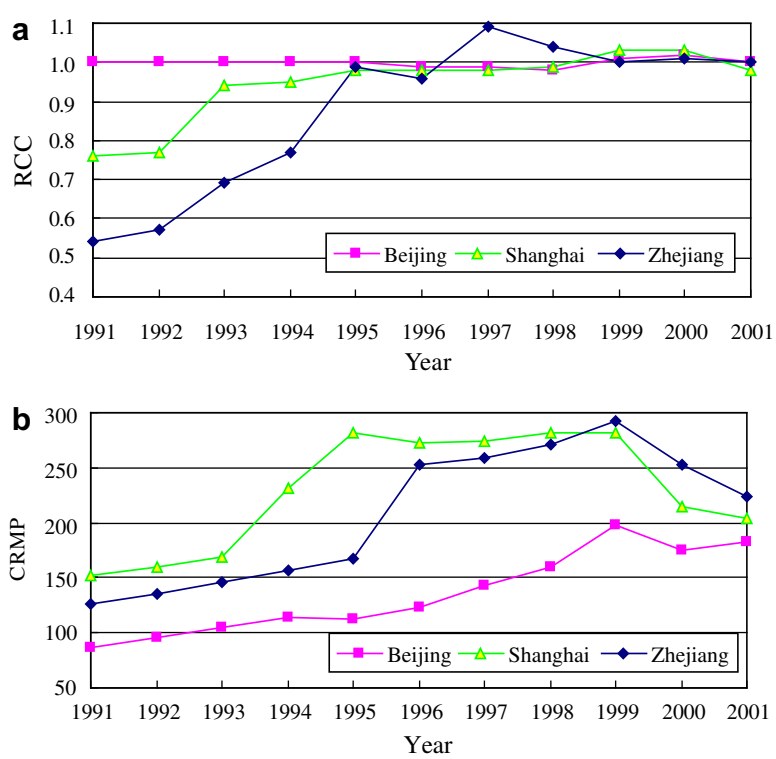


Figure 4. *(a) RCC in three provinces/municipalities. (b) CRMP in three provinces/municipalities.*

play a role in financial development. In particular, government expenditure may have a crowding-out effect on financial development. It has also been shown that social capital promotes economic growth (Knack & Keefer, 1997). The variable ASSOCs is meant to capture the amount of social capital in a province. Social capital fosters trust in the society, which is very important in current China where trust has not been established as a business culture. More trust reduces transaction costs, so we expect that a province with a higher value of ASSOCs would have a higher degree of financial development. The variable STATE is meant to capture a province's economic structure. While we expect that a larger state sector will reduce bank competition and the amount of credit allocated to the private sector and has a crowding-out effect on private investment, it is not clear whether it is detrimental to our measure of the financial depth. This is because it is relatively easier for SOEs to borrow from the bank, so a larger state sector may induce the bank system to issue more credit. Basic statistics of the control variables as well as the four financial indicators, RCC, and CRMP are reported in Table 1.

To control for endogeneity and irregularities caused by intertemporal fluctuations, all the explanatory variables (RCC, CRMP, and the control variables) will enter our regressions by their three-year lagged averages (the four dependent variables of financial development will use the value of the current year, though). To save data, the year of 1992 uses the explanatory variables of 1991, and the year of 1993 uses the averages of the explanatory variables of 1991 and 1992.

## 5. EMPIRICAL RESULTS

### (a) *Tests of H1 and H2*

To test H1, the most important thing is to find controls for the other sources of finance. Better enforcement of law is likely to enhance these sources of finance as the formal legal practice provides a yardstick standard for contract enforcement in the informal market and personal relationships (Hay & Shleifer, 1998). So the estimate for the impact of the effectiveness of law on the leakage effect would be biased if we did not control for those sources. Unfortunately, we do not have data to directly measure them and have to rely on indirect controls. Some of the control variables introduced in the last section serve that purpose. For example, FDI can be an important source of finance for the private sector. In addition, firms in a province with a larger stock of social capital may find it easier to get finance in the informal financial market. The most effective control, however, perhaps is *per capita* GDP because higher *per capita* GDP implies more surpluses in people's earnings. Therefore, we estimate the following specification to test H1:

$$PRIINV_{it} = a_0 + b_1\overline{RCC}_{it-1} + b_2\bar{X}_{it-1} + c_1 PRIVATE_{it-1} + c_2 \ln GDP_{it-1} + a_i + a_t + e_{it}, \quad (1)$$

where $PRIINV_{it}$ is the share of private investment of the $i$th province in year $t$, $\overline{RCC}_{it-1}$ is the lagged three-year average of RCC, $\bar{X}_{it-1}$ is the lagged three-year average of the set of control variables defined in the last section, $PRIVATE_{it-1}$ is PRIVATE lagged for one-year, $\ln GDP_{it-1}$ is *per capita* GDP lagged for one year, $a_0$ is the constant term, $b_1$, $b_2$, $c_1$, and $c_2$ are estimable parameters, $a_i$ is the effect for the $i$th province, $a_t$ is the effect for year $t$, and $e_{it}$ is an i.i.d. error term. GDP is measured in 1990 constant terms and enters the model in logarithm. We use its one-year lagged value instead of the lagged three-year moving average because GDP is used to control for the other sources of finance in year $t$, rather than serving as an explanatory variable. The same thing is true for PRIVATE, which, according to H1, enters the model to control for the amount of formal credit allocated to the private sector. The provincial effect is arguably strong because of the heterogeneities among the Chinese provinces. The period covered by our dataset was quite volatile in terms of both domestic and international macroeconomic situations. China itself has experienced relatively high inflation in the first half of the 1990s and then serious deflation in the late 1990s. Internationally, the Asian financial crisis had a clear impact on China, especially in 1998 and 1999. Therefore, it is important to control for the macroeconomic conditions in different years. For these reasons, the two-way panel model in Eqn. (1) is appropriate. We estimate this model by both the fixed effect and the random effect panel method and present the results of OLS estimation for comparison.

The results of the estimation of Eqn. (1) are presented in Table 2. Both the LR test and the *F-test* show that the two panel models fit the data much better than the OLS model, but the Hausman test shows that the fixed-effect model is ineffi-

Table 2. *Test of H1, dependent variable = PRIINV*

| | OLS | | Two factor model | | | |
|---|---|---|---|---|---|---|
| | | | Fixed effect | | Random effect | |
| | Estimate | St. err. | Estimate | St. err. | Estimate | St. err. |
| Constant | 0.036 | 0.353 | −0.242 | 0.836 | −0.752 | 0.577 |
| Ln(RCC) | −0.106* | 0.062 | −0.097 | 0.061 | −0.112** | 0.059 |
| GOV | −0.241 | 0.286 | 0.729 | 0.468 | 0.223 | 0.406 |
| STATE | −0.353*** | 0.069 | −0.079 | 0.113 | −0.215** | 0.100 |
| FDI | 0.031 | 0.020 | −0.036 | 0.034 | −0.021 | 0.031 |
| TRADE | 0.003 | 0.022 | 0.036 | 0.033 | 0.051* | 0.030 |
| ENROLL | 0.610 | 0.561 | 0.771 | 0.574 | 1.062** | 0.501 |
| ASSOCs | 0.234 | 0.144 | −0.322 | 0.295 | −0.056 | 0.241 |
| PRIVATE_1 | 0.297*** | 0.105 | 0.024 | 0.116 | 0.075 | 0.111 |
| LNGDP_1 | −0.013 | 0.014 | −0.015 | 0.058 | 0.020 | 0.032 |
| $R^2$ | 0.501 | | 0.778 | | | |
| | | | *P*-value for Hausman test: 0.272 | | | |

* Significance at 10% level.
** Significance at 5% level.
*** Significance at 1% level.

cient than the random-effect model (the *P*-value of the test is 0.272). In addition, the results of the OLS model and the random-effect model largely agree with each other. So we base our discussion on the results of the random-effect model. The most important result is that H1 is confirmed: the coefficient of Ln(RCC) is significantly negative at the 5% significance level. With an estimate at −0.112, it implies that when a province with the least effective legal system (with a value of RCC at 0.54) improves to the level of the province with the most effective legal system (with a value of RCC at 1.09), that is, when its legal system in enhanced by 100%, its share of private investment will decrease by 11.2 percentage points, more than one-fourth of the sample average.

There are three significant variables in the set of the control variables. The state share of industrial output has a strong detrimental effect on the share of private investment. An increase of one percentage point of the variable STATE leads to a reduction of 0.22 percentage points in PRIINV. Therefore, a larger state sector does have a crowding-out effect on private investment. One other significant variable is ENROLL. An increase of one percentage point in ENROLL leads to about 1.1 percentage point increase in PRIINV. With a smaller statistical significance, TRADE is shown to have a positive effect on private investment. If TRADE is increased by one percentage point, PRIINV will increase by 0.05 percentage point, a quite small effect. All the other control variables are insignificant. Our expected positive effects of FDI and social capital fail to come true, nor does the expected negative effect of government spending.

The lagged variables of private investment and *per capita* GDP (PRIVATE_1 and LNGDP_1) are also insignificant although they have positive signs. PRIVATE_1 is shown to be highly significant in the OLS regression, though. This means that both private investment and private credit are highly correlated with uncontrolled provincial and time effects. When the provincial and time effects are controlled, the linkage between private investment and private credit is quite weak. This, however, is consistent with the rationing nature of the credit received by the private sector. The insignificance of LNGDP_1 either implies that *per capita* GDP is not an adequate control for private sector's sources of finance, or implies that those sources are indeed not important for private investment. Judging by the private sector's heavy reliance on self-finance and the informal credit market to make investment as reported in Garnaut *et al.* (2001) and other sources, it is likely the case that *per capita* GDP is not a good control. This observation actually reinforces our confidence in the estimate of the leakage effect because a better control of the other sources of finance could only enhance the estimate, a claim that will be supported by our test of H2.

The model for testing H2 is a reduced version of model (1):

$$PRIINV_{it} = a_0 + b_1\overline{RCC}_{it-1} + b_2\bar{X}_{it-1} + a_i + a_t + e_{it}, \qquad (2)$$

where the definitions of the variables and coefficients are the same as those in (1). The results of the estimation are reported in Table 3. The two panel models continue to outperform the OLS model, and the random effect model continues to be more efficient than the fixed-effect model (the *P*-value is 0.124). Therefore, the results of the random-effect model will still be those that we consult. They largely repeat what we found in model (1) except TRADE now turns insignificant. Ln(RCC) is still significantly negative, but both its magnitude and statistical significance are slightly reduced. This is consistent with our theoretical discussion. Since this reduced estimate is obtained when the two control variables, PRIVATE_1 and LNGDP_1, are taken out of the regression, this result supports our claim made for the test of H1, that is, we would obtain a stronger estimate for the effect of Ln(RCC) if better controls for the other sources of finance were used to substitute for LNGDP_1.

Our finding that enhanced effectiveness of law *reduces* the private share of investment shows that the leakage effect is very strong as to outweigh the effectiveness of law's possible positive effects on private credit and the private sector's other sources of finance. The negative gross effect of enhanced court enforcement on private share of investment is significant. If the least effective province improves its legal system by 100%, its share of private investment will decrease by 10.2 percentage points. We will see in the next section that this reduction has a significant implication for GDP growth.

### (b) *Tests of H3–H5*

Replacing PRIINV by PRIVATE, DEPTH, and COMP, respectively, Eqn. (2) is a ready model to test H3–H5. The results are presented in Tables 4–6. In all the three tests, the panel models outperform the OLS model, and the random-effect model is shown to be inadequate (i.e., the provincial and year dummies are correlated with the regressors). We will carry out our discussion by mainly referring to the results of the fixed-effect model, but will also frequently compare them with the results of the other two models.

Table 3. *Test of H2, dependent variable = PRIINV*

| | OLS | | Fixed effect | | Random effect | |
|---|---|---|---|---|---|---|
| | Estimate | St. err. | Estimate | St. err. | Estimate | St. err. |
| Constant | 0.069 | 0.356 | −0.382 | 0.531 | −0.499 | 0.491 |
| Ln(RCC) | −0.094 | 0.057 | −0.094 | 0.059 | −0.102* | 0.058 |
| GOV | −0.242 | 0.288 | 0.736 | 0.464 | 0.210 | 0.401 |
| STATE | −0.409*** | 0.066 | −0.077 | 0.111 | −0.244*** | 0.095 |
| FDI | 0.026 | 0.020 | −0.037 | 0.033 | −0.014 | 0.030 |
| TRADE | 0.000 | 0.022 | 0.039 | 0.032 | 0.055 | 0.029 |
| ENROLL | 0.521 | 0.344 | 0.789 | 0.544 | 0.989** | 0.491 |
| ASSOCs | 0.044 | 0.116 | −0.319 | 0.291 | −0.031 | 0.231 |
| $R^2$ | 0.481 | | 0.784 | | | |
| | | | *P*-value for Hausman test: 0.124 | | | |

* Significance at 10% level.
** Significance at 5% level.
*** Significance at 1% level.

Table 4. *Test of H3, dependent variable = PRIVATE*

| | OLS | | Fixed effect | | Random effect | |
|---|---|---|---|---|---|---|
| | Estimate | St. err. | Estimate | St. err. | Estimate | St. err. |
| Constant | −0.034 | 0.205 | 0.851*** | 0.290 | 0.049 | 0.145 |
| Ln(RCC) | 0.114*** | 0.033 | 0.111*** | 0.032 | 0.106*** | 0.023 |
| GOV | 0.055 | 0.166 | 0.416* | 0.253 | 0.047 | 0.117 |
| STATE | −0.228*** | 0.038 | −0.119** | 0.061 | −0.234*** | 0.027 |
| FDI | −0.025 | 0.011 | 0.019 | 0.018 | −0.023*** | 0.008 |
| TRADE | 0.004 | 0.012 | 0.048*** | 0.017 | 0.006 | 0.009 |
| ENROLL | 0.331* | 0.201 | −0.651** | 0.291 | 0.252* | 0.140 |
| ASSOCs | −0.003 | 0.067 | −0.357** | 0.159 | −0.024 | 0.048 |
| $R^2$ | 0.362 | | 0.761 | | | |
| | | | *P*-value for Hausman test: 0.000 | | | |

* Significance at 10% level.
** Significance at 5% level.
*** Significance at 1% level.

Table 5. *Test of H4, dependent variable = DEPTH*

| | OLS | | Fixed effect | | Random effect | |
|---|---|---|---|---|---|---|
| | Estimate | St. err. | Estimate | St. err. | Estimate | St. err. |
| Constant | −1.666** | 0.791 | −0.699 | 0.812 | −1.633*** | 0.536 |
| Ln(RCC) | 0.570*** | 0.127 | 0.038 | 0.091 | 0.286*** | 0.076 |
| GOV | 1.930*** | 0.640 | 3.827*** | 0.710 | 2.383*** | 0.426 |
| STATE | 0.887*** | 0.147 | 0.608*** | 0.170 | 0.779*** | 0.099 |
| FDI | 0.118*** | 0.044 | 0.078 | 0.051 | 0.139*** | 0.030 |
| TRADE | 0.168*** | 0.048 | 0.041 | 0.049 | 0.129*** | 0.032 |
| ENROLL | 1.870** | 0.812 | 0.871 | 0.822 | 1.841*** | 0.521 |
| ASSOCs | 0.952*** | 0.261 | 0.641 | 0.445 | 0.840*** | 0.190 |
| $R^2$ | 0.462 | | 0.891 | | | |
| | | | *P*-value for Hausman test: 0.000 | | | |

** Significance at 5% level.
*** Significance at 1% level.

In the test of H3, all the variables except FDI are significant in the fixed-effect model. In particular, Ln(RCC) is shown to be significant at the 1% significance level with a coefficient of 0.111. Indeed, this variable is also highly significant in the OLS and random-effect regressions. Therefore, H3 is strongly confirmed. The contrast between the test result of H3 and those of H1 and H2 is interesting. It shows that the effectiveness of law does have different impacts on the share of private investment and the share of private credit. Since bank credit is one of the important sources that private sector gets money for investment, enhanced court enforcement must have significantly negative impacts on other informal financing channels among which leakage is one of the most important.

Turning to the test results of H4 presented in Table 5, we find that the fixed-effect model only offers two significant coefficients, for GOV and STATE, to be exactly, while the OLS and random-effect models show that every coefficient is strongly significant. So, most of the variables and DEPTH have strong joint correlations with the provincial fixed effect. The strong positive effects of GOV and STATE shown by

Table 6. *Test of H5, dependent variable = COMP*

| | OLS | | Fixed effect | | Random effect | |
|---|---|---|---|---|---|---|
| | Estimate | St. err. | Estimate | St. err. | Estimate | St. err. |
| Constant | −0.037 | 0.333 | 0.067 | 0.432 | 0.093 | 0.212 |
| Ln(RCC) | 0.250*** | 0.054 | 0.093* | 0.048 | 0.132*** | 0.037 |
| GOV | −1.200*** | 0.269 | 0.029 | 0.378 | −1.073*** | 0.172 |
| STATE | 0.004 | 0.062 | 0.063 | 0.091 | −0.020 | 0.041 |
| FDI | 0.005 | 0.018 | 0.047* | 0.027 | −0.007 | 0.012 |
| TRADE | 0.008 | 0.020 | −0.010 | 0.026 | 0.031** | 0.013 |
| ENROLL | 0.525* | 0.322 | 0.317 | 0.437 | 0.409** | 0.205 |
| ASSOCs | 0.181* | 0.109 | −0.440* | 0.237 | −0.009 | 0.070 |
| $R^2$ | 0.360 | | 0.845 | | | |
| | | | *P*-value for Hausman test: 0.000 | | | |

* Significance at 10% level.
** Significance at 5% level.
*** Significance at 1% level.

all the three models are somewhat surprising but make sense. Government spending in China is usually accompanied by the boom of bank loans. This is particularly true in infrastructure projects because firms demand more loans for investment if they receive contracts from the government and can easily obtain loans from banks by showing the government contracts which send signals to banks that the loans have little risk. So GOV exhibits a strong positive effect on the amount of loan issued by the bank. In addition, the positive effect of STATE can be explained by the Chinese banking system's strong favor toward the state sector and lends weights to our premise that the formal credit is highly rationed toward the private sector.

Regarding the test of H4, we have an "irrelevance" result in the fixed-effect model: the improvement of court enforcement does not have a significant, either positive or negative, impact on DEPTH. However, both the OLS and the random models show that there is a strong and positive impact. To the extent that the fixed-effect model is the best model to fit the data, we have to conclude that this positive impact is spurious in the sense that it is related to unobserved provincial or year characteristics that have a positive effect on both the effectiveness of law and financial depth. Interpreted in another way, this means that merely improving the effectiveness of law does not lead to a deeper financial market. This result again supports the existence of the leakage effect. We support this claim by the following three-step reasoning. First, because the share of private credit increases with the enhancement of the legal system, the amount of private credit must have increased faster than the amount of credit received by the state sector. Second, since the total amount of credit is unchanged as the legal system improves, the above conclusion must lead us to a further conclusion that the credit received by the state sector is reduced by an enhanced legal system. Finally, there is only one way that an enhanced legal system leads to a reduction of the credit to the state sector, that is, the legal system's blocking of the leakage process.

Lastly, Table 6 shows that H5 is verified, regardless which model we stick to. However, quantitative differences do exist between the fixed-effect model and the two other models. While the two other models show that Ln(RCC) has quite economically significant effects on bank competition, its effect found in the fixed-effect model is considerably smaller, especially when it is compared with the OLS result. This shows that the provincial and year fixed effects do take away a considerable part of the explanatory power of the effectiveness of law. Nevertheless, the result that a positive effect does remain after the fixed-effect is controlled for implies that improving the legal system alone is still useful, although the marginal effect may be small (a 100% enhancement of the legal system leads to an increase in the share of other banks' credit by nine percentage points).

Among the control variables, only two variables, FDI and ASSOCs, are significant in the fixed-effect model. FDI is shown to have a positive effect although the magnitude is almost negligible. Again, ASSOCs is shown to have a negative effect, which contradicts to the OLS result once more. In fact, we have not found any significantly positive effect of ASSOCs in all the regressions that are deemed appropriate for the data. In the occasions that we did find a positive effect, it nevertheless arises from its correlation with the provincial fixed effect. Therefore, unless our use of ASSOCs as a measure for social capital is inadequate, social capital does not play a significant role to foster financial development in China. [14]

### (c) *Tests of H6*

We run five regressions to explore the linkage between the effectiveness of law and economic growth. The results of these five regressions are presented in Table 7. The dependent variable of the regressions is the average growth rate (in percentage term) of the period of 1992–2001, and the explanatory variables take their value of 1991. This specification is consistent with what has been done in the literature (see Levine 1997, for a review).

In Models I–III, we explore the relationship between the four indicators of financial development and the growth rate. Model I only has the four indicators and the logarithm of the *per capita* GDP of 1991 in the regression. The 1991 GDP is added to control provincial heterogeneity at the starting point. Among the four financial indicators, only PRIINV has a significantly positive coefficient. The magnitude of this coefficient is large: an increase of one percentage point of the share of

Table 7. *Results of the growth rate (29 cases)*

| | Model I | | Model II | | Model III | | Model IV | | Model V | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Estimate | St. err. | Estimate | St. err. | Estimate | St. err. | Estimate | St. err. | Estimate | St. err. |
| Constant | 0.346 | 4.512 | 12.600 | 9.000 | 24.600 | 8.838*** | 11.300 | 9.656 | 26.103*** | 10.059 |
| Ln(RCC) | | | | | | | 0.142 | 1.212 | −0.230 | 1.068 |
| DEPTH | −0.690 | 1.712 | 1.031 | 1.101 | 0.914 | 1.121 | | | | |
| PRIVATE | −0.757 | 5.212 | −1.578 | 3.605 | −3.032 | 3.246 | | | | |
| PRIINV | 8.053*** | 2.526 | 6.219*** | 1.919 | 6.281*** | 1.767 | | | | |
| COMP | 1.030 | 4.119 | −4.565 | 3.221 | −0.193 | 3.915 | | | | |
| GOV | | | 3.855 | 7.716 | 2.789 | 6.606 | 3.231 | 9.180 | 2.110 | 7.983 |
| STATE | | | −7.913*** | 2.989 | −5.278* | 2.724 | −9.361*** | 2.865 | −7.023** | 3.225 |
| FDI | | | 1.682 | 1.136 | 2.564* | 1.515 | 0.854 | 1.981 | 0.637 | 1.046 |
| TRADE | | | 0.023 | 0.815 | −0.552 | 0.918 | 0.253 | 0.812 | 0.410 | 0.732 |
| ENROLL | | | 0.031 | 0.123 | −0.088 | 0.111 | 0.097 | 0.104 | −0.018 | 0.095 |
| ASSOCs | | | 0.553 | 0.558 | 0.857** | 0.423 | 0.666 | 0.607 | 0.960** | 0.503 |
| Ln(GDP) | 1.210* | 0.701 | −0.443 | 0.616 | −0.743 | 0.745 | −0.712 | 0.681 | −1.309* | 0.748 |
| Central | | | | | 0.187 | 1.123 | | | −0.467 | 0.946 |
| West | | | | | −1.359 | 0.957 | | | −2.016* | 1.074 |
| $R^2$ | 0.545 | | 0.884 | | 0.927 | | 0.794 | | 0.855 | |

* Significance at 10% level.
** Significance at 5% level.
*** Significance at 1% level.

private investment leads to an increase of 0.81 percentage points in the growth rate. The regression shows that there is a fairly strong tendency of divergence among the Chinese provinces, as doubling the 1991 *per capita* GDP leads a province to grow faster by 1.2 percentage points in the subsequent 10 years. However, this strong tendency of divergence no longer holds once we move to the other models when more controls are added. In Model II, the control variables that we used before are added. PRIINV is still the only significant variable among the four financial indicators, but its magnitude is reduced to 0.62 percentage points of the growth rate for one percentage point increase in itself. Among the control variables, only STATE is significant. A province with a larger state industrial sector falls strongly behind other provinces: an increase of one percentage point in the industrial share of the state sector reduces a province's average growth rate by 0.79 percentage points. Model III then adds two regional dummies to denote the central and western provinces, respectively (the east coast is used as the reference region). We do so because some recent studies (e.g., Xu & Shu, 2004) have shown that there is evidence for club convergence among the Chinese provinces. Nevertheless, this kind of convergence is statistically highly insignificant in our regression although the sign of the logarithm of the 1991 *per capita* GDP does turn to be negative. PRIINV continues to be the only significant financial indicator and its magnitude is almost unchanged compared with Model II. In addition, STATE remains significantly negative although the size of its effect is reduced. However, there are also two new results. FDI and ASSOCs now have significantly positive and economically meaningful effects on the growth rate.

In summary, the share of private investment is the only indicator of financial development that shows a consistent positive and strong effect on economic growth. The strong positive linkages between other indicators of financial development and economic growth found in cross-country study do not show up. The short time period covered by our study may be responsible for these results. In the literature, 20 to 30-year average growth rates are studied whereas we only study 10-year growth data. Nevertheless, our results do match the Chinese reality since the early 1990s, that is, the private sector has become the engine of China's overall economic growth, and the state sector has become a burden of its growth (Garnaut *et al.,* 2001). In addition, the paramount importance of private investment implies that improving the legal system alone has a detrimental effect on economic growth. By our early estimation, if the province with the least effective legal system made an improvement to reach the level of the most effective province, its share of private investment would be reduced by 10.2 percentage points. Using the conservative estimates provided by Models II and III, this reduction would lead to a fall of the growth rate by about 0.7 percentage points. This is about 8% of China's average growth rate in the 1990s, which implies a loss of about 8 billion US$ each year. [15]

To gouge the gross effect of the improved effectiveness of law, we run Models IV and V. The four indicators of financial development are left out. Model IV does not include the regional dummies whereas Model V does. STATE continues to be highly negative in both models, and ASSOCs takes a significantly positive sign in Model V. In addition, Model V shows a tendency of strong club convergence. However, since this finding highly depends on model specification, it is premature to take it as firm evidence for convergence.

The important result of Models IV and V is that both models show that the effectiveness of law does not have a significant impact, be it positive or negative, on the growth rate. This insignificant result may arise for the following two combined reasons. On the one hand, the improvement of the legal system has mixed impacts on the four indicators of financial development, and the only indicator that contributes positively to growth, that is, the share of private investment, is reduced by improved effectiveness of law. On the other hand, improvements made to the legal system may not have a significant impact on the other aspects of the economy. However, the result can also be a consequence of the short time period covered by our study. If this is true, it is premature to draw a definite conclusion regarding the gross effect of the effectiveness of law on economic growth.

### (d) *Results with data from the period 1991–96*

The variation of RCC starting in the late 1990s is low, so our results concerning its impacts on financial development may be artificial because the performance indicators continued to be improved but RCC did not. To avoid the bias created by this possibility, we test H1–H5 again by using data from the

Table 8. *Robust tests*

| | H1 | | H2 | | H3 | | H4 | | H5 | | H6 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Estimate | St. err. | Estimate | St. err. | Estimate | St. err. | Estimate | St. err. | Estimate | St. err. | Estimate | St. err. |
| *Test with 1991–96 data*[a] | | | | | | | | | | | | |
| Ln(RCC) | −0.079* | 0.047 | −0.084* | 0.045 | 0.136*** | 0.045 | −0.004 | 0.087 | 0.086** | 0.040 | | |
| *Tests with CRMP*[b] | | | | | | | | | | | | |
| CRMP alone[c] | | | | | | | | | | | | |
| Ln(CRMP) | 0.005 | 0.021 | 0.007 | 0.021 | 0.003 | 0.012 | 0.101*** | 0.032 | −0.021 | 0.018 | 0.007 | 0.006 |
| RCC and CRMP together[d] | | | | | | | | | | | | |
| Ln(RCC) | −0.115** | 0.611 | −0.103* | 0.059 | 0.119*** | 0.033 | 0.107 | 0.091 | 0.084* | 0.049 | 0.005 | 0.007 |
| Ln(CRMP) | −0.004 | 0.021 | −0.001 | 0.021 | 0.013 | 0.012 | 0.110*** | 0.033 | −0.14 | 0.018 | 0.003 | 0.008 |

[a] The number of cases for all tested models is 145. Results of H1, H2, and H4 are from the two-way fixed effect model, and results of H3 and H5 are from the two-way random effect model (*P*-value for Hausman test is 0.581 and 0.061).
[b] The number of cases for H1–H5 is 290, and the number of cases for H6 is 29. H6 uses Model V in Table 7.
[c] Results of H1 and H2 are from the two-way random effect model (*P*-value for Hausman test is 0.239 and 0.123), results of H3–H5 are from the two-way fixed effect model, and the result of H6 is from OLS model.
[d] Results of H1 and H2 are from the two-way random effect model (*P*-value for Hausman test is 0.341 and 0.174), results of H3–H5 are from the two-way fixed effect model, and the result of H6 is from OLS model.
* Significance at 10% level.
** Significance at 5% level.
*** Significance at 1% level.

period 1991–96 that has sufficient variations in RCC. The results are presented in the first row of Table 8. To save space, only the estimates of Ln(RCC) in the best-fitted model are presented. They are qualitatively the same as what we got using the full sample except the magnitude and significance of Ln(RCC) in the test of H1 are slightly reduced. Therefore, it can be ruled out that our early results were brought about by a distorted dataset.

### (e) *Results with CRMP*

We now substitute CRMP for RCC and rerun all the regressions with the full sample. As in the case of RCC, we use Ln(CRMP) in the regressions. The results are presented in the second row of Table 8. To save space, only the estimates of Ln(CRMP) in the best-fitted model are presented. They are quite different from what we previously obtained with RCC. Ln(CRMP) is not significant in the tests of H1, H2, H3, and H5, and the sign of its coefficient contradicts to the prediction of each hypothesis. In addition, it shows a strong positive contribution to financial depth, giving H4 a positive answer and contradicting the result of RCC. The only result by which Ln(CRMP) agrees with RCC is for H6 concerning the average GDP growth rate where both variables do not show significant impact.

However, it is premature to take the above results as evidence against the main idea that this paper tries to convey, that is, strengthening the law may not help financial development and economic growth when the financial market is characterized by significant repression. Although they do not provide evidence supporting this idea, the results of CRMP do not provide evidence against it either. After all, RCC is not a bad measure of the effectiveness of the court. The Supreme Court allows a court to charge 0.5–1.5% of the disputed value of a commercial case as the court fee, [16] so the courts have strong incentives to take more commercial cases, especially those with a high disputed value, which are usually more difficult to settle. As a result, RCC is unlikely to suffer from the deficiency associated with the court's intention to take easy cases. In addition, if selection is important in the court's decision to take cases, then it is natural to expect that a province with a lower CRMP would have a higher RCC. However, the correlation coefficient between these two measures is only −0.007, which means that they are basically independent to each other.

A realistic view is to take RCC and CRMP as measures of different aspects of the legal system. While RCC measures the effectiveness of the court system, CRMP measures the public's trust in the system. To further explore the possible influence of CRMP on the results of RCC, we put the two variables into the same regression and test the six hypotheses again. The main results are presented in the last two rows of Table 8. These results show that RCC and CRMP each has qualitatively the same effects as what we have found before. This test thus considerably increases our confidence in most of the results of RCC. The only modification is possibly with the effect of the legal system on financial depth. To the extent that CRMP measures the public's awareness to seek formal legal litigations, we conclude that a conductive legal culture helps financial development.

## 6. CONCLUDING REMARKS

Our empirical endeavor has established the following robust results: improving the effectiveness of law alone in an economy with financial repression does not lead to overall financial development; instead, it has a fairly large negative effect on economic growth by reducing the share of private investment in the economy. We have found that this negative effect comes from the law's adverse impact on the leakage effect that moves financial resources from the inefficient state sector to the efficient private sector.

While our results provide a partial explanation to the paradoxical co-existence of weak law and rapid economic growth in China, we do not mean to refute the proposition that the effectiveness of law promotes economic growth. Less so do we mean to diminish the role of the rule of law. Rather, our results are best interpreted as evidence showing the complexity of the interplay of the formal legal system and informal self-helping arrangements in a distorted environment characterized by financial repression. This is consistent with the conclusion reached by McMillan and Woodruff (1999, 2002) that informal relations are important for private enterprises to flourish in transition economies. On another front, our results show that law is but one factor in the institutional nexus. For the legal system to work properly, improvements in other complementary institutions are needed. [17] This finding echoes the findings of Berkowitz *et al.* (2003) who find that the social and economic context is important to make transplanted laws work in the recipient country. But we have gone one step further to conduct a structural analysis of how and under what conditions the legal system works for or against financial development.

The findings in this paper also provide a hint for the sequence of reform in transition countries. While it is an ultimate goal, strengthening the legal system nonetheless should not be an urgent concern when the economy is still stranded by multiple market and institutional failures. With the space left out and, hopefully, with the supplement of informal enforcement mechanisms, private agents can innovate ways and means to overcome the failures and bring the economy closer to socially optimal outcomes. [18] It is more urgent for a transition country to remove market and institutional rigidities that provide fertile soil for rent-seeking behavior than to strengthen the legal system. With the rigidities in place, unlawful activities are deemed to arise. In the context of China, the gains will be much larger to reform the banking system, liberalize the interest rate regime in particular, than to improve the legal system.

## NOTES

1. Roland and Verdier (2003) contend in a theoretical endeavor, however, that China has done better than Russia in law enforcement. They attribute China's better performance to its dual-track approach to economic reform, by which the state can use resources collected directly from the controlled sector (the state sector) to finance law enforcement and exempt the uncontrolled sector (the private sector) of heavy tax burdens.

2. They are China Bank of Industry and Commerce (CBIC), Bank of China (BOC), China Construction Bank (CCB), and China Agriculture Bank (CAB). In addition to these four large banks, China has several smaller mixed ownership banks, many small city commercial banks and rural credit cooperatives.

3. The official website of China Banking Regulatory Commission, http://www.cbrc.gov.cn/english/info/statistics/index.jsp, May 16, 2007.

4. In the 1990s before 1998, the average annual growth rate of commercial credit was 22.9%, but the rate was slowed down to only

10.7% in the period of 1998–2001 (PBOC, 2000). This slowdown was definitely linked to the shock caused by the Asian Financial Crisis, but many analysts also believe that it was tied to the tightened bank regulations.

5. See a symposium on this issue in *China Economic Quarterly* (Chinese), Vol. 2, No. 1, October 2002.

6. For instance, Lin *et al.* (1996) propose that China's alignment with its comparative advantage is the major cause for its high-speed growth in the last 20 years; Qian and his collaborators (Qian & Roland, 1999; Qian & Weingast, 1996) believe that China's unique fiscal federalism is the key to its success.

7. However, Li also believes that a "trap of financial repression" has been formed in China because the vested interests do not want to lose their privileges granted by the old system.

8. Tibet is excluded and Chongqing, a new provincial-level municipality separated from Sichuan province in 1997, is added back to Sichuan province.

9. We understand that RCC is not a direct measure of how effective banks can use the law against SOE managers because most of the commercial cases involve only private agents. However, it is reasonable to believe that the legal system is more ready to help banks against SOEs if it is more effective in handling private cases.

10. We owe an anonymous referee for pointing out this point.

11. An alternative measure is the number of cases closed. But this number is closely correlated with the number of cases taken (the correlation coefficient is 0.99). Another weighting method is to use total GDP rather than population. This may be a more sensible way of weighting as the number of cases taken by the court is likely to be correlated with the activity of the economy. However, the growth of GDP has been tremendous, so the measured rule of law would decline for all the provinces as time passes if GDP were used as the weighting factor.

12. Since some closed cases in a year are unclosed cases left from the previous years, it is possible that this ratio is above 1.

13. Mathematically, this seemingly compressed measure can represent a rather dispersed distribution of the effectiveness of the legal system. For example, an index for the general effectiveness of the legal system can be defined as $(RCC/10)^2$, which is positively correlated with RCC but has a larger variance than RCC.

14. A minute's pause realizes that this measure may indeed be inadequate to measure social capital in Chinese provinces. Most of the registered associations in China are attached to the government, so they may not be organized on a voluntary basis. There is evidence to show that some truly voluntary associations or business chambers do not register with the government (Yao, 2003). However, ASSOCs is the variable that we can get to provide the closest proxy for social capital in each province.

15. China's GDP has been growing by roughly 100 billion US$ each year in recent years.

16. See *Standards of Court Fees*, The Supreme Court, July 12, 2004. This range is for cases with a disputed value higher than 200,000 RMB (about 25,000 US$). Rates for cases with a smaller value are higher.

17. This assessment is not new, see, for example, Aoki (2001) and Milgrom and Roberts (1990).

18. This view is also presented in Hay and Shleifer (1998) in the Russian context, but from a somewhat different angle.

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