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The impact of banks and non-bank financial institutions on local economic growth in China

BOFIT Discussion Papers
Editor-in-Chief Iikka Korhonen

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Abstract

This paper provides evidence on the relationship between finance and high growth in China. Employing data for 27 Chinese provinces over the period 1995–2003, we assess the impact of banks and non-bank financial institutions on local economic growth. We argue that banks have had a larger impact than non-banks on local economic growth as they benefited earlier and more profoundly from China's financial reforms than their non-bank counterparts.

Key Words: growth, financial development, Chinese provinces, banks
JEL-codes: E44, G21

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Tiivistelmä

Tässä paperissa tutkitaan rahoituksen ja nopean talouskasvun yhteyttä Kiinassa. Työssä selvitetään pankkien ja muiden luottolaitosten vaikutusta talouskasvuun 27 kiinalaisessa provinssissa vuosina 1995–2003. Tulosten mukaan pankeilla on suurempi vaikutus talous-kasvuun kuin muilla luottolaitoksilla. Pankit ovat hyötyneet muita luottolaitoksia aiemmin ja enemmän Kiinan rahoitusjärjestelmän uudistuksista.

Asiasanat: talouskasvu, rahoitusjärjestelmän kehitys, Kiinan provinssit, pankit

1   Introduction

In the long-running debate on the relationship between finance and growth, an early line of argument claimed financial institutions for the most part react to growth expectations. In recent years, a rather convincing body of evidence has been marshaled to suggest that financial sector development has actively contributed to growth of developed economies (e.g. Levine, 2004), but the evidence for developing countries remains mixed. Finance appears to have promoted growth in some Latin American countries (Haber, 1991 and 1997), while the role of financial institutions in China, the world's largest developing economy, has proven difficult to assess. Even so, study of the finance-growth connection in China offers two tantalizing bonuses. First, China suffers from relatively weak legal and financial systems like most transition economies, so it is plausible that the Chinese experience provides relevant lessons for other countries with similar growth potential and financial systems. Second, given the globalization of trade and increase in international capital flows, the sustainability of China's growth has become an issue important for the entire world.

Discussion of finance and growth in China focuses on how Chinese firms are financed and monitored. Some observers contend the Chinese legal system and formal financial sector are too weak to enforce sound governance, so the nexus of law, finance, and growth cannot hold (e.g. Allen et al., 2005; Boyreau-Debray, 2003). Others propose that banks in China, despite their relative weakness, contribute to growth (e.g. Hasan et al., 2006; Ayyagari et al., 2007).

This dispute could probably be resolved with convincing micro data, but construction of the appropriate datasets would be costly and time-consuming as longer time series are essential to capturing growth dynamics. We propose an indirect, less elegant approach based on China's publicly available macro data that first formally links financial reforms to financial development and then assesses the impact on growth. It is expected that financial institutions that benefited from government reforms in the mid-1990s aimed at improving the efficiency of financial institutions will show greater efficiency in allocating capital and consequently make a greater contribution to growth.

To our knowledge, this study is the first to include both bank and non-bank financial institutions in assessing the relationship of finance and growth in China. Previous studies focus on banks, which dominate the Chinese financial sector. Nevertheless, we believe including non-bank financial institutions can contribute to our understanding of economic

growth in China as non-bank financial institutions serve as an important financing channel for small, private firms. Moreover, cross-country political and cultural variations, as well as differences in accounting standards make it difficult to directly compare Chinese banks to their international counterparts. In this case, China's non-bank financial institutions serve as a more appropriate reference group.

In identifying the causality between finance and growth, the best case would be one where the difference between banks and non-bank institutions lies solely in the reforms they have implemented. Assuming that successful reforms lead to greater efficiency, our testable hypothesis would be that the financial development of institutions that have benefited most from reforms correlates most strongly with growth. Indeed, China's banks typically benefited earlier and more extensively from the reform process than their non-bank counterparts. However, they also typically lend to large or mid-sized firms. This is particularly interesting as small, private firms are routinely heralded as the engine of China's growth. In any case, a statistically and economically significant correlation between banking development and growth should reveal the role of financial reforms in enhancing finance and promoting growth.

Most non-bank financial institutions in China limit their operations to a single province, while banks, especially state-owned banks, operate in a number of provinces and may even maintain national headquarters. Even so, banks rarely engage in cross-province lending due to rules imposed by the People's Bank of China (PBoC). For this reason, it appears reasonable to compare the performance of banks and non-bank financial institutions at the provincial level. Financial development at the province level can be measured conventionally according to the ratios of local savings and loans to GDP and deposit market concentration.

Our panel dataset covers the reform period of 1995–2003, which helps alleviate the reverse impact from growth to financial reforms. Specifically, the concern that financial reforms were initiated exactly at the time that the economy was expected to boom should be less of a concern. Moreover, growth rates show a decreasing trend throughout the period as the Chinese government engineered a "soft landing" of the economy.

Our results reveal a clear difference between the impacts of financial development of banks and non-bank financial institutions on growth. Banks contribute significantly to local growth. This effect is most pronounced in provinces with foreign entry. In contrast, non-bank financial institutions, which grant most of their loans to small, but fast growing firms, seem less important for local growth. Our results are robust across different specifi-

cations controlling for omitted variables and reverse causality. We attribute the difference to the fact that banks relative to non-bank financial institutions have benefited far more from China's ongoing financial reforms – particularly commercialization of state-owned banks, deregulation for foreign entry, and liberalization of interest rates. Our results suggests that, despite the relatively weak Chinese financial sector, the efficiency of banks has improved over the years, allowing them to play important roles in allocating funds and spurring growth.

The paper is organized as follows. Section II briefly reviews the finance and growth literature. Section III describes the reforms and the development of the Chinese financial system, focusing on the two types of financial institutions. Section IV presents our empirical framework and the data. Section V discusses the results on the effects of financial development on economic growth in China. Section VI concludes.

2   Financial development and economic growth: Theory and evidence

A number of arguments have been advanced as to why financial development plays a key role in growth. These include:

- Financial intermediation economizes the costs associated with mobilizing savings (Boyd and Smith, 1992; Sirri and Tufano, 1995), and therefore increases capital accumulation.

- Financial intermediaries evaluate firms, managers and market conditions in order to reallocate capital to its best use (Boyd and Prescott, 1986; Greenwood and Jovanovic, 1990; and Allen, 1990).

- Financial intermediaries monitor firms and exert control to overcome agency problems (Townsend, 1979; Gale and Hellwig, 1985; and Boyd and Smith, 1994).

- Financial intermediation makes it possible to diversify investment risks, which enhances output and economic growth (Gurley and Shaw, 1955; Greenwood and Jovanovic, 1990; and Acemoglu and Zilibotti, 1997). Under this view, differences in the quantity and quality of services provided by financial institutions partly explain why countries grow at different rates (Goldsmith, 1969; McKinnon, 1973; and Shaw, 1973).

- Financial intermediaries can evaluate, finance, and monitor potential entrepreneurs in their innovative activities. In integrating financial development into an innovation-based growth models, King and Levine (1993b) suggest the relationship between finance and growth is likely to be dynamic and endogenous.

Empirical evidence employing cross-country datasets also suggest finance correlates positively with growth. King and Levine (1993a) use data on 80 countries over the period 1960–1989 to establish that the level of financial development determines long-run economic growth, capital accumulation, and productivity growth. Levine and Zervos (1998) find that initial stock market liquidity and banking development are both positively correlated with future rates of economic and productivity growth in a sample of 42 countries over the period 1976–1993.

While early cross-country studies suffer from simultaneity bias, more recent studies carefully attempt to remove the exogenous part of financial development when dealing with the issue of causality. La Porta et al. (1998) link the legal legacy of a country to its financial development. Their empirical results suggest that differences among legal systems (e.g. British, French, German and Scandinavian law) in terms of protecting the rights of shareholders and creditors and in terms of legal enforcement may account for differences in financial development. Indeed, a substantial body of aggregate, industry-level and firm-level analysis based on legal legacies and cross-country datasets suggest that financial development promotes economic growth (e.g. Levine, Loayza, and Beck 2000; and Demirgüç-Kunt and Maksimovic, 1998). For this reason, we use the dynamic system GMM panel estimator proposed by Arellano and Bover (1995) to extract the impact of financial development on economic growth by controlling for potential endogeneity.

A straightforward way to avoid cross-country differences is to focus on a single country. Jayaratne and Strahan (1996) study the effect of financial deregulation in the early 1970s on 35 states in the USA as an exogenous shock to local financial development. The endogeneity problem is tackled by keeping effects other than financial development constant. Their findings indicate that in the 30 years following deregulation, the economy grew faster in deregulated states than in regulated states. They test and reject the hypothesis that deregulation occurred solely in anticipation of future financing needs, observing that lending did not skyrocket after deregulation. Thus, they attribute higher economic growth in the deregulated states to the improvements in loan quality. Guiso, Sapienza, and Zingales (2004) study the effects of differences in local financial development on economic activity in Italy. They find that local financial development enhances the likelihood

that individuals will start businesses, increases industrial competition, and spurs growth of companies.

Only a handful of studies consider developing countries. Haber (1991, 1997) examines the role of financial liberalization for economic growth in Brazil and Mexico, contending that financial liberalization allows a greater number of firms access to external finance. He argues that political institutions play an important role in determining the degree of financial liberalization, and concludes that Brazil did better in financial liberalization than Mexico due to better political institutions.

The finance and growth issue in China has only recently received attention, so as yet there is no consensus on the impact of financial development. One view holds that finance promotes growth in China. Employing a province-level dataset for the period 1985–1998, Liu and Li (2001) find that growth of provincial aggregate output is positively related to the growth in lending of the largest banks and self-raised funds. They attribute the positive correlation to an improvement in the efficiency of capital reallocation during liberalization of the financial and real sectors of the economy. Hasan et al. (2006), analyze the issue more broadly, using panel data covering 31 Chinese provinces for the period 1986–2002. They find that the extent of development of financial markets is associated with growth (along with the legal environment, awareness of property rights, and political pluralism). The recent study of Ayyagari et al. (2007) examines finance and growth in China using micro-level data. Employing the World Bank 2003 survey data covering 2,400 firms, they find that despite its weaknesses, higher growth of firms is associated with financing from the formal financial system, and that fund-raising from alternative channels is not.

Other papers take the view that China is a counterexample of the finance-growth nexus (e.g. Allen et al., 2005; and Boyreau-Debray, 2003). Allen et al., observing the coexistence of weak legal and financial systems and high economic growth in China, question whether development of financial institution actually plays much of a role in China's growth. Through a close examination of the relationship of law, finance and growth in China, they reveal that the relatively poor legal system and the underdeveloped financial sector contribute little to private-sector growth, the oft-touted motor of China's growth. Allen et al. conclude that the private sector must have access to alternative financing channels besides financial institutions.

3   Financial reforms and financial development in China

While this study focuses on banks and non-bank financial institutions, the two main types of financial institutions in China during the period under study, we recognize stock markets have also begun to play a significant role in the Chinese financial system.[1] Nevertheless, financial development in China has largely been shaped by financial reforms initiated by the Chinese government in the mid-1990s. Most of these reforms affected the banking sector, particularly state-owned banks. Moreover, banks generally have been the subject of substantial reforms and restructuring efforts (Li, 2001).[2]

We discuss the link between the efficiency of financial institutions and reforms from three aspects: commercialization, market entry deregulation, and liberalization.

Commercialization

[Insert Table 1 here]

Table 1 displays key reforms aimed for commercializing financial institutions and occurred in the banking and non-bank financial sectors up to 2002. Before 1994, China's four large state-owned banks dominated the banking sector.[3] In 1994, three additional policy banks were created to undertake policy lending previously assigned to the four state-owned banks. These new banks eventually became state-owned commercial banks (SOCBs), engaging solely in commercial finance. A series of financial reforms were also implemented to improve the management of SOCBs on a consolidated legal person basis, as well as de-link them from their non-banking arms and improve internal management and risk-control mechanisms (Li, 2001). In 1998, the PBoC abandoned its credit quota system and allowed SOCBs to make their own lending decisions on a commercial basis. To reduce intervention

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[1] China's stock markets were established in late 1990. By the end of 1994, the ratio of stock market capitalization to total assets of financial institutions was approximately 6.7%. Allen et al. (2005) comments that the importance of stock markets continues to increase, but as of the early 2000s had yet to reach a scale and importance as a financing channel comparable to that of financial institutions. More recently, China's stock markets have taken off, with this ratio climbing to about 40% as of June 2007. While this doubtless provides the basis for a separate study, we employ here a fixed effects panel model incorporating time dummy variables to deal with the omission of the time-varying impact of stock markets.

[2] PBoC former assistant governor, Mr. Ruogu Li, mentions in his speech "Revisiting China's Financial Reform" that "SOCBs were setup first and then financial institutions with other ownership structure began to develop. Strengthening and reform of the other financial institutions preceded that of the SOCBs."

[3] The four large state-owned banks are the Bank of China (BOC), the Agricultural Bank of China (ABC), the China Construction Bank (CCB), and the Industrial and Commercial Bank of China (ICBC).

of provincial governments in bank lending, the PBoC also consolidated its 32 provincial branch structure into a nine-branch arrangement.

Table 1 shows how little reform has been directed toward the non-bank financial sector. Attempts to reform in the non-bank financial sector have been postponed due to a lack of consensus on ownership and functions of non-bank financial institutions, particularly rural credit cooperatives (RCCs) (He, 2006; and Xie, 1998). Moreover, reform has been resisted where it jeopardized vested interests. The failure of the reform of RCCs in 1996 highlights the intractability of this problem. Legislation on trust and investment companies (TICs) has also lagged banking legislation. The Law on Commercial Banking, which provides a legal framework for standardizing the operations of the commercial banks, was enacted in 1995. The Law on Trusts was not enacted until the end of 2001.

[Insert Figure 1 here]

Figure 1 presents an overview of the China's financial institutions at the end of 1994, right after the commercialization. The banking sector entails three policy banks and fifteen commercial banks, of which the four SOCBs are by far the most important in terms of assets. Among the eleven joint stock banks, the Bank of Communications (BoCom) is the largest. Its main shareholder is the finance ministry. Researchers often refer to the four state-owned banks and the Bank of Communications as "the five biggest state-owned banks." The non-bank financial sector consists of urban credit cooperatives (UCCs), RCCs, TICs, financial companies (FCs), and other institutions.

[Insert Figure 2 and Table 2 here]

Commercialization has several effects. First, SOCBs started to finance non-state-owned firms. Figure 2 and Table 2 indicate how short-term credit had been allocated between state-owned and non-state-owned enterprises in China during the sample period. SOCBs gradually reduced their exposure to the state-owned sector as the proportion of loans to the state-owned sector decreased from 82.5% in 1994 to 64.4% in 2002 (see Table 2). Over the period 1994–2002, short-term lending to the non-state-owned sector grew faster (see Figure 2). Data from Bankscope suggests that the reporting SOCBs' growth rate of short-term loans was larger than the rate of reporting non-bank financial institutions (average annual growth rates of 6.6% and 2.3%, respectively, during the period 1996–

2002).[4] The evidence suggests SOCBs made greater efforts to support the non-state-owned sector than non-bank financial institutions. Moreover, SOCBs succeeded in attracting high-quality personnel capable of effectively selecting and monitoring investment projects. Anecdotal evidence suggests that the quality difference of personnel at banks and non-bank financial institutions is huge. For example, as of end-2002, approximately 18% of the personnel working for Industrial and Commercial Bank of China held at least one university degree (Almanac of China's Finance and Banking, 2003). In contrast, only around 0.1% of working for typical rural credit cooperatives had university degrees (He and Li, 2006).

[Insert Tables 3 here]

The evolution of non-performing loans (NPLs) in SOCBs should shed some light on our argument that commercialization improved efficiency in lending. Most NPLs were the result of policy lending during the pre-reform period, and few such loans were generated after commercialization (Zhang, 2003; and Xu, 2005). Moreover, besides the fact that the NPL ratio in the banking sector was lower than that in the non-bank financial sector as presented in Table 3, evidence suggests that during the post-reform period, the NPL ratio of RCCs increased dramatically, even as the NPL ratios of the four SOCBs steadily fell.[5] Such differences imply that reforms helped banks improve their loan quality.

Market Entry Deregulation

[Insert Table 4 here]

As Table 4 shows, China has made an effort to stimulate competition among SOCBs and introduce competition from other banks with different ownership structures. In 1986 the first joint stock commercial bank (Bank of Communications) was established, and in 1996 and the first private joint stock commercial bank, the China Minsheng Banking Corp. (CMBC), was created. Foreign financial institutions were allowed to setup representative offices in China in 1981. Foreign banks were allowed to set up branches in the main coastal cities in 1994, and two years later granted permission to conduct RMB business in Shanghai and Shenzhen. In contrast, the non-bank financial sector in China has remained sheltered and isolated from competition by the Chinese government. When the Agricultural

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[4] The joint stock commercial banks (excluding the Bank of Communications) show the highest growth rate in the short-term loan lending.

Bank of China left the market in 1996, RCCs were handed a monopoly of the rural financial market (He, 2006; Xie, 2001). Similarly, strict regulation of the entry into the trust market since 1994 has protected the business of TICs. The government closed down and merged TICs in the late 1990s, so now only about 30 TICs remain (Xie, 1998; Xin, 2003).[6]

[Insert Figure 3 here]

Figure 3 presents the impact of market entry on market shares of financial institutions from 1994 to 2002. The total assets of the four SOCBs, which were approximately RMB 7,122 billion at the end of 1994,[7] represented around 78% of total assets of the entire financial sector. Due to increased competition, the market share of SOCBs at declined to 68% at the end of 2002, while the market share of joint stock banks rose to 15%. The market share of the foreign financial institutions reached 1% at the end of 2002. In the non-bank financial sector, the market share of RCCs was 7%, which was comparable to that of TICs at the end of 1994. As the monopoly in the rural financial market, RCCs increased their market share from 7% to 11%, while the market share of TICs decreased from 6% to 2%, reflecting the previously discussed closure and merger policy.

[Insert Table 5 here]

One way to look at the effect of competition is to check the institutions' cost-cutting ability. Table 4 compares the operating costs ratio between banks and non-bank financial institutions reported by Bankscope. From Table 4, it is clear that banks perform better than their counterparts as they exhibit lower operating costs ratios.

Liberalization

[Insert Table 6 here]

Table 6 presents the liberalization process in the Chinese financial markets. Since the mid-1990s, China has gradually liberalized interest rates in the interbank market. Meanwhile, the loan rates have been allowed to move within gradually loosened "floating bounds" since the mid-1990s (see Table 6). RCCs only started to benefit from these floating bounds in late 1998. In 2004, the upper bound of the lending rate and the lower bound of the deposit rate of banks were removed completely, a further step in liberalizing the banking sector. However, the complete removal of the upper bound on loan rates for non-bank finan-

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[5] See e.g. Wang and Li (2004) or *The Wall Street Journal*, March 12, 2004, p. A13.

[6] The bankruptcies of the China Agricultural Development Trust and Investment Company (CADTIC) and the Guangdong International Trust and Investment Company (GITIC) are good examples.

[7] RMB=Renminbi (in 2000, 1 US $ = 8.3 RMB)

cial institutions has yet to be realized. Liberalization has obvious benefits. For instance, with autonomy of loan rates banks can distinguish risky borrowers more readily and increase profitability.

4 Empirical framework and data description

4.1 Empirical model

To estimate the impact of financial development on economic growth, we follow King and Levine (1993b) by considering a Cobb-Douglas production function at the individual level,

$$y = k^{\alpha} x, \tag{1}$$

where y equals real per capita GDP, k equals real per capita physical capital stock, x equals other determinants of per capita growth, and α is a production function parameter. Taking the logarithm of (1) yields

$$\ln y = \alpha \ln k + \ln x. \tag{2}$$

As most neo-classical R&D models predict (e.g. King and Levine, 1993b), the growth of x comes from technological innovation. The first-difference of (2) obtains

$$GYP = \alpha(GK) + PROD,$$

where GYP is the growth rate of real per capita GDP, GK is the growth rate of real per capita capital stock and PROD is the growth rate of everything else. If we assume that the hours worked per worker are relatively stable in our sample range, PROD should provide a reasonable conglomerate indicator of technology growth. If there is any key relationship between technological growth and financial development, for instance, efficiency, the contemporaneous impact of finance on growth can be estimated by

$$GPY_t = a_o + a_1 GK_t + a_2 FI_t + \varepsilon_t, \tag{3}$$

where FIt is the financial development indicator at time t. For an empirical application of equation (3) to China's local province growth, we base our estimation on panel data from different provinces during the period 1995–2003. Panel data has the advantage of allowing us to estimate the corresponding relationship even for a relatively short period. The fixed effects model derived from equation (3), controlling for time effects, can be written as

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$$GPY_{i,t} = \alpha_0 GDP_{i,t-1} + \alpha_1 GK_{i,t} + \alpha_2 FI_{i,t} + \alpha_3 CON_{i,t} + \sum_{i=1}^{I} \delta_i U_i + \sum_{t=1}^{T} \phi_t V_t + \varepsilon_{i,t},$$

where $GDP_{i,t-1}$ is initial real GDP per capita and FIi,t is the financial development indicator of either banks or non-bank financial institutions in province i at time t. Ui is a set of province dummy variables, Vt is the set of time dummy variables, and δ_i and ϕ_t are the vectors of coefficients. CON refers to the conditioning informational set. CON includes FDI measured by the ratio of foreign direct investment to GDP.

To reveal the relationship between financial development and future economic growth, we introduce the lagged financial development indicators in our panel regression,

$$GPY_{i,t} = \alpha_0 GDP_{i,t-1} + \alpha_1 GK_{i,t} + \alpha_2 FI_{i,t-1} + \alpha_3 CON_{i,t} + \sum_{i=1}^{I} \delta_i U_i + \sum_{t=1}^{T} \phi_t V_t + \varepsilon_{i,t}.^{8} \qquad (4)$$

Here, equation (4) can be estimated by OLS in general, assuming that the lagged FI is exogenous and there is no heteroskedasticity and serial autocorrelation in the error term. Problems arise, however, if these assumptions are violated. For example, heteroskedasticity or serial autocorrelation in the error term is often observed in panel analysis. This can be solved by introducing robust standard errors or by first differencing the data. In our analysis, heteroskedasticity is detected. We report the results of regression (4) employing robust standard errors.

4.2 Financial development indicators

We construct three financial development indicators at the province level for banks and non-bank financial institutions, respectively.

Bank Deposit equals the ratio of the savings in the banking system to local GDP. *Bank Deposit* is a measure of the "financial depth" of the local banking sector. A second indicator is *Bank Credit*, the credit extended by banks to local enterprises over local GDP. This indicator measures the financial resources provided by banks to provincial entities. Finally, we construct a measure *Bank Concentration*, which is the Herfindahl-Hirschman Index

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[8] We control here for the contemporaneous effects of conditioning variables such as *FDI* following the traditional finance and growth literature (see e.g. King and Levine, 1993a). As a robustness test, we also model the finance and growth relationship by controlling for the lagged value of conditioning variables as conventional growth theory suggests. Our results remain robust.

(HHI),[9] employing bank market shares in the deposit market and taking the province as the relevant market. We include this measure to proxy for the competitiveness of the banking sector.

In a similar fashion, we construct *Non-bank Deposit, Non-bank Credit* and *Non-bank Concentration* for non-bank financial institutions.

4.3 Data description

Our dataset contains annual growth rates of real per capita GDP, real per capita capital stock, and FDI for 27 Chinese provinces over the period 1995–2003.[10] Lagged financial development indicators, lagged real per capita GDP, and lagged infrastructure indicators[11] are also included in our dataset from 1994 to 2002.[12]

The financial development indicators in our study are calculated employing the statistics data reported by the Almanac of China's Finance and Banking. The Almanac documents the provincial data of annual savings and loans of five banks: four state-owned banks and the Bank of Communications (the largest national commercial bank). At the end of 1994, these five banks represented approximately 96% of the total assets of the banking sector.

We start of our analysis in 1995 as the Almanac of China's Finance and Banking reports only from 1994 onwards the provincial data of savings and loans of rural credit cooperatives and some selected trust and investment companies, financial companies, and other non-bank financial institutions.[13] Only non-bank financial institutions considered to be large enough are included in the Almanac, so smaller institutions remain uncovered. This may introduce a reporting bias in that provinces with many small institutions may have an underestimated size of the non-banking sector. This reporting bias, however, should be taken care of by our province dummies in as far the reporting bias remains constant over our sample period within a province.

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[9] Although HHI may not be an ideal estimate for the degree of competition, it is the best estimate we have at the provincial level.

[10] Data problems prevent us for including three provinces (Hubei, Tibet and Hainan).

[11] Lagged infrastructure indicators are included in our robustness tests.

[12] The real capital stock per capita growth rate is calculated by the perpetual inventory method (PIM).

[13] The data of urban credit cooperatives are also reported – just not for every year. Thus, we exclude urban credit cooperatives from our sample.

[Insert Table 7 here]

Table 5 provides summary statistics. We present time averages for the 27 provinces. Table 5 highlights that there is substantial variation between provinces. The highest average annual real per capita GDP growth rate is 10.2% (Zhejiang province), while the lowest is 5.7% (Yunnan province). Shanghai, the richest province in China has on average annual real GDP per capita of 15,920 renminbi, while Yunnan, the poorest, has only 1,430 renminbi. The financial development indicators for China are relatively high compared to those for other countries (see e.g. Allen et al., 2005). For example, the average ratios of *Bank Deposit* and *Bank Credit* across provinces are 0.843 and 0.683, while the average ratios of non-bank savings and loans to GDP across provinces are only 0.141 and 0.109. Similarly, Beijing on average has the highest values of both *Bank Deposit* and *Bank Credit*, while Shandong province on average has the lowest levels of *Bank Deposit* and *Bank Credit*. Non-bank financial institutions exhibit the lowest development in Qinghai province, while Shanxi on average has the greatest *Non-bank Deposit* and Guangdong enjoys the greatest *Non-bank Credit*. Both *Bank Deposit* and *Bank Credit* outweigh those of non-bank financial institutions.

5 The growth effects of financial development in China

5.1 Intra-province effects

[Insert Table 8 here]

Table 8 presents the regression results of different specifications of equation (4). The left panel (8a, b, and c) displays the results including our bank financial development indicators in the regression. *Bank Deposit* and *Bank Credit* are significantly positively correlated with future economic growth. The middle panel (8d, e, and f) presents the results where non-bank financial development indicators enter the regression. Only *Non-bank Deposit* is statistically significant. The right panel (8g and h) shows the results for the regressions where both bank and non-bank financial development indicators enter the specification. The banking development indicators *Bank Deposit* and *Bank Credit* remain statistically significant and robust compared to the left panel. The fact that *Non-bank Deposit* is only

significant at the 10% level when *Bank Deposit* is included as a regressor, puts into question the robustness of the result of regression 6d. *Bank Concentration* and *Non-bank Concentration* are not statistically significant, suggesting that concentration in banking markets does not affect growth.[14] Table 8 implies that the greater the bank development was in a province, the faster the province would grow. In contrast, the changes of the development of non-bank financial institutions seem to be less correlated with the variations of further growth. This difference confirms that financial development matters for local growth.

We now turn to the control variables as reported in Table 8. *FDI* does not have a significant impact on growth within provinces over time. This result may stem from the inclusion of province fixed effects. Therefore, *FDI* may not exhibit sufficient time-series variation to become significant. *Initial GDP* is significantly negative in all specifications. It captures the convergence effect of growth within the Chinese provinces. This effect has been documented in previous research dealing with China (see e.g. Boyreau-Debray, 2003; and Démurger, 2001). The per capita capital stock growth is not statistically significant. This insignificance may stem from the fact that it is usually easier for people to move within a country (i.e. across provinces) than from country to country. Hence, an empirical application using local data of a country may suffer from the problem that the provincial population is quite unstable over time. In Table 9, we present the results of regressing provincial aggregate GDP growth on the growth of the aggregate capital stock and financial development indicators.

[Insert Table 9 here]

The aggregate capital stock growth is significant and positive. In general, the results in Table 9 show the robustness of the results reported in Table 8.

Concentration within the banking sector (captured by *Bank Concentration* in our analysis) does not show a clear contribution to future growth, but here we are interested in the impact of foreign entry on the efficiency of bank institutions. We split the sample by determining whether there was a foreign financial institution in the province immediately after the commercialization of the SOCBs. It turns out that as of 1995, 14 out 27 provinces in our sample saw the entry of foreign financial institutions.

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[14] We also estimate the regression by controlling for cross-province correlation. Our results remain robust.

[Insert Table 10 here]

Table 10 shows the results of two sub-samples, with and without foreign entry. The bank development in the provinces with foreign entry shows a more pronounced impact on future growth than those in the provinces without foreign entry. One may argue that foreign financial institutions could choose to set up their branches where the economy is set to boom, so the sample split reflects expectations of future growth. However, the average growth rates of the two sub-samples are almost the same. The provinces with foreign entry enjoy a real GDP per capita growth rate of approximately 7.8% per year while the others stay with a growth rate of approximately 7.7% per year. In addition, our regression includes provincial dummies to avoid the criticism that our sample split picks up regional effects, given that foreign entry happened mostly in the coastal area. In sum, to the extent that banks in the area with foreign entry foresaw that the potential competition from foreign banks was likely to threaten their market share and hence reacted by improving their competitiveness, it is plausible to conclude that the policy of opening up improves the efficiency of those banks.

5.2 Robustness tests: endogeneity

5.2.1 Reverse causality

Are these results driven by reverse causality? That is, does the expectation of future growth prospects lead to greater financial development? If this were true, high economic growth provinces should also exhibit high growth rates of financial development. We investigate this issue in several ways. First, we select the 13 provinces with the highest economic growth, and find that only six of them are in the top 13 of fastest growing Bank Deposit or Bank Credit provinces. Therefore, high growth provinces are less likely to be provinces that exhibit a high growth rate of financial development.

Second, directly controlling for endogeneity between finance and growth is also possible when employing the dynamic system GMM estimator proposed by Arellano and Bover (1995). The dynamic panel model requires the lagged dependent variable to enter to right-hand side of the regression. For example, regression (4) can be extended to a dynamic panel regression as follows:

$$GPY_{i,t} = \beta_0 GPY_{i,t-1} + \beta_1 GDP_{i,t-1} + \beta_1 GK_{i,t} + \beta_2 FI_{i,t-1} + \beta_3 CON_{i,t}$$

$$+ \sum_{i=1}^{I} \varphi_i U_i + \sum_{t=1}^{T} \gamma_t V_t + \varepsilon_{i,t} \qquad . \quad (5)$$

First differences of (5) read,

$$GPY_{i,t} - GPY_{i,t-1} = \beta_0 (GPY_{i,t-1} - GPY_{i,t-2}) + \beta_1 (GDP_{i,t-1} - GDP_{i,t-2})$$

$$+ \beta_2 (GK_{i,t} - GK_{i,t-1}) + \beta_3 (FI_{i,t-1} - FI_{i,t-2}) \qquad . \quad (6)$$

$$+ \beta_4 (CON_{i,t} - CON_{i,t-1}) + (\varepsilon_{i,t} - \varepsilon_{i,t-1})$$

A system estimator jointly estimates the regression in levels (5) and the regression in differences (6). To correct for endogeneity, Arellano and Bover (1995) suggest employing lagged first differences of the explanatory variables as instruments for the equation in levels (5) and the lagged values of the explanatory variables in levels as instruments for the equation in differences (6). The crucial assumptions therefore are that the lagged differences of financial development are good instruments for explaining subsequent levels, and the lagged levels of financial development are good instruments for explaining subsequent first differences. Rejection of the Sargan test of over-identifying restrictions at 5% level, however, questions the validity of those instruments. It is also necessary to test whether the error term of regression (6), $\varepsilon_{i,t} - \varepsilon_{i,t-1}$, is second-order serially autocorrelated. Accepting the null hypothesis of no second-order serial autocorrelation supports the assumption of the moment condition of (6).

[Insert Table 11 here]

Table 11 reports the impact of financial development on economic growth when using the dynamic system GMM estimator. While *Bank Deposit* is not statistically significant any more, *Bank Credit* significantly spurs economic growth, both economically and statistically. For example, if Shandong (the province receiving the least bank credit) enjoyed as much bank credit as Beijing (where the most bank credit is extended), ceteris paribus, Shandong's growth rate would increase approximately 4.3% per year, which is considerable. Column 9h displays the results when we include *Bank Credit* and *Non-bank Credit* in a single regression. Again, only the impact of *Bank Credit* appears to be positive and significant. *Bank Deposit* turns statistically insignificant. The coefficient of *Non-bank Concentration* is significant but is much less robust than other results in different specifications and should therefore be taken with caution. The fact that the null hypotheses of both the

Sargan test and the second-order serial autocorrelation tests cannot be rejected at the 5% level approves the validity of the results of dynamic panel regressions.

5.2.2 Omitted variables

Endogeneity may arise when a regression excludes some omitted variables. In robustness checks, we enlarge our conditioning set. Following Démurger (2001), we include two variables capturing the development of the local transportation infrastructure, *Road* and *Railway*. Démurger (2001) constructs an indicator for conglomerate development of road, railway and waterway for each province.[15] We introduce *Road*, which measures the number of kilometers of roads per square kilometer in a particular province (lagged with one year), and its square *Road²*, as well as *Railway*, which measures the number of kilometers of railway per square kilometer in a particular province (lagged with one year), and *Railway.²* We also control for the potential congestion problem by including *Population*, which is the lagged population density per square kilometer in one province, and its interaction term with *Road* and *Railway*.

[Insert Table 12 here]

In unreported regressions, we also control for the effect of human capital by introducing education into our regression analysis. However, due to data availability, we only have education data for five years. Our results remain robust after controlling for education (albeit for a smaller sample).

5.3 Discussion

How do we reconcile these results the argument posed by Allen et al. (2005) that the Chinese financial system is weak and does not promote growth? Clearly, Chinese financial institutions suffer from inefficiencies not seen in their international counterparts. Yet compared to other domestic financial institutions, Chinese banks have benefited greatly from financial reforms and evolved dramatically from merely granting policy loans to allocating

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[15] We exclude a term for Waterway because of availability. However, we assume that development of a waterway is largely subject to natural water resources and relatively stable during our sample period, and hence should be controlled for by the provincial dummy.

capital and monitoring projects according to commercial standards. It is hard to conclude such improvements had no effect on promoting high growth in China.

Going beyond the discussion in the third section on why banks may perform better than non-banks, three additional reasons deserve mention.

- Banks perform better than non-banks because they enjoy a better pool of borrowers. Borrowers prefer to borrow from banks because bank loans, especially short-term loans, are less costly than other financial instruments. Among those best candidates, banks typically pick up the most substantial borrowers with collateral (see Appendix for two surveys of firms' financing patterns in China). This may also be a reason banks increased their relative exposure towards the financing of private firms, even though most financed private firms were large. It appears "chasing the winners" is a good strategy for Chinese banks.

- Financing the state-owned sector *per se* does not necessarily imply misallocation of capital. The state-owned sector has accounted for around 40% of GDP growth in recent years (Sun, 2004). As banks can to some extent screen good borrowers from bad and allocate the capital to profitable state-owned enterprises (Cull and Xu, 2000), bank loans are still important in supporting local industrial growth.

- Banks with many branches all around the country make it easier to share the credit records of clients and benefit from industry expertise than their standing alone counterparts, especially in China, which still lacks efficient information sharing mechanisms.

6   Concluding remarks

This paper contributes to the recent debate on the finance and growth issue in China from new perspectives. Unlike previous studies, we link financial reforms, financial development, and growth. In addition, non-bank financial institutions, which have long been ignored by the finance and growth literature, were brought into the discussion. Moreover, banks and non-bank financial institutions serve as "reference groups" for each other in identifying the reform-finance-growth nexus.

Using a province-level panel dataset over the period 1995-2003, we found that bank development greatly contributes to province growth. For instance, an increase of bank loans to GDP ratio from the lowest to the highest in our sample increases future annual growth by 4.3 percentage points. The development of non-bank financial institutions is much less correlated with growth, as only the ratio of non-bank savings to GDP is significant in some specifications. We attribute this difference to the fact that the reform process has benefited banks, especially state-owned banks, more than non-bank financial institutions. More specifically, reforms such as commercialization, market entry deregulation, and liberalization have the largest significance. Banks have been able to gradually build up a commercial culture, getting rid of the intervention from the local government, attracting better quality personnel, and improving their viability as foreign institutions entered the market. The different findings on banking development and non-bank financial institutions' development show that the finance-growth nexus also applies to the growth rate of Chinese provinces.

Our results highlight the importance of financial reforms in shaping banking finance during China's transition. One may argue the reforms have not changed the ownership of SOCBs, and thus they are still not subject to sound corporate governance. This view is ultimately reduced to the long running debate question on whether the Coasian argument is right, which is beyond the scope of this paper. Compared to banks, non-bank financial institutions are in urgent need for extensive reforms to enhance their efficiency to finance the private sector.

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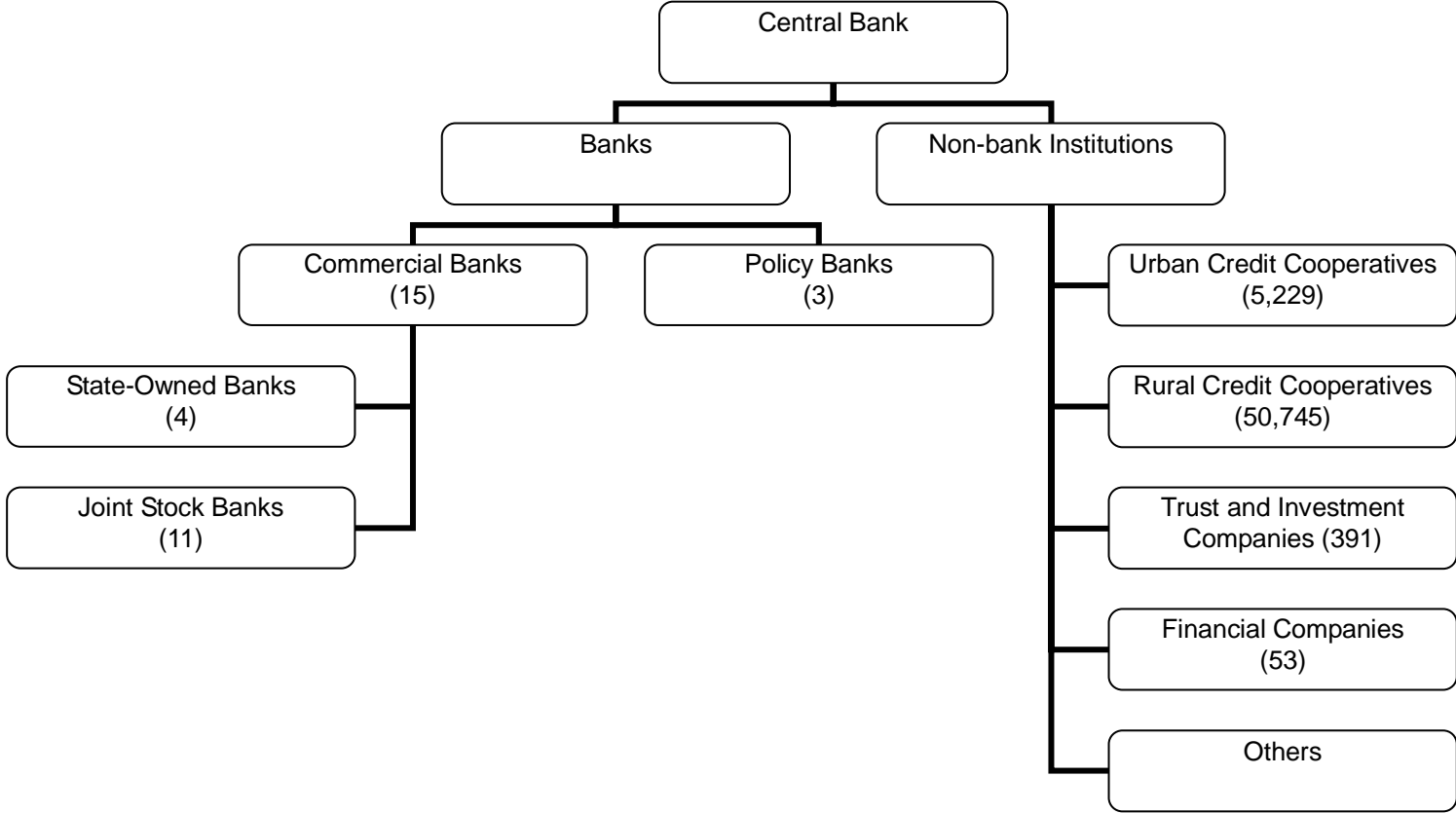Goldsmith, Raymond W., 1969. Financial Structure and Development. Yale University Press, New Haven, CT.

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Figure 1 Financial institutions in China at the end of 1994

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                        ┌──────────────────┐
                        │   Central Bank   │
                        └──────────────────┘
                  ┌───────────────┴───────────────┐
          ┌──────────────┐              ┌────────────────────────┐
          │    Banks     │              │  Non-bank Institutions │
          └──────────────┘              └────────────────────────┘
         ┌──────┴──────┐                           │
┌──────────────────┐ ┌──────────────┐   ┌─────────────────────────────┐
│ Commercial Banks │ │ Policy Banks │   │  Urban Credit Cooperatives  │
│       (15)       │ │     (3)      │   │           (5,229)           │
└──────────────────┘ └──────────────┘   └─────────────────────────────┘
        │                               ┌─────────────────────────────┐
┌──────────────────┐                    │  Rural Credit Cooperatives  │
│ State-Owned Banks │                   │          (50,745)           │
│       (4)        │                    └─────────────────────────────┘
└──────────────────┘                    ┌─────────────────────────────┐
┌──────────────────┐                    │     Trust and Investment    │
│ Joint Stock Banks│                    │      Companies (391)        │
│      (11)        │                    └─────────────────────────────┘
└──────────────────┘                    ┌─────────────────────────────┐
                                        │     Financial Companies     │
                                        │            (53)             │
                                        └─────────────────────────────┘
                                        ┌─────────────────────────────┐
                                        │            Others           │
                                        └─────────────────────────────┘
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Source: Almanac of China's finance and banking (1995)

Figure 2 Short-term loan portfolio of Chinese financial institutions: 1994-2002

RMB billion

■ state-owned enterprises   □ non-state-owned enterprises
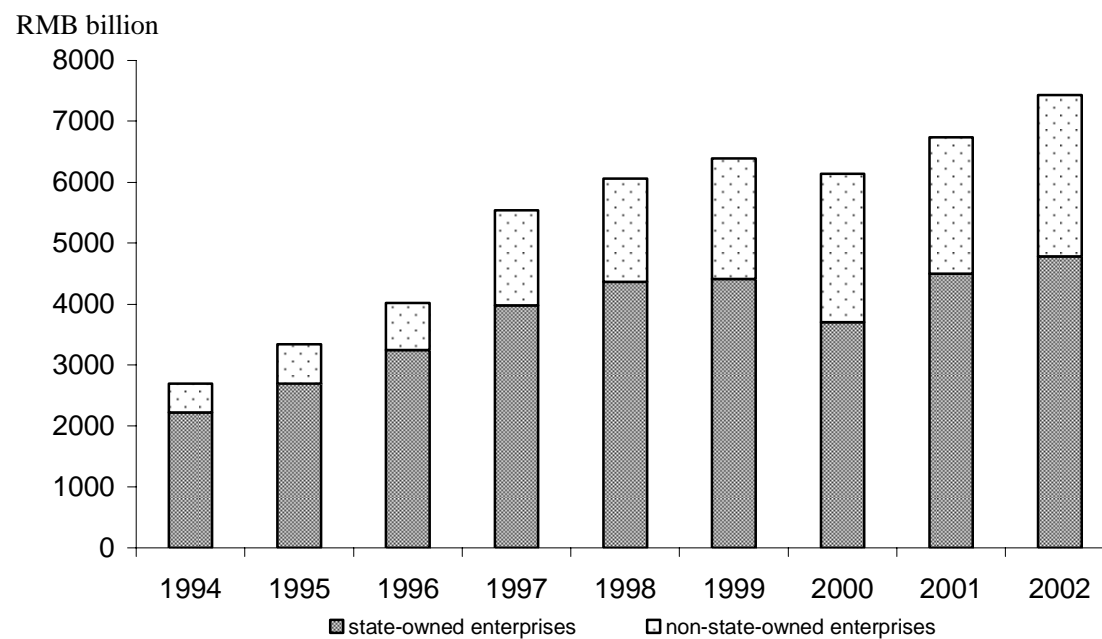
Source: China credit yearbook (volume I)

Figure 3 Total assets of financial institutions at the end of 1994 and 2002
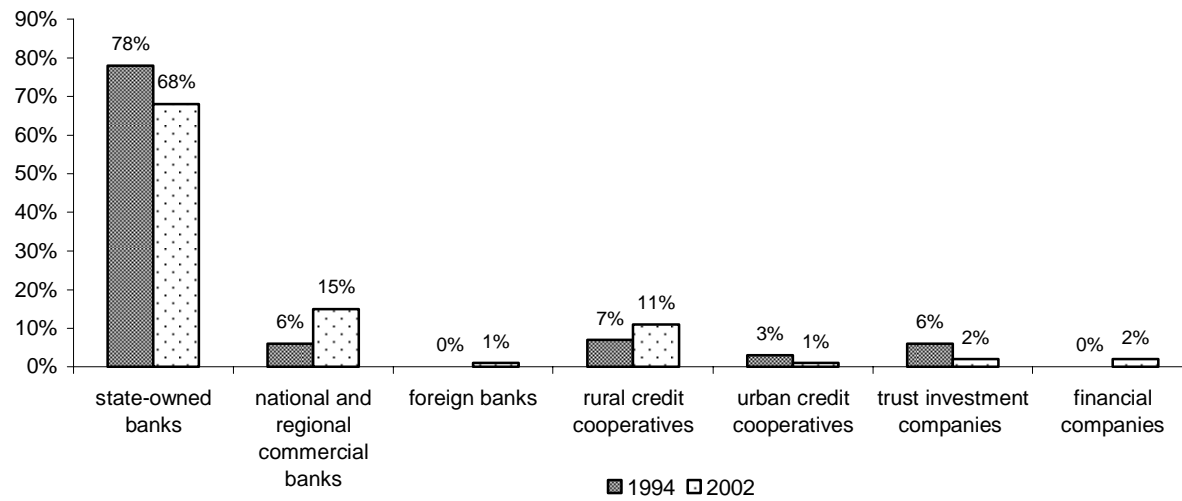
Table 1 Commercialization of the banking sector and non-bank financial sector

| Year | Banking Sector[a] | Non-bank Financial Sector[b] | |
		RCCs	TICs & FCs
1979	➢Setup of BOC, ABC and CCB		➢Setup of the first TIC
1984	➢Takeover of the PBoC's commercial banking business by ICBC		
1987	➢Setup of the first joint stock commercial bank, BoCom		➢Setup of first FCs
1994	➢Setup of 3 policy banks to take over policy lending of the 4 major state banks. Organizational and management structure reform of SOCBs		
1995	➢Promulgation of the Law on the PBoC ➢Promulgation of the Law on Commercial Banking		
1998	➢Abandoning of credit quotas ➢Restructuring of PBoC branches		
2001			➢Promulgation of Law on Trusts

Abbreviations used here: Bank of China (BOC), the Agricultural Bank of China (ABC), the China Construction Bank (CCB), the People's bank of China (PBoC), the Industrial and Commercial Bank of China (ICBC), Bank of Communications (BoCom), state-owned commercial banks (SOCBs), rural credit cooperatives (RCCs), trust and investment companies (TICs), and financial companies (FCs).

Source: Almanac of China's finance and banking

Table 2 Composition of the short-term loan portfolio of Chinese financial institutions: 1994-2002

		1994	1995	1996	1997	1998	1999	2000	2001	2002	Average
State-owned enterprises	Proportion	0.824	0.808	0.807	0.718	0.720	0.690	0.603	0.669	0.644	
	Growth rate		0.176	0.169	0.185	0.088	0.010	-0.192	0.178	0.058	0.084
Non-state-owned enterprises	Proportion	0.176	0.192	0.193	0.282	0.280	0.310	0.397	0.331	0.356	
	Growth rate		0.263	0.174	0.503	0.079	0.142	0.188	-0.091	0.156	0.177

Source: China credit yearbook (volume I)

Table 3 Non-performing Loans at bank and non-bank financial institutions

Institutions		Non-performing Loan Ratio[a]			
	Name	2000	2001	2002	2003
Banks	*ICBC*	0.334	0.298	0.257	0.213
	BOC	0.272	0.275	0.225	0.181
	CCB	0.203	0.192	0.152	0.119
	ABC	0.468	0.421	0.381	0.321

Non-bank Financial institutions	*Rural Credit Cooperatives*	The average non-performing loan ratio was around 0.5 by the end of 2003. In underdeveloped provinces, the ratio reached up to 0.9.[b]
	Trust and Investment Companies	The non-performing loan ratio is unreported, but likely quite high. This was seen in the bankruptcy of Guangdong International Trust and Investment Company (GITIC) in 1998. The Chinese government has typically closed and merged financially bankrupt TICs, so the total number of TICs shrank from 339 in 1990 to 244 in 1996.[c] Following in the GITIC case in 1998, the Chinese government decided to further close and merge bankrupt TICs, so that only 30 TICs remained.[d]

[a] : Source: Sun (2004)

[b]: Source : Zhang (2003)

[c] : Source: Xie (1998)

[d] : Source: Xin (2003)

Table 4 Market entry dregulation of the banking sector and the non-bank financial sector

Year	Banking Sector	Non-bank Financial Sector	
		RCCs	TICs & FCs
1981	➤Entry of the representative offices of foreign financial institutions		
1985	➤Entry of foreign financial institutions in five special economic zones		
1994	➤Entry of foreign financial institutions allowed in most coastal cities		➤Regulation on the entry of the trust market: no new TICs allowed
1996	➤Entry of the first private joint stock commercial bank, CMBC ➤Foreign financial institutions allowed to conduct RMB business in Shanghai and Shenzhen	➤ABC abandons rural financial market	➤Closure and merger of 168 TICs

Abbreviations used here: China Mingsheng Banking Corp., Ltd. (CMBC), rural credit cooperatives (RCCs), trust and investment companies (TICs), financial companies (FCs), and the Agricultural Bank of China (ABC).

Source: Almanac of China's Finance and Banking

Table 5 Operating costs of different Chinese financial institutions

	Institutions	Operating Costs Ratio[c]	Sample Period	Average Ratio	
Banks	*Industrial and commercial Bank of China* [a]	0.010	1996-2003	0.011	
	Bank of China [a]	0.007	1996-2003		
	Bank of Communications [a]	0.015	1996-2003		
Non-bank Financial Institutions	*Rural Credit Cooperatives* [b]	0.019	1998-1999	0.016	0.030
	Heilongjiang International Trust & Investment Corp. [a]	0.030	1997-1998		
	Jiangsu International Trust & Investment Corp. [a]	0.007	1996-1997		
	Shanghai AJ Trust & Investment Co, Ltd [a]	0.014	1996-2002		
	Shanghai Associated Finance Co. [a]	0.008	1996-1997		
	Shanghai International Trust & Investment Corp. [a]	0.022	2000-2002		
	Shenzhen International Trust & Investment Corp. [a]	0.015	1996-1999		
	Zhejiang International Trust & Investment Corp. [a]	0.128	1996-1999		

[a] : Source: Bankscope

[b] : Source: Xie (2001)

[c] : Operating costs ratio= operating costs/total assets

Table 6 Liberalization of banking sector and non-bank financial sector

Year	Banking Sector	Non-bank Financial Sector	
		RCCs	TICs & FCs
1996	➤Liberalization of inter-bank lending interest rates		
1997	➤Liberalization of inter-bank negotiable bill rates and the repurchase rates of government bonds		
1998	➤Liberalization of rates of inter-bank commercial bank discounts ➤The floating bounds of loan rates to SMEs relaxed from 10% to 20%	➤The floating bounds of the loan rates to SMEs relaxed from 40% to 50%	
1999	➤The floating bounds of loan rates relaxed to 30% for SMEs and increased to 10% for large enterprises		
2000	➤Liberalization of the deposit rates of foreign currencies		
2002		➤The floating bounds of loan rates relaxed to 100% in eight counties	

Abbreviations used here: rural credit cooperatives (RCCs), trust and investment companies (TICs), and financial companies (FCs).

Source: Almanac of China's Finance and Banking

Table 7 Summary statistics of growth and financial development indicators

Variable	Obs.	Mean	Std. Dev.	Min.	Max.
Real GDP Per Capita Growth Rate	27	.077	.013	.057	.102
Initial GDP (initial real GDP per capita) [a] [b]	27	.471	.313	.143	1.592
Per Capita Capital Stock Growth (real capital stock per capita growth rate)	27	.114	.020	.072	.145
Real Aggregate GDP Growth Rate	27	.088	.013	.067	.111
Initial Aggregate GDP (initial real aggregate GDP) [a] [c]	27	1854.933	1397.122	141.775	5353.567
Aggregate Capital Stock Growth (real capital stock aggregate growth rate)	27	.121	.019	.080	.158
Bank Deposit (lagged ratio of bank savings to GDP) [a]	27	.843	.467	.477	2.936
Bank Credit (lagged ratio of bank loans to GDP) [a]	27	.683	.224	.402	1.223
Bank Concentration (lagged ratio of HHI based on bank deposit market shares) [a]	27	.265	.029	.222	.353
Non-bank Deposit (lagged ratio of non-bank savings to GDP) [a]	27	.141	.053	.049	.268
Non-bank Credit (lagged ratio of non-bank loans to GDP) [a]	27	.109	.041	.038	.224
Non-bank Concentration (lagged ratio of HHI based on non-bank deposit market shares) [a]	27	.726	.094	.549	.850
FDI (FDI to GDP) [a]	27	.031	.033	.002	.110
Road (number of kilometers of roads per square kilometer)	27	.292	.188	.027	.761
Railway (number of kilometers of railway per square kilometer)	27	.027	.052	.002	.270
Population (population density) d	27	3.678	4.515	.072	23.118

[a] : Logarithm in regression

[b] : Number in *wan Yuan* (10.000 RMB)

[c] : Number in *yi Yuan* (0.1 Billion RMB)

[d] : Number in *bai ren* (100 people)

Source: Almanac of China's Finance and Banking (1995–2003); China Statistics Yearbook (1996–2004

Table 8 Finance and real per capita GDP growth: intra-province effects, 1995–2003
Fixed effects regressions with yearly dummies

Dependent variable: *Real Per Capita GDP Growth*

regressors	8a	8b	8c	8d	8e	8f	8g	8h
Initial GDP	-.339*** (.000)	-.336*** (.000)	-.358*** (.000)	-.345*** (.000)	-.347*** (.000)	-.361*** (.000)	-.338*** (.000)	-.334*** (.000)
Per Capita Capital Stock Growth	.054 (.272)	.085 (.091)	.044 (.404)	.032 (.505)	.041 (.427)	.043 (.396)	.039 (.419)	.074 (.146)
Bank Deposit	.066** (.004)						.057** (.011)	
Bank Credit		.078*** (.000)						.074*** (.000)
Bank Concentration			.061 (.281)					
Non-bank Deposit				.032** (.026)			.026 (.073)	
Non-bank Credit					.008 (.353)			.009 (.229)
Non-bank Concentration						-.024 (.052)		
FDI	.002 (.598)	.003 (.563)	.535 (.535)	.001 (.745)	.002 (.666)	.001 (.848)	.001 (.762)	.002 (.723)
Obs.	243	243	243	243	243	243	243	243
R-squared	.504	.513	.485	.497	.483	.498	.514	.516

** indicates significance at 5% level; *** indicates significance at 1% level; *p*-value is reported between brackets

Table 9 Finance and aggregate real GDP growth: intra-province effects, 1995–2003
Fixed effects regressions with yearly dummies

Dependent variable: *Aggregate Real GDP Growth*

regressors	9a	9b	9c	9d	9e	9f	9g	9h
Initial aggregate GDP	-.255*** (.000)	-.260*** (.000)	-.267*** (.000)	-.268*** (.000)	-.270*** (.000)	-.267*** (.000)	-.258*** (.000)	-.262*** (.000)
Aggregate Capital Stock Growth	.222** (.011)	.271*** (.002)	.235*** (.006)	.240*** (.005)	.252*** (.004)	.231*** (.006)	.234*** (.007)	.283*** (.001)
Bank Deposit	.033** (.044)						.034** (.044)	
Bank Credit		.057*** (.001)						.056*** (.001)
Bank Concentration			-.004 (.909)					
Non-bank Deposit				-.002 (.857)			-.005 (.666)	
Non-bank Credit					-.005 (.464)			-.004 (.590)
Non-bank Concentration						-.003 (.729)		
FDI	-.001 (.892)	-.001 (.816)	-.001 (.881)	-.001 (.885)	.000 (.932)	-.001 (.905)	-.001 (.899)	-.001 (.851)
Obs.	243	243	243	243	243	243	243	243
R-squared	.536	.553	.528	.528	.530	.529	.537	.554

** indicates significance at 5% level; *** indicates significance at 1% level; *p*-value is reported between brackets

Table 10 Finance and aggregate real GDP growth: impact of foreign entry, 1995–2003
Fixed effects regressions with yearly dummies

regressors	Sub-sample with foreign entry		Sub-sample without foreign entry	
	10a	10b	10c	10d
Initial GDP	**-.287***	**-.283***	**-.366***	**-.363***
	(.001)	**(.001)**	**(.000)**	**(.000)**
Per Capita Capital Stock Growth	-.032	.002	.101	.110
	(.554)	(.964)	(.171)	(.131)
Bank Deposit	**.071**		**.062**	
	(.027)		**(.034)**	
Bank Credit		**.101***		.072
		(.007)		(.058)
FDI	.010	.001	-.001	.000
	(409)	(944)	(.769)	(.957)
Obs.	126	126	117	117
R-squared	.483	.500	.603	.603

Dependent variable: *Real Per Capita GDP Growth*

** indicates significance at 5% level; *** indicates significance at 1% level; *p*-value is reported between brackets

Table 11 Finance and real per capita GDP growth: intra-province effects, 1995–2003
        Dynamic panel regressions, system GMM estimator

Dependent variable: *Real Per Capita GDP Growth*

Regressors	11a	11b	11c	11d	11e	11f	11g	11h
Initial GDP	**-.510*****	**-.512*****	**-.592*****	**-.567*****	**-.663*****	**-.502*****	**-.439*****	**-.478*****
	(.000)	**(.000)**	**(.000)**	**(.000)**	**(.000)**	**(.000))**	**(.000)**	**(.000))**
Per Capita Capital Stock Growth	-.001	.013	-.008	.029	.002	-.029	.000	.014
	(.991)	(.842)	(.899)	(.680)	(.975)	(.627)	(.998)	(.813)
Bank Deposit	.068						.037	
	(.092)						(.263)	
Bank Credit		**.089*****						**.079*****
		(.008)						**(.008)**
Bank Concentration			.099					
			(.213)					
Non-bank Deposit				-.014			.008	
				(.563)			(.663)	
Non-bank Credit					-.003			.007
					(.811)			(.473)
Non-bank Concentration						-.033**		
						(.046)		
FDI	.005	.005	.001	.005	-.004	.003	.005	.001
	(.579)	(.577)	(.922)	(.578)	(.675)	(.716)	(.427)	(.935)
Obs.	216	216	216	216	216	216	216	216
Sargan Test	.956	.982	.898	.973	1.000	.628	.433	.965
AR(2) Test	.903	.691	.592	.707	.693	.402	.900	.591

** indicates significance at 5% level; *** indicates significance at 1% level; *p*-value is reported between brackets

Table 12 Finance and real per capita GDP growth: intra-province effects, 1995–2003
Fixed effects regressions with yearly dummies and extra controlling variables

Dependent variable: *Real Per Capita GDP Growth*

regressors	12a	12b	12c	12d	12e	12f	12g	12h
Initial GDP	-.335*** (.000)	-.351*** (.000)	-.377*** (.000)	-.350*** (.000)	-.364*** (.000)	-.372*** (.000)	-.327** (.000)	-.342*** (.000)
Per Capita Capital Stock Growth	.074 (.149)	.093 (.077)	.054 (.329)	.050 (.343)	.048 (.395)	.052 (.345)	.073 (.136)	.088 (.087)
Bank Deposit	.069*** (.005)						.069*** (.005)	
Bank Credit		.082*** (.000)						.087*** (.000)
Bank Concentration			.102 (.093)					
Non-bank Deposit				.035** (.036)			.035** (.028)	
Non-bank Credit					.006 (.509)			.011 (.192)
Non-bank Concentration						-.023 (.109)		
Road	-.210 (.3219)	-.212 (.205)	-.297 (.101)	-.286 (.101)	-.298 (.094)	-.267 (.130)	-.200 (.236)	-.211 (.208)
Road²	.277 (.186)	.234 (.277)	.386 (.093)	.345 (.116)	.362 (.100)	.298 (.174)	.254 (.221)	.219 (.307)
Road × Population	-.015 (.118)	-.012 (.255)	-.021 (.056)	-.016 (.097)	-.017 (.096)	-.015 (.148)	-.014 (.135)	-.010 (.315)

Table 12 (continued): Finance and real per capita GDP growth: within-province effects, 1995-2003

Railway	-.635 (.448)	-.785 (.350)	-.677 (.433)	-.499 (.563)	-.586 (.491)	-.370 (.683)	-.551 (.518)	-.804 (.337)
Railway²	1.242 (.385)	1.170 (.381)	1.921 (.193)	.822 (.583)	1.269 (.375)	.913 (.547)	.703 (.628)	.995 (.469)
Railway **x** *Population*	-.005 (.950)	.012 (.879)	-.034 (.681)	.004 (.960)	-.007 (.926)	-.019 (.791)	-.010 (.880)	.022 (.773)
Population	.016 (.344)	.008 (.626)	.020 (.268)	.017 (.268)	.012 (.461)	.014 (.378)	.020 (.160)	.009 (.590)
FDI	.004 (.418)	.004 (.378)	.004 (.358)	.003 (.527)	.004 (.442)	.005 (.287)	.002 (.600)	.003 (.537)
Obs.	243	243	243	243	243	243	243	243
R-squared	.528	.540	.516	.522	.508	.516	.542	.544

** indicates significance at 5% level ;*** indicates significance at 1% level . *P*-value is reported between brackets

Appendix: Surveys of loans to the non-state-owned sector

Survey a1

A survey carried out by People's Bank of China in October, 2002, shows that 47.7% of bank loans were extended to the non-state-owned sector during the first nine months of 2002. The survey covers 10,804 non-state-owned enterprises and 2,633 bank branches and non-bank financial institutions for 184 cities in 30 provinces.

Satisfaction ratios reported by banks (Jan.–Sept. 2002)

Institutions	Loans required (RMB billion)	Satisfaction ratio
State-owned banks	1138.9	84.1%
National and regional banks	596.24	80.9%
City commercial banks*	149.68	84.5%
Foreign banks	122.66	75.4%
Non-bank financial institutions	208.95	85.5%

*transformed from urban credit cooperatives

The satisfaction ratio varied among types of applicants. For example, the satisfaction ratio of large non-state-owned enterprises was 85%, while that of small and medium-sized non-state-owned enterprises was only 69.5%. Moreover, ownership also mattered for the satisfaction ratio. For instance, Hong Kong-, Macao- and Taiwan-funded enterprises had a satisfaction ratio of 88.6% – higher than for any type of enterprise. Private enterprises had the lowest satisfaction ratio, 73.8%.

Ranked financing channels by enterprises (Jan.–Sept. 2002)

Bank Loans	Self-raised Funds	Client-raised funds	Private-lending loans	Bonds	FDI	Stock markets
35.7%	24.7%	17.4%	10.7%	8.2%	2.8%	0.6%

Source: Almanac of China's Finance and Banking (2003)

Survey a2

Another survey carried out by People's Bank of China in 2002 showed that after deregulation of interest rate discrimination, bank loans become the most important sources for SMEs in Weizhou city, where economic growth was typically driven by the private sector. The survey covers 190 SMEs and 13 banks and credit cooperatives in Wenzhou. The survey indicated that 61% of the debts of the SMEs were bank loans in 2002.

78% of the SMEs in the survey answered they would first go for bank loans (or credit cooperative loans) if they needed external financing. The satisfaction ratio still varies between small and medium-sized enterprises. For example, the satisfaction ratio of loans reported by medium-sized enterprises is 72.7%, while the ratio reported for small enterprises was only 60.5%.

Source: Almanac of China's Finance and Banking (2003)

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