

Cheng, Xiaoqiang; Degryse, Hans

**Working Paper**

## The Impact of Bank and Non-Bank Financial Institutions on Local Economic Growth in China

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# LICOS

## Centre for Transition Economics

### LICOS Discussion Papers

Discussion Paper 171/2006

**“The Impact of Bank and Non-Bank Financial Institutions on Local Economic Growth in China”**

**Xiaoqiang Cheng**  
**Hans Degryse**



Katholieke Universiteit Leuven

LICOS Centre for Transition Economics  
Huis De Dorlodot  
Deberiotstraat 34  
B-3000 Leuven  
BELGIUM  
TEL:+32-(0)16 32 65 98  
FAX:+32-(0)16 32 65 99  
<http://www.econ.kuleuven.be/licos>

**The Impact of Bank and Non-Bank Financial Institutions on  
Local Economic Growth in China\***

**by**

**Xiaoqiang Cheng**

Katholieke Universiteit Leuven

Department of Economics

Naamsestraat 69

BE-3000 Leuven

Belgium

E-mail: xiaoqiang.cheng@econ.kuleuven.be

and

**Hans Degryse**

CentER - Tilburg University, TILEC, and CESifo

P.O. Box 90153

NL-5000 LE Tilburg

The Netherlands

E-mail: h.degryse@uvt.nl

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## **The Impact of Bank and Non-Bank Financial Institutions on Local Economic Growth in China**

### **Abstract**

This paper shows that banking development spurs growth, even in a country with a high growth rate such as China. Employing data of 27 Chinese provinces over the period 1995-2003, we study whether the financial development of two different types of institutions – banks and non-bank financial institutions – have a (significantly different) impact on local economic growth. Our findings show that banks outperform non-bank financial institutions. Only banking development exerts a statistically and economically significant positive impact on local economic growth. This effect becomes more pronounced when the financial sector is less concentrated.

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

## I. Introduction

Financial development plays an important role in promoting the growth of many countries. An under-researched question, however, is whether finance continues to be an important driver of growth in countries exhibiting high growth rates. In this paper we address this “finance-high-growth rate” question by studying the recent economic growth of Chinese provinces. China, being one of the most important developing countries in the world, exhibited an average real growth rate of about 9 percent per year during the last two decades. We do find that finance also matters for fast growing economies.

In addressing the finance-high-growth rate nexus, we deal with the impact of different financial institutions – bank and non-bank financial institutions. Banks typically are state-owned, large, operate nationwide, and have many branches. Non-bank financial institutions, in contrast, operate locally within the province and are much smaller<sup>1</sup>. Banks are generally technologically more advanced, better developed and dominate the financial system. Banks, however, are known for their reluctance to grant loans to small private companies (Allen et al., 2005 and Boyreau-Debray, 2002), while most non-bank institution loans are extended to the non-state-owned sector (Xie, 1998). Bank and non-bank financial institutions show clear differences calling for a separate treatment. Employing a generalized “difference-in-differences” method, we compare the impact of the development of bank and non-bank financial institutions on Chinese provinces’ growth rates over the period 1995-2003. Our results indicate that only bank loans exert a statistically and economically significant positive impact on local economic growth. The distinct performances of bank and non-bank financial institutions can mainly be attributed to the differences in their geographical scope, size and organization, and efficiency. However, we also find that the presence of non-bank financial institutions stimulates competition in the local banking market. Specifically, the positive impact of banks’ development on growth becomes more pronounced when the local financial sector is less concentrated.

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<sup>1</sup> Banks in our study include the five biggest commercial banks in China: the four biggest state-owned commercial banks and one national commercial bank, Bank of Communications. Non-bank financial institutions mainly include rural credit cooperatives, and local trust and investment companies. For the detailed differences between those institutions, we refer to the third section.

The relationship between finance and growth has been debated for a long time. Recent cross-country studies provide evidence that greater financial development leads to higher growth (e.g. King and Levine (1993a), Levine and Zervos (1998), Berger, Hasan, and Klapper (2004); more details are in our literature review section). However, the evidence from cross-country regressions may be plagued by omitted variable problems, and therefore must be viewed with some skepticism (Jayaratne and Strahan (1996)). For example, cross-country differences in political institutions, accounting standards, and legal systems may drive both economic growth and financial development, but are not easily controlled for.

Within-country studies suffer less from this problem and their inferences therefore should be more convincing. For instance, Jayaratne and Strahan (1996) document that after the relaxation of bank branch restrictions in the United States, the growth in income and output increased significantly (see our literature review section for other studies). However, whether those inferences also apply to developing economies that are in a different phase of the growth path than the developed ones, is not clear.

Direct evidence from developing economies on the finance-high-growth-rate nexus is scarce.<sup>2</sup> As China is one of the most important developing countries, China's experience may be relevant also for other countries having the potential of exhibiting similar growth as China. The Chinese finance-growth nexus only recently received attention, but no consensus on the role of finance has been reached yet. One strand of papers argues that financial development matters for economic growth by observing that local growth is significantly correlated with financial development (e.g. Li and Liu (2001) and Zhou and Wang (2002)). Another strand of papers holds the opinion that China is a counterexample to the current findings of the finance and growth literature. For instance, Allen et al. (2005) conclude that there exist other financing channels for the private sector than those of financial institutions.

Our paper provides new evidence and insights on the finance-high-growth rate nexus in China. Identifying the effects of financial development on economic growth is a challenging task in that financial development may react to the expectation of

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<sup>2</sup> An exception is Haber (1991, 1997) who documents that financial liberalization promotes growth in both Brazil and Mexico.

enhanced future economic growth; hence economies with good growth prospects develop institutions to provide funds necessary to support those good prospects (Robinson (1952)). The Chinese case allows us to make progress in controlling for this reverse causality. First, the Chinese economy with its different types of financial institutions allows us to take a generalized “difference-in-differences” method, which helps us identify the causation. The rationale for this approach stems from the following reasoning. Theory argues that financial institutions efficiently allocate capital to where it can generate better returns and therefore promote growth. If this theory applies, banks with better efficiency relative to non-bank financial institutions may be better at selecting fast growing firms. Empirically we should observe a stronger correlation between bank development and future economic growth. However, if finance simply follows growth, the huge demand for funds from the non-state-owned enterprises due to their growing needs will make the development of non-bank financial institutions show a stronger correlation with future growth.

Second, we choose the period over 1995-2003, immediately after the Chinese government tried to “soft land” the economy. The economic growth rates had shown a decreasing trend during our sample period. When economic growth leads finance, the situation should be less severe during the downswing of the business cycle. Typically, we find that the fastest growing provinces in our sample are not those that exhibit the greatest increase in financial development.

Our findings highlight that banking development via bank loans exerts a significantly positive impact on local growth, both statistically and economically. As a comparison, non-bank financial institutions, while granting most of their loans to the non-state-owned sector, seem to be less important for local growth. This suggests that the efficiency of financial institutions still plays an important role in the allocation of funds, and in turn spurs growth. We find little evidence that fast growing provinces also had experienced a fast developing financial sector during our sample period. In conclusion, our results are less likely driven by reverse causality.

How to reconcile these results with Allen et al. (2005), who argue that growth in China mainly stems from the private sector? First, Chinese banks may enjoy a better pool of borrowers as they have a larger geographical scope, face fewer restrictions in

attracting deposits and therefore can establish stronger bank-firm relationships, and finance both large and small firms. Non-bank financial institutions may have a restricted choice due to their smaller nature. We notice that the state-owned sector still contributes around 40% of GDP growth in recent years (Sun, 2003). Banks therefore can easily allocate the capital to the most profitable state-owned enterprises. Second, bank loans and especially short-term loans to the non-state-owned sector, had grown considerably during our sample period. This suggests that banks increased their relative exposure towards the financing of private firms, even though most financed private firms were large ones. This noticeable change is also documented by two recent surveys (see Appendix), which indicate that Chinese banks are more likely to discriminate borrowers with respect to their sizes rather than ownership. Third, another plausible explanation is that bank loans may be transmitted to the private sector through state-owned enterprises. Lu and Yao (2004) argue that given the weak legal enforcement, Chinese banks may prefer to grant loans to state-owned enterprises that reinvest bank loans in the private sector.

The rest of our paper is organized as follows. Section II briefly reviews the finance and growth literature. Section III introduces the Chinese financial system, focusing on the two types of financial institutions. Section IV presents the effects of financial development on economic growth in China. The last section concludes.

## **II Financial Development and Economic Growth: Theory and Evidence**

Theory has studied the relationship between finance and growth. In general there are two schools of thought with contrasting views. One school holds the idea that financial development follows rather than spurs economic growth. Robinson (1952) argues that finance does not cause growth, but reacts to the demand from the real sector. Hence economies with good growth prospects develop institutions to provide the necessary funds to support those good prospects. Some empirical evidence supports this idea. For instance, Shan and Morris (2002) study data from 19 OECD countries and China, and document that there is no clear evidence that finance



Granger causes growth.

The other school argues that financial development plays a key role for growth. First, financial intermediation economizes the costs associated with mobilizing savings (Boyd and Smith (1992) and Sirri and Tufano (1995)), and therefore increases capital accumulation. Second, financial intermediation evaluates firms, managers and market conditions, and reallocates capital to its best use (Boyd and Prescott (1986), Greenwood and Jovanovic (1990), or Allen (1990)). Moreover, financial intermediaries monitor firms and exert control to overcome agency problems (Townsend (1979), Gale and Hellwig (1985), and Boyd and Smith (1994)). Financial intermediation meanwhile diversifies investment risks, which enhances the output and in turn economic growth (Gurley and Shaw (1955), Greenwood and Jovanovic (1990) and Acemoglu and Zilibotti (1997)). In their 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)). The recent literature also well integrates financial development in innovation-based growth models. For instance, King and Levine (1993a) suggest that financial intermediaries can evaluate, finance and monitor potential entrepreneurs in their innovative activities. They also show that the relationship between finance and growth is likely to be dynamic and endogenous. Aghion, Howitt and Mayer-Foulkers (2003) show why the existence of technological transfers is not sufficient to put all countries on parallel long-run growth rate paths. They find that it is not just financial constraints that make some countries poor but rather that financial constraints inhibit a technological transfer and thus lead to an ever-increasing technology gap.

Recent empirical evidence employing cross-country datasets document that finance is positively correlated with growth. King and Levine (1993a) use data on 77 countries over the period 1960-1989, to document that the level of financial development determines long-run economic growth, capital accumulation, and productivity growth. Levine and Zervos (1998) refine this and 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.

The initial cross-country studies, however, are likely to suffer from simultaneity bias.

More recent studies therefore focus on finding proper instruments to extract the exogenous part of financial development when trying to settle the issue of causality. La Porta et al (1998) link the legal origin of a country to its financial development. Their empirical results suggest that a variety of legal origins (British, French, German or Scandinavian laws) differing in protecting the rights of both shareholders and creditors and in the efficiency of legal enforcement, reasonably lead to different levels of financial development. Based upon the above legal origin-finance instruments and using cross-country datasets, a substantial body of empirical work further shows that financial development promotes economic growth in aggregate, industry and firm level analysis (see e.g. Levine, Loayza, and Beck, (2000) or Demirgüç-Kunt and Maksimovic (1998)). Next to instruments such as legal origin, economists also rely on improved econometric techniques to instrument endogenous variables. Authors employ 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.

One way to control for cross-country differences such as legal origin is to focus on one country only. Jayaratne and Strahan (1996) tackle the endogeneity problem by keeping effects other than financial development constant. They use financial deregulation in the early 1970s in 35 U.S.-states as an exogenous shock to local financial development. They find that in the 30 years after the deregulation, the economy grew faster in the deregulated states than in the other states. They also test the hypothesis of deregulation happening only due to expectation about the future needs of financing. They reject this hypothesis by observing that the loans after deregulation did not explode. Therefore, they attribute the relatively faster 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 probability that an individual starts a business, increases industrial competition, and in turn spurs firm growth.

Only few studies consider developing countries. Haber (1991, 1997) carefully examines the role of financial liberalization for economic growth in Brazil and Mexico. He documents that financial liberalization allows more firms to have better

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 due to its better political institutions.

The finance and growth issue in China has only received attention recently but no consensus has been reached yet. One strand of papers holds the view 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 of the loans of the largest banking institutions and self raised funds. They attribute the positive correlation to the improvement in the efficiency of capital reallocation during the liberalization in both financial and real sectors. Zhou and Wang (2002) study the impact of local financial development on economic growth, using a provincial dataset over the period 1978-2000, and find that local financial development is highly correlated with economic growth. Moreover, the provinces with relatively low initial level of financial development show slower growth rates afterwards. Particularly, they attribute the significant correlation between finance and growth to the openness of local financial markets, which improves the competition as well as the efficiency of financial institutions. However, those papers do not formally deal with the endogeneity of finance and growth and hence to some extent their conclusion of the causality is less convincing.

The other strand of papers holds the opinion that China is a counterexample of the law-finance-growth nexus. More specifically, they question whether financial development plays an important role for China's growth, as they observe the coexistence of weak Chinese legal and financial systems and fast economic growth. Allen et al. (2005) examine closely the relationship between law, finance and growth in China. Their analysis reveals that the relatively poor legal system and the underdeveloped financial sector contribute little to the growth of the private sector, which is known as the most important component of China's fast growth. Hence, Allen et al. (2005) argue that there exist other financing channels for the private sector than those of financial institutions.

### III. The Chinese financial system

#### 3.1 The Chinese financial structure

In this section, we offer a description of the Chinese financial structure.<sup>3</sup> We explicitly focus on the differently developed financial institutions in China – banks and non-bank financial institutions, rather than stock markets. The reasoning is that the Chinese financial system is dominated by financial institutions, especially banks.<sup>4</sup>

[Insert Figure 1 here]

Figure 1 presents the structure of the Chinese financial system at the end of 1994. It shows that financial institutions in China can be separated in two categories: banks and non-bank financial institutions. The banking sector (labeled as “banks”) entails three policy banks – focusing on policy-oriented loans – and fifteen commercial banks, of which the four state-owned commercial banks dominate the whole banking sector. Among the eleven national and regional banks, Bank of Communications<sup>5</sup> is the largest with China’s finance ministry the largest shareholder. Sometimes researchers 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 and rural credit cooperatives, trust and investment companies, financial companies and other institutions.

We make a distinction between banks and non-bank financial institutions. Banks are hierarchically organized while non-bank institutions are generally following a “decentralized form”. This hierarchical structure mainly stems from their size. For example, Industrial and Commercial Bank of China, the largest state-owned bank has 37,039 branches all over the country. As a comparison, there are only 50,745 rural credit cooperatives in the whole country. Also, a rural credit cooperative typically has

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<sup>3</sup> Table a1 in Appendix introduces the functions of the main Chinese financial institutions.

<sup>4</sup> For example, at the end of 1994, the ratio of the stock market capitalization to total assets of financial institutions was approximately 6.7%. Although the importance of stock markets has increased somewhat since the early 1990s, the scale and the importance of the financing channels of the stock markets are not comparable to those of financial institutions (Allen et al., 2005). In this paper, we assume that stock markets have no significantly different impacts on different provinces. Hence employing a fixed effects panel model and incorporating time dummy variable in our analysis may well control for the impact of stock markets.

<sup>5</sup> The Bank of Communications has been publicly listed in Hong Kong Stock Exchange since June 2005.

only one branch-office, does not belong to any “headquarter”, is independent from other rural credit cooperatives, and is active in one province only.

[Insert Figure 2 here]

As Figure 2 illustrates, the total assets of the four state-owned banks, which were approximately 7,122 billion RMB<sup>6</sup> at the end of 1994, cover around 78 percent of the total assets of the entire financial sector. The other banks are relatively smaller. As the fifth biggest bank in China, Bank of Communications occupied more than half of the total assets of all national and regional banks at the end of 1994. The total assets of non-bank financial institutions together took 16 percent of the assets of all financial institutions. The market share of rural credit cooperatives was 7 percent, which was comparable to that of trust and investment companies. At the end of 2002, state-owned banks still dominated but their market share declined towards 68 percent. National and regional banks gained market share towards 15 percent. Market share of rural credit cooperatives increased whereas trust and investment companies’ market share decreased.

We argue that the two types of financial institutions – banks and non-bank financial institutions – differ in several dimensions, and their financial development should therefore be treated separately. First, they have a diverging geographical scope. Banks are bigger players than non-bank financial institutions. Most banks in China are national or regional players, and some of them are even international players. A non-bank financial institution, in contrast, is typically present in one province only. Second, banks may be technological more advanced. Banks often pay higher salaries and offer better career opportunities to young graduates. Therefore, banks may attract higher quality personnel. Banks also benefit more easily from technological spillovers, as they recruit experts having overseas working experience. Third, large banks’ branches benefit from expert credit systems developed centrally. Although a hierarchical structure also has clear disadvantages and may imply a focus on hard information as argued by Stein (2002), banks in emerging countries may still benefit from such organizational structure as it helps in reducing asymmetric information

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<sup>6</sup> RMB=Renminbi (in 2000, 1 US \$ = 8.3 RMB)

problems. Stand-alone non-bank financial institutions are more likely to suffer from asymmetric information in the Chinese financial system. The reasoning is that there is no third-party credit rating agency.

Recent balance sheet data as well as reported data on non-performing loans (NPLs) show that banks perform better than non-bank financial institutions. Tables 1 and 2 offer more information.

[Insert Tables 1 and 2 here]

Table 1 shows the operating costs of different types of Chinese financial institutions. The ratio of operating costs to assets is lower for banks than for non-bank financial institutions. Table 2 provides data on the non-performing loans (NPLs) in the Chinese financial sector. Although the average NPL ratio is high relative to other countries, banks have a lower NPL ratio than non-bank financial institutions. The numbers presented in Table 1 and 2 suggest that banks are more efficient than non-bank financial institutions.

### 3.2 Bank-firm relationships in China

Understanding the formation of bank-firm relationships in China may help us to gain insights into the role of finance for growth. As stock markets are not well developed in developing economies and emerging markets, firms heavily rely on debt, in particular short-term debt, for financing their investments. Hence the short-term loan portfolios of Chinese financial institutions may shed light on how different types of firms are financed. Figure 3 and Table 3 show how short-term credit has been allocated between two different types of firms, state-owned and non-state owned enterprises in China, during our sample period.

[Insert Figure 3 and Table 3 here]

Figure 3 shows the evolution of the short-term loan portfolios of financial institutions in China. Although both state-owned enterprises and non-state-owned enterprises received more short-term credit over the period 1994-2002, the short-term loans

extended to the non-state-owned sector grew faster. Meanwhile the proportion of loans to the state-owned sector decreased from 82.5% in 1994 towards 64.4% in 2002. Data from BankScope show that the reporting banks' growth rate of short-term loans was larger than the one of the reporting non-bank financial institutions (average annual growth rate of 6.6% versus 2.3% respectively over the period 1996-2002). This evidence taken together suggests that the growing short-term loans stem more from banks than from non-bank financial institutions.

Furthermore, two surveys provide evidence on how firms may choose between different financial institutions (see Appendix: survey a1 and a2). They show that firms apply first for credit at banks before turning to non-bank financial institutions or other sources of finance. Hence, banks in China may enjoy a better pool of borrowers. The two surveys indicate also that at the end of 2002, banks in China are more likely to discriminate according to borrowers' size rather than ownership. This may stem from the fact that the Chinese banks are used to extent loans on the basis of collateral.

## **IV. The growth effects of financial development in China**

### 4.1 Theoretical background, empirical model and financial development indicators

#### *4.1.1 Theoretical background*

Following King and Levine (1993b), we illustrate briefly how financial development affects technological innovation and hence possibly influences the long-run growth rate. Their endogenous growth model focuses on the connections between finance, entrepreneurship and economic growth. Financial institutions in this model play an important role in both the monitoring and financing of potential entrepreneurs, in their initiation of innovative activities, and launching of new products.

[Insert Figure 4 here]

Figure 4 displays the channels through which financial intermediation contributes to economic growth. Initially, in the entrepreneurial selection procedure, the financial intermediary monitors the whole set of candidates in the market and picks up potential entrepreneurs with the ability to manage innovations in the intermediate goods production technology. Second, the financial intermediary finances the innovative activities. If entrepreneurs are successful, they will enjoy monopoly profits by producing the unique intermediate product at a lower cost than their rivals but charging the same price. However, to produce intermediate goods the successful entrepreneurs need external financing. The financial intermediary evaluates and finances those entrepreneurs while it can pay back the consumers (savers) the interest according to its evaluation of the profitability of those entrepreneurs. Requiring the input of intermediate goods and labor, the production of final goods is also affected by the innovative success – the productivity increases with the technological progress. Of course, the aggregate final goods' production influences the consumers, who also provide the labor in this model, by affecting their optimal choice of intertemporal substitution in consumption. Again, as most neo-classical models predict, the intertemporal substitution elasticity and time preferences of labor together with real return rates (interest rates in this model), are positively correlated with the aggregate growth. Moreover, the equilibrium conditions of the model show that the growth rate is not only affected by productivity, which is partly decided by the probability that a candidate is a potential entrepreneur, but also negatively impacted by the cost of monitoring.

The model identifies the following potential relationships between finance and growth. First, finance supports innovations and hence increases the productivity which is positively correlated with growth. Second, efficiency improvements in the financial sector, such as a decrease in the cost of monitoring, will increase the real rate of return and thus lead to a higher future growth rate. Third, the model also suggests a reverse channel of causation where distortions in the innovative sector lower the demand for financial services and retard financial development.

#### *4.1.2 Empirical framework*

To estimate the impact of financial development on economic growth, consider a



Cobb-Douglas production function at the individual level,

$$y = k^\alpha x, \quad (1)$$

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

$$\ln y = \alpha \ln k + \ln x. \quad (2)$$

As most neo-classical R&D models predict, for example King and Levine (1993), the growth of  $x$  comes from technological innovation. First-difference of (2) yields,

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

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 hence can be estimated by,

$$GPY_t = a_o + a_1 GK_t + a_2 FI_t + \varepsilon_t \quad (3)$$

where  $FI_t$  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 over the period 1995-2003. The advantage of using panel data is that we can estimate the corresponding relationship even in a relatively short period. The fixed effects model derived from equation (3), also controlling for time effects can be written as

$$GPY_{i,t} = a_1 GK_{i,t} + a_2 FI_{i,t} + a_3 CON_{i,t} + \sum_{i=1}^I \delta_i U_i + \sum_{t=1}^T \phi_t V_t + \varepsilon_{i,t}$$

where  $FI_{i,t}$  is the financial development indicator of either banks or non-bank financial institutions in province  $i$  at time  $t$ .  $U_i$  is a set of province dummy variables,  $V_t$  is the set of time dummy variables, and  $\delta_i$  and  $\phi_t$  are the vectors of coefficients.  $CON$  refers to the conditioning informational set.  $CON$  includes  $FDI$  and  $Investment$  measured by the ratio of Foreign Direct Investment to GDP, and the ratio of total investment to GDP, respectively.

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

$$GPY_{i,t} = a_1GK_{i,t} + a_2FI_{i,t-1} + a_3CON_{i,t} + \sum_{i=1}^I \delta_i U_i + \sum_{t=1}^T \phi_t V_t + \varepsilon_{i,t} \quad (4)$$

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. However, problems arise when those assumptions are violated. For example, heteroskedasticity or serial autocorrelation in the error term is often observed in panel analysis. This problem 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.

Within country panel analysis alleviates the potential endogeneity problem that most cross-country studies may face. It is easier to control for omitted variables that may drive both economic growth and financial development. Reverse causality is another concern. The significant correlation between finance and growth may not necessarily indicate that finance spurs growth, but possibly the reverse. As we argued before, examining two types of financial institutions may also mitigate this problem. In several robustness tests, we also try to further deal with potential endogeneity problems.

#### 4.1.3. Bank and non-bank financial development indicators

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

##### *Indicators of financial development of banks*

*Bank Deposit* equals the ratio of the savings in the banking system to local GDP. *Bank*

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<sup>7</sup> Here we control for the contemporaneous effects of conditioning variables, such as *FDI* and *Investment*, 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.

*Deposit* is a measure of “financial depth” of the local banking sector. A second indicator is *Bank Credit*, which equals 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 represents the Herfindahl-Hirschman Index (HHI), 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. Before 1980, there were only 3 banks in China and each of them enjoyed a different segment of the deposit market. After 1984, the number of banks in the market increased and banks began to compete for deposits under the permission of the central government.

#### *Indicators of financial development of non-bank financial institutions*

In a similar fashion as for the bank indicators, we construct *Non-bank Deposit*, *Non-bank Credit* and *Non-bank Concentration* for non-bank financial institutions. Descriptive statistics on all the development indicators are discussed in Section IV.

A final variable we employ is *Financial Concentration*, computed as the HHI of the deposit market share of all financial institutions in our sample. It provides us with a global view of the concentration of the entire financial sector

## 4.2 Data and empirical results

### *4.2.1 Data Description*

Our dataset contains annual growth rates of real per capita GDP, real per capita capital stock, FDI and Investment in 27 provinces of China over the period 1995-2003<sup>8</sup>. Lagged financial development indicators are also included in our dataset from 1994 to 2002.

The financial development indicators in our study are calculated employing the statistics data reported by Almanac of China’s Finance and Banking. The Almanac documents the provincial data of annual savings and loans of 5 banks only: 4

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<sup>8</sup> Data reasons prevent us to include three provinces (Hubei, Tibet and Hainan).

state-owned banks and the Bank of Communications, the biggest bank of the national commercial banks. At the end of 1994, those 5 banks represent approximately 96 percent of the total assets of the banking sector.

From 1994 onwards, Almanac of China's Finance and Banking reports the provincial data of savings and loans of rural credit cooperatives and of some selected trust and investment companies, financial companies, and other non-bank financial institutions.<sup>9</sup> Only the non-bank financial institutions that are considered to be large enough have their data included in the Almanac, whereas 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. However such reporting bias should be taken care of by our province dummies in as far the reporting bias remains constant over our sample period within a province.

We construct the financial development indicators of non-bank institutions from the annual provincial data of rural credit cooperatives and other reporting non-bank financial institutions. The computation of the non-bank concentration based on the aggregate data of Almanac of China's Finance and Banking also induces some problems. While rural credit cooperatives, like other non-bank financial institutions, are isolated from each other, Almanac of China's Finance and Banking reports the province level aggregate for all rural credit cooperatives jointly in every province. However in reality rural credit cooperatives are not "integrated" into one entity. Therefore, the degree of competition among non-bank financial institutions is estimated by measurement error, which is inevitable given our data limitations.

[Insert Table 4 here]

Table 4 provides summary statistics of our data. We present time averages for the 27 provinces. Table 4 highlights that there is substantial variation between provinces. The highest average annual real per capita GDP growth rate equals 10.2 percent (Zhejiang province), while the lowest equals 5.7 percent (Yunnan province). The financial development indicators for China are relatively high compared to those for other

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<sup>9</sup> The data of urban credit cooperatives are also reported but not for every year. We therefore decided to exclude urban credit cooperatives from our sample.

countries (see also 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 0.141 and 0.109 only. 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.

#### 4.2.2 Empirical results

[Insert Table 5 here]

Table 5 presents the results of different versions of equation (4). The left panel (5a,b and c) displays the results including the bank financial development indicators in the regression. We first discuss the results on our financial development indicators. We turn to the control variables after having introduced the results in Table 6. *Bank Deposit* and *Bank Credit* are significantly positively correlated with future economic growth. The middle panel (5d,e and f) presents the results where non-bank financial development indicators enter the regression. Only *Non-bank Deposit* is positively correlated with growth. While most of the *Non-bank Credit* is granted to the non-state-owned sector, those loans exhibit little correlation with future growth. The right panel (5g and h) shows the results for the regressions where both bank and non-bank indicators enter the specification. Including both *Bank Credit* and *Non-bank Credit* into one regression (5h) shows the robustness of the results. Both *Bank Deposit* and *Non-bank Deposit* are significantly positively correlated with future growth (column 5g), which is in line with most finance and growth literature. However, *Bank Concentration* and *Non-bank Concentration* do not affect growth directly, suggesting that competition in banking markets does not affect growth.

Bank and non-bank financial development indicators exhibit a significant different impact on growth. In particular, the coefficient of *Bank Credit* is statistically significant and higher even though bank loans are more focused on the state-owned

sector. As a comparison, although non-bank loans are mostly extended to the non-state-owned sector, *Non-bank Credit* is largely irrelevant in explaining growth. This remarkable difference between bank and non-bank financial institutions suggests that the loans of the financial sector do not simply follow growth. On the contrary, it reveals that financial development plays an important role in promoting local Chinese economic growth, as banks compared to non-bank financial institutions have a wider geographical scope, are technologically more advanced, and may have been more affected by deregulatory financial reforms.<sup>10</sup>

Does banking competition promote the impact of financial development? We deal with this question by running two additional regressions, and present the results in Table 6. The first regression in column 6a includes the interaction between *Financial Concentration* and *Bank Credit* (*Financial Concentration x Bank Credit*) as additional regressor. In the second regression presented in column 6b, we introduce the interaction between *Bank Concentration* and *Bank Credit* (*Bank Concentration x Bank Credit*). The reasoning is that banks dominate the financial sector and the impact of *Financial Concentration* may mainly stem from *Bank Concentration*.

[Insert Table 6 here]

Column 6a shows that the interaction term *Financial Concentration x Bank Credit* is strongly negative, suggesting that more concentrated financial markets exhibit a lower growth rate for a given level of *Bank Credit*. In contrast, the coefficient on *Bank Concentration x Bank Credit* in column 6b is not significantly different from zero. Our results therefore suggest that although non-bank financial institutions seem to contribute little to local growth, their presence stimulates the competitiveness of the financial sector. That is the impact of *Bank Credit* in the provinces where the financial markets are less concentrated is much more pronounced.

We now turn to the control variables. The results in Tables 5 and 6 reveal that neither *FDI* nor *Investment* are having a significant impact on growth. This result may stem from the inclusion of province fixed effects. Therefore, *FDI* and *Investment* may not

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<sup>10</sup> The series of financial reforms and deregulations are reported in Table a2 in Appendix.

exhibit sufficient time-series variation to become significant. Table 6 reveals that also the per capita capital stock growth is not statistically significant. An explanation for this is that people may move easier across provinces within a country than to move across countries. Hence an empirical application using local data of a country may suffer from the problem that the provincial population is quite unstable over time. Therefore, the insignificance of the coefficient of per capita capital stock growth may be due to the fluctuation of local population. We therefore test whether the growth of aggregate capital stock is correlated with aggregate economic growth.

[Insert Table 7 here]

Table 7 presents the results of regressing provincial aggregate GDP growth on the growth of the aggregate capital stock and financial development indicators. The aggregate capital stock growth is significant and positive. More importantly, *Bank Credit* keeps its positive sign. However, *Bank Deposit* now is only marginally significant in the first regression, and *Non-bank Deposit* becomes insignificant.

#### 4.3 Robustness tests: endogeneity

Are our results driven by reverse causality? That is, does the expectation of future growth prospects imply 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 fastest growing provinces in terms of economic growth. We do find, however, that only 6 of them are in the top 13 of fastest growing *Bank Deposit* or *Bank Credit* provinces. Therefore, high growth provinces are not more likely to be provinces that have a high growth rate of financial development.

Second, directly controlling for endogeneity 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,

$$GPY_{i,t} = a_0 GPY_{i,t-1} + a_1 GK_{i,t} + a_2 FI_{i,t-1} + a_3 CON_{i,t} + \sum_{i=1}^I \delta_i U_i + \sum_{t=1}^T \phi_t V_t + \varepsilon_{i,t} \quad (5)$$

First differences of (5) read,

$$\begin{aligned} GPY_{i,t} - GPY_{i,t-1} = & a_0 (GPY_{i,t-1} - GPY_{i,t-2}) + a_1 (GK_{i,t} - GK_{i,t-1}) \\ & + a_2 (FI_{i,t-1} - FI_{i,t-2}) + a_3 (CON_{i,t} - CON_{i,t-1}) \\ & + (\varepsilon_{i,t} - \varepsilon_{i,t-1}) \end{aligned} \quad (6)$$

A system estimator jointly estimates the regression in levels (5) and the regression in differences (6). In order 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 variables are good instruments for explaining subsequent levels and the lagged levels of variables 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 8 here]

Table 8 reports the impact of financial development on economic growth when using the dynamic system GMM estimator. Bank loans significantly spur future economic growth, both economically and statistically. For example, if Shandong, the province now 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 8 percent per year, which is huge. Column 8h displays the results when we include *Bank Credit* and *Non-bank Credit* in one regression. Again, only the impact of *Bank Credit* appears to be positive and significant. *Bank Deposit* does not show any significant impact. The impact of *Non-bank Deposit* appears to be different in column 8d and column 8g, questioning the robustness of the effect of non-bank



loan size on growth. The coefficients of *Bank Concentration* and *Non-bank Concentration* are not significant. The fact that the null hypotheses of both the Sargan test and the second-order serial autocorrelation tests cannot be rejected at the 5 percent level approves the validity of the results of dynamic panel regressions<sup>11</sup>. In general, the results reported by Table 8 confirm those of Table 5.

We also employ the dynamic system GMM estimator when including the interaction item between concentration and financial development (results are reported in Table 9). Our previous findings remain virtually unaffected.

## V. Conclusion

Is the finance-growth nexus at work in an economy exhibiting a high growth rate? In this paper we provide empirical evidence on the impact of financial development on the growth of Chinese provinces over the recent period 1995-2003. Exploiting within variation on 27 provinces, we are able to more adequately control for institutional, legal and cultural factors that may commonly affect the Chinese financial system. We find that the finance-growth nexus also applies to the recent economic growth of Chinese provinces.

But which financial institutions' development contributes to the Chinese finance-growth nexus? We look at the impact of two types – “banks” and “non-bank financial institutions”. The reasoning to distinguish those two types is that banks, relative to non-bank financial institutions, have a wider geographical scope, are larger, and are often more hierarchically organized. Bank branches are also well integrated and may benefit from centrally developed technology and expert credit systems.

We find that provinces with a more financially developed banking sector enjoy a statistically and economically significantly higher local economic growth<sup>12</sup>. In

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<sup>11</sup> The null of the Sargan test of the regression reported in column 6f cannot be rejected at 5% but can still be rejected at 10%.

<sup>12</sup> As the two surveys in Appendix document, the Chinese banks seem to be less prone to grant loans when firms are in the starting-up stage but become the most important loan providers once the firms survive and become larger. Hence the Chinese banks may discriminate the two different channels modeled by King and Levine (1993b), as illustrated in Figure 4. Specifically, banks are more likely to drop the channel of financing potential entrepreneurs

contrast, even though non-bank financial institutions focus more on the non-state-owned sector, we still find that provinces with a more developed non-bank financial sector show no different growth rate than provinces with a little developed non-bank financial sector. We also find that the impact on growth of banking development is more pronounced in provinces with a less concentrated financial sector, showing that competition pronounces the finance-growth nexus. In particular competition from non-bank financial institutions seems important.

In general, our findings challenge the view that China is a counterexample to the current findings in the finance-growth literature. Our focus on a recent time period and the difference between banks and non-bank financial institutions shows that the finance-growth nexus also applies to the growth rate of Chinese provinces.

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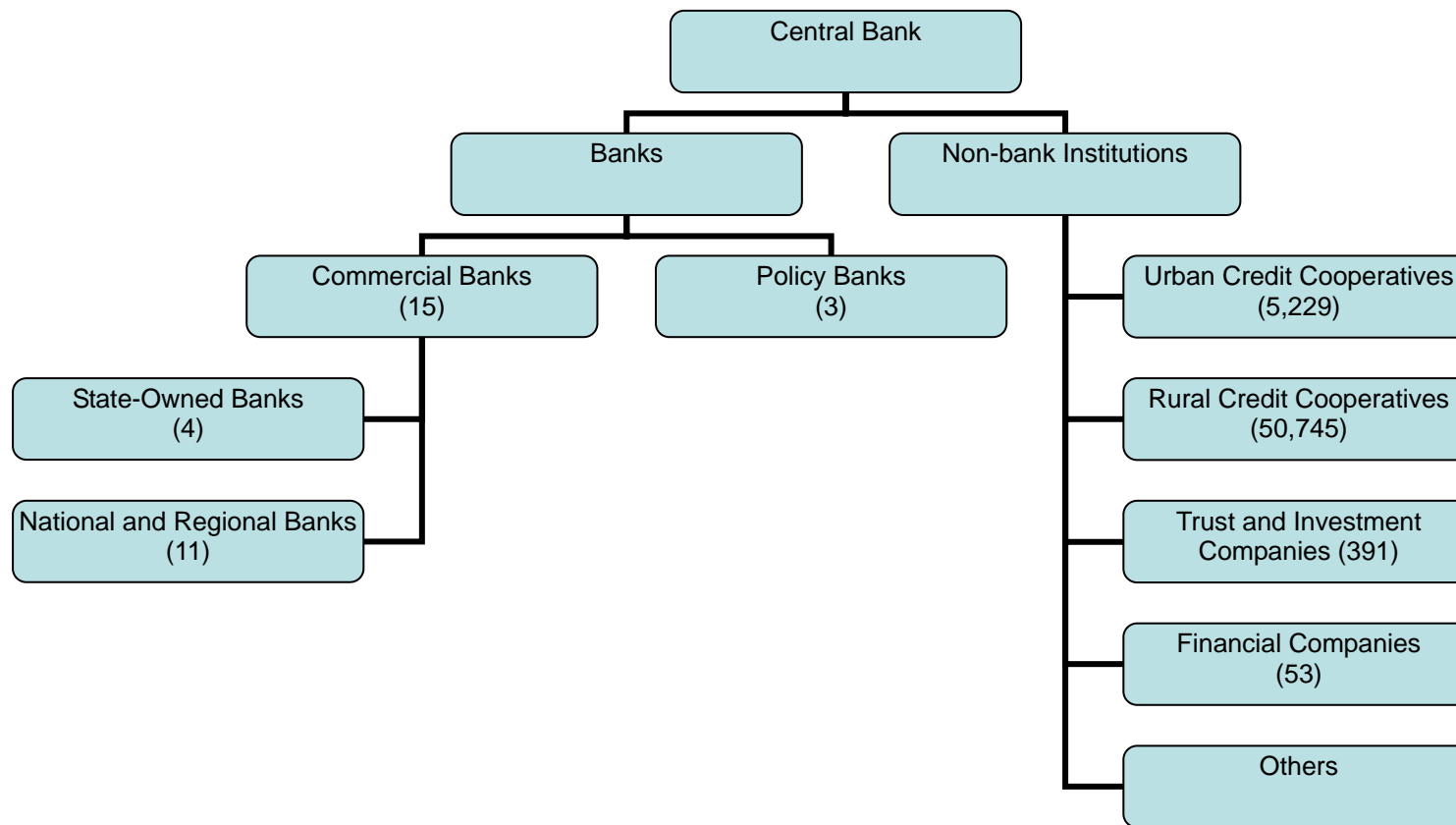
but adopt the channel of evaluating and financing intermediate goods monopoly.

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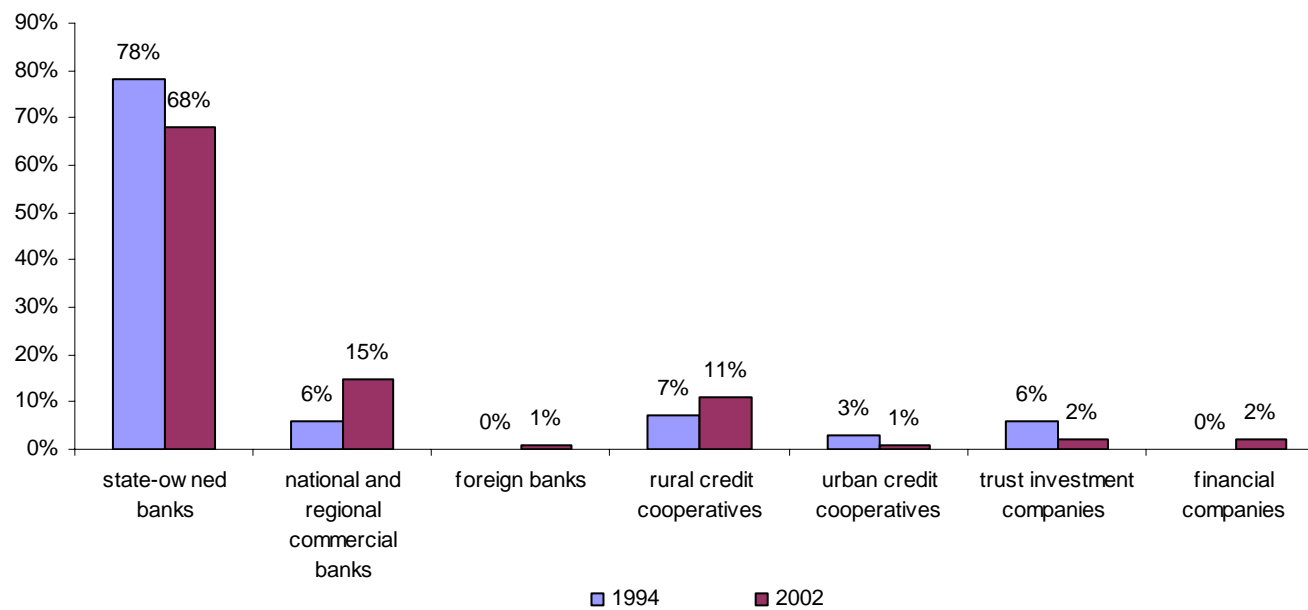
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**Figure 1: Financial institutions in China at the end of 1994**



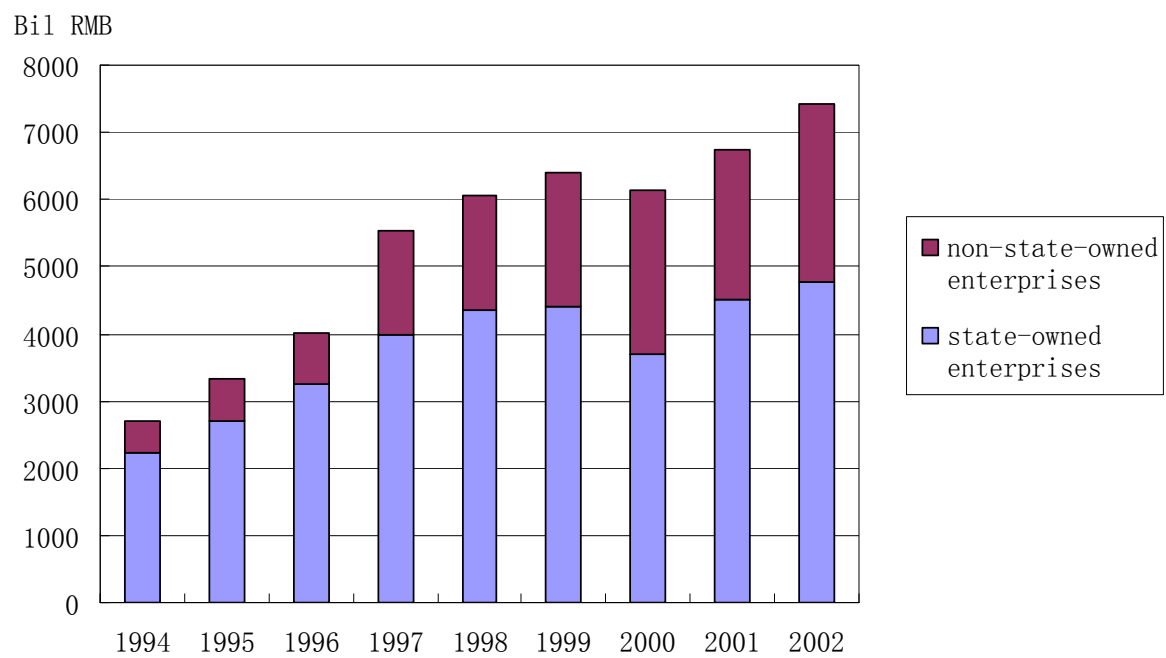
Source: Almanac of China's Finance and Banking (1995)

**Figure 2: Total assets of financial institutions at the end of 1994 and 2002**



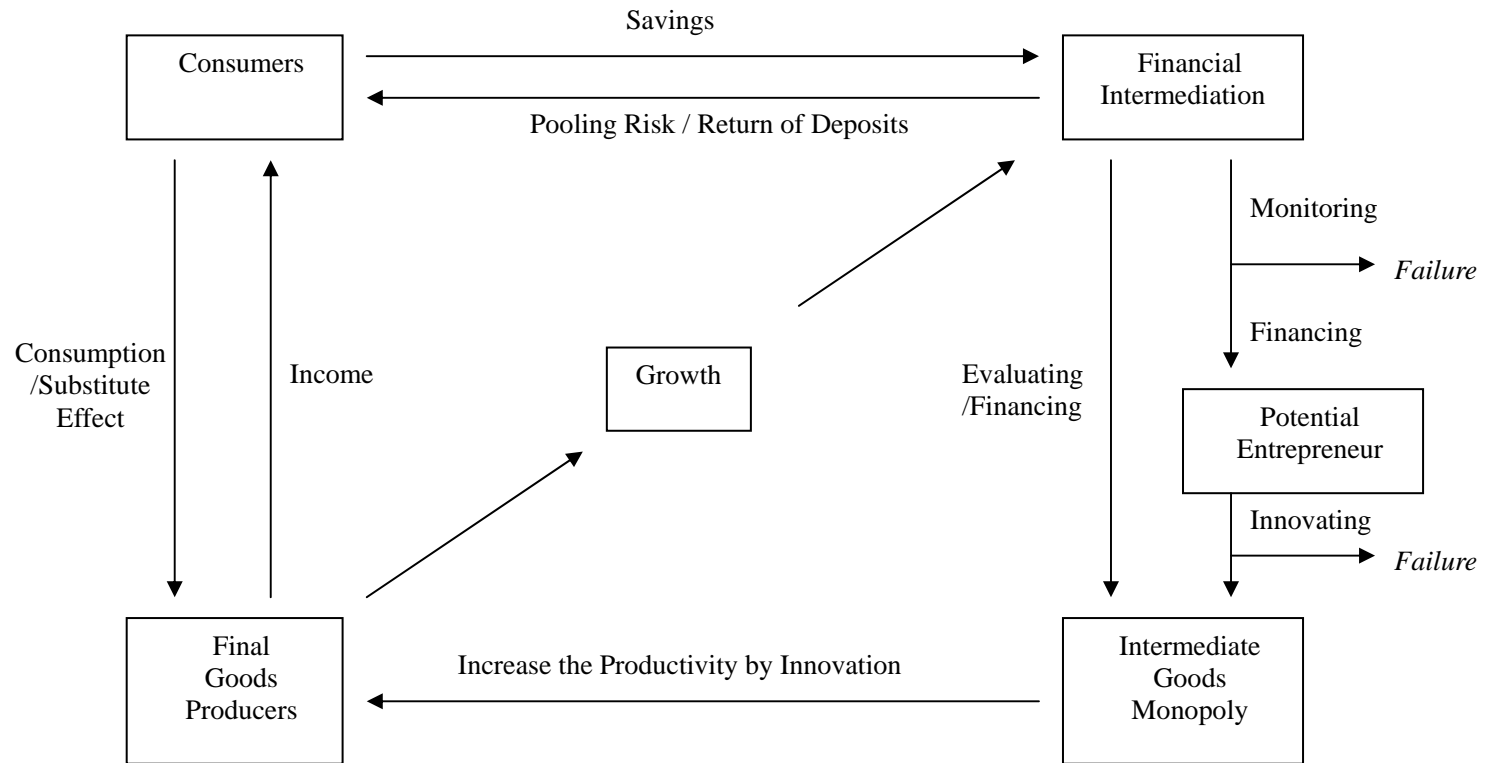
Source: Almanac of China's Finance and Banking (1995, 2003)

**Figure 3: Short-term loan portfolio of the Chinese financial institutions: 1994-2002**



Source: China Credit Yearbook (Volume I)

**Figure 4: Channels: finance and growth model of King and Levine (1993b)**





**Table 1: Operating costs of different Chinese financial institutions**

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

Operating costs ratio= operating costs/total assets

\* Source: Bankscope

\*\* Source: Xie, P., 2001, Zhongguo nongcun xinyongshe tizhi gaige de zhenglun (The system reform of China's rural credit cooperatives), Financial Research, 2001(1).

**Table 2: Financial risk comparison between banks and non-bank institutions**

Institutions		Financial Risk			
Banks		Nonperforming Loan Ratio *			
	Name	2000	2001	2002	2003
	<i>ICBC</i>	0.334	0.298	0.257	0.213
	<i>BOC</i>	0.272	0.275	0.225	0.181
	<i>CCB</i>	0.203	0.192	0.152	0.119
	<i>ABC</i>	0.468	0.421	0.381	0.321
Non-bank Financial institutions	<i>Rural Credit Cooperatives</i>	Average nonperforming loan ratio was around 0.5 by the end of 2003. In some underdeveloped provinces the ratio even reached 0.9. **			
	<i>Trust and Investment Companies</i>	Nonperforming Loan ratio is unreported but expected to be high. The bankruptcy of Guangdong International Trust and Investment Company (GITIC) in 1998 is an example. The Chinese government often decides to close the financially bankrupt Trust and Investment Companies. The total number of Trust and Investment companies shrank from 339 (by 1990) to 244 (by 1996). ***			

\* Source: Sun, L., 2003, The Fragility in China's Financial Systems, Finance and Trade Economics (Chinese), 268: 5-12

\*\*Source: Zhang, Q., 2003, Zhongguo Nongcun Jinrong Xianzhang Yu Zhengce Fengxi (Analysis of the Chinese Rural Financial System), Report for Asian Development Bank, 2003

\*\*\* Source: Xie, P., 1998, Zhongguo Fei Yinhang Jinrong Jigou Yanjiu ( A Study of the Chinese Non-bank Financial Institutions), Economics and Finance, 1998 (3), (4), and (5).

**Table 3: Composition of Short-term loan portfolio of the 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 4: Summary statistics of growth and financial development indicators**

<b>Variable</b>	<b>Obs</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Min</b>	<b>Max</b>
<b>real GDP per capita growth rate</b>	27	.077	.013	.057	.102
<b>real capital stock per capita growth rate</b>	27	.114	.020	.072	.145
<b>Bank Deposit</b> (bank savings to GDP)	27	.843	.467	.477	2.936
<b>Bank Credit</b> (bank loans to GDP)	27	.683	.224	.402	1.223
<b>Bank Concentration</b> (HHI based on bank deposit market shares)	27	.265	.029	.222	.353
<b>Non-bank Deposit</b> (non-bank savings to GDP)	27	.141	.053	.049	.268
<b>Non-bank Credit</b> (non-bank loans to GDP)	27	.109	.041	.038	.224
<b>Non-bank Concentration</b> (HHI based on non-bank deposit market shares)	27	.726	.094	.549	.850
<b>Financial Concentration</b> (HHI based on the whole deposit market shares)	27	.207	.035	.137	.358
<b>Investment</b> (Investment to GDP)	27	.455	.087	.337	.683
<b>FDI</b> (FDI to GDP)	27	.031	.033	.002	.110

Source: Almanac of China's Finance and Banking (1995-2003)  
Yearly Statistic Book of China (1996-2004)

**Table 5: Finance and real per capita GDP growth in Chinese provinces: 1995-2003**  
**Fixed effects regressions, within estimator**

Dependent variable: *Real Per Capita GDP Growth*

regressors	5a	5b	5c	5d	5e	5f	5g	5h
<i>Per Capita Capital Stock Growth</i>	-.036 (.641)	-.000 (.999)	-.034 (.662)	-.041 (.572)	-.037 (.627)	-.036 (.633)	-.041 (.571)	-.0060 (.936)
<i>Bank Deposit</i>	<b>.080***</b> (.000)						<b>.072***</b> (.006)	
<i>Bank Credit</i>		<b>.095***</b> (.000)						<b>.096***</b> (.000)
<i>Bank Concentration</i>			.015 (.769)					
<i>Non-bank Deposit</i>				<b>.032**</b> (.016)			<b>.023*</b> (.093)	
<i>Non-bank Credit</i>					.008 (.398)			.009 (.186)
<i>Non-bank Concentration</i>						-.014 (.400)		
<i>Investment</i>	<b>.050*</b> (.081)	<b>.054*</b> (.062)	.041 (.267)	.029 (.341)	.035 (.314)	.039 (.259)	.041 (.135)	<b>.048*</b> (.084)
<i>FDI</i>	.001 (.863)	.002 (.859)	.003 (.740)	.002 (.795)	.002 (.781)	.003 (.687)	.000 (.902)	.001 (.913)
Obs	242	242	242	242	242	242	242	242
R-squared	.385	.398	.351	.366	.353	.354	.390	.401

\* indicates significance at 10% level  
 \*\* indicates significance at 5% level  
 \*\*\* indicates significance at 1% level  
*p*-value is reported between brackets

**Table 6: Finance and real per capita GDP growth in Chinese provinces (1995-2003):  
the impact of concentration  
Fixed effects regressions, within estimator**

Dependent variable: *Real Per Capita GDP Growth*

regressors	6a	6b
<i>Per Capita Capital Stock Growth</i>	.018 (.800)	.019 (.821)
<i>Bank Credit</i>	<b>.195***</b> <b>(.000)</b>	<b>.180**</b> <b>(.012)</b>
<i>Bank Credit x Financial Concentration</i>	<b>-.080**</b> <b>(.047)</b>	
<i>Bank Credit x Bank Concentration</i>		-.074 (.223)
<i>Investment</i>	.049 (.102)	.050 (.117)
<i>FDI</i>	.001 (.916)	.002 (.845)
Obs	242	242
R-squared	.407	.402

\* indicates significance at 10% level  
 \*\* indicates significance at 5% level  
 \*\*\* indicates significance at 1% level  
*p*-value is reported between brackets

**Table 7: Finance and aggregate real GDP growth in Chinese province ( 1995-2003):  
aggregate capital stock growth  
Fixed effects regressions, within estimator**

Dependent variable: *Aggregate Real GDP Growth*

regressors	7a	7b	7c	7d	7e	7f	7g	7h
<i>Aggregate Capital Stock Growth</i>	<b>.421***</b> (.000)	<b>.478***</b> (.000)	<b>.484***</b> (.000)	<b>.453***</b> (.000)	<b>.479***</b> (.000)	<b>.479***</b> (.000)	<b>.406***</b> (.000)	<b>.472***</b> (.000)
<i>Bank Deposit</i>	<b>.042*</b> (.089)						.042 (.122)	
<i>Bank Credit</i>		<b>.057**</b> (.028)						<b>.057**</b> (.028)
<i>Bank Concentration</i>			-.008 (.850)					
<i>Non-bank Deposit</i>				.0100 (.361)			.006 (.652)	
<i>Non-bank Credit</i>					.001 (.849)			.002 (.711)
<i>Non-bank Concentration</i>						-.002 (.865)		
<i>Investment</i>	-.043 (.185)	-.043 (.200)	<b>-.057*</b> (.050)	<b>-.056*</b> (.053)	<b>-.056*</b> (.058)	<b>-.056**</b> (.049)	-.049 (.186)	-.043 (.211)
<i>FDI</i>	.001 (.910)	.001 (.954)	.001 (.868)	.001 (.875)	.001 (.876)	.001 (.860)	.001 (.913)	.000 (.965)
Obs	242	242	242	242	242	242	242	242
R-squared	.462	.473	.449	.451	.449	.449	.460	.474

\* indicates significance at 10% level  
 \*\* indicates significance at 5% level  
 \*\*\* indicates significance at 1% level  
*p*-value is reported between brackets

**Table 8: Finance and real per capita GDP growth in Chinese provinces: 1995-2003**  
**Dynamic panel regressions, system GMM estimator**

Dependent variable: *Real Per Capita GDP Growth*

Regressors	8a	8b	8c	8d	8e	8f	8g	8h
<i>Per Capita Capital Stock Growth</i>	-.064 (.307)	-.090 (.147)	-.059 (.371)	-.089 (.147)	-.090 (.154)	-.076 (.214)	-.077 (.190)	-.078 (.185)
<i>Bank Deposit</i>	.016 (.639)						.009 (.769)	
<i>Bank Credit</i>		<b>.072**</b> <b>(.022)</b>						<b>.074**</b> <b>(.010)</b>
<i>Bank Concentration</i>			-.044 (.501)					
<i>Non-bank Deposit</i>				.028 (.183)			<b>.036*</b> <b>(.067)</b>	
<i>Non-bank Credit</i>					.004 (.688)			.010 (.286)
<i>Non-bank Concentration</i>						-.017 (.241)		
<i>Investment</i>	.017 (.657)	<b>.065*</b> <b>(.092)</b>	.007 (.846)	.010 (.771)	.027 (.485)	.032 (.374)	.005 (.891)	.042 (.240)
<i>FDI</i>	.006 (.443)	.003 (.739)	.008 (.300)	.005 (.538)	.007 (.370)	.008 (.310)	.005 (.466)	.006 (.431)
Obs	215	215	215	215	215	215	215	215
Sargan Test	.297	.321	.226	.200	.390	<b>.051*</b>	.282	.419
AR(2) Test	.290	.372	.241	.355	.218	.332	.299	.354

\* indicates significance at 10% level

\*\* indicates significance at 5% level

\*\*\* indicates significance at 1% level

*p*-value is reported between brackets



**Table 9: Finance and real per capita GDP growth in Chinese provinces (1995-2003):  
the impact of concentration  
Dynamic panel regressions, system GMM estimator**

Dependent variable: *Real Per Capita GDP Growth*

regressors	9a	9b
<i>Per Capita Capital Stock Growth</i>	-.021 (.727)	-.048 (.437)
<i>Bank Credit</i>	<b>.260***</b> (.001)	<b>.211***</b> (.010)
<i>Bank Credit x Financial Concentration</i>	<b>-.138**</b> (.010)	
<i>Bank Credit x Bank Concentration</i>		<b>-.107*</b> (.095)
<i>Investment</i>	.035 (.314)	.050 (.153)
<i>FDI</i>	.004 (.533)	.005 (.461)
Obs	215	215
Sargan Test	.460	.458
AR(2) Test	.335	.416

\* indicates significance at 10% level

\*\* indicates significance at 5% level

\*\*\* indicates significance at 1% level

*p*-value is reported between brackets

## Appendix

**Table a1: The introduction to the main Chinese financial institutions**

Name	Functions
<i>People's Bank of China</i>	The People's Bank of China (PBOC) is China's central bank, which formulates and implements monetary policy.
<i>China Banking Regulatory Commission</i>	China Banking Regulatory Commission (CBRC) was officially launched on April 28, 2003, to take over the supervisory role of the PBOC. It regulates and supervises banks, asset management companies, trust and investment companies as well as other deposit-taking financial institutions.
<i>Stated-owned commercial banks</i>	The four Stated-owned banks were established in the mid-1980s and transformed into commercial banks in 1994. The "big four" include: the Bank of China (BOC), the China Construction Bank (CCB), the Agricultural Bank of China (ABC), and the Industrial and Commercial Bank of China (ICBC).
<i>Policy banks</i>	The three policy banks were established in 1994 to take over the government-directed spending functions of the four state-owned commercial banks. The three policy banks are: the Agricultural Development Bank of China (ADBC), China Development Bank (CDB), and the Export-Import Bank of China (Chexim)
<i>National and regional commercial banks</i>	National and regional commercial banks were mostly established by key state entities. China Minsheng Banking Corp. is the first publicly traded private bank. Bank of Communications is the biggest bank among all those banks. Although those banks are much smaller than the four state-owned banks, they have a much lower ratio of non-performing loans (NPLs).
<i>Credit cooperatives*</i>	There are two types of credit cooperatives: rural credit cooperatives (RCCs) and urban credit cooperatives (UCCs). Both of them are local financial institutions and aimed to extend loans for local economic activities. They are functionally close to commercial banks.
<i>Trust and investment companies*</i>	Trust and investment companies (TICs) are engaged in various forms of merchant and investment banking activities. They take deposits from inter-bank markets. Except for few national TICs, most of them were established by government agencies and provincial authorities and are localized.
<i>Financial companies*</i>	Financial companies belong to state entities. They are only allowed to take deposits from and grant loans to entities.

\* They are classified as non-bank financial institutions, according to Almanac of China's Finance and Banking. Some Chinese researchers are willing to exclude credit cooperatives from non-bank financial institutions because those cooperatives are functionally closer to commercial banks. In our study, we follow the classification of Almanac of China's Finance and Banking.

**Table a2: Financial reforms in China**

Date	Events
198302	The State Council approved a regulation on establishment of delegations of foreign banks and financial institutions in Beijing and special economic zones
198504	The State Council approved a regulation on establishment of branches of foreign banks and of joint venture banks in special economic zones
198601	PBOC allowed Industrial and Commercial Bank of China (ICBC) and Agricultural Bank of China (ABC) to provide personal checks for the individual-owned companies in 7 provinces/cities.
198604	PBOC introduced a regulation on controlling the establishment of trust and investment companies (TICs); The regulation strictly forbids private-owned TICs.
198607	PBOC introduced a regulation requiring a re-evaluation process for existing urban credit cooperatives (UCCs) in order to control the fast growth of UCCs. UCCs were not allowed to enter the county level market.
199102	PBOC introduced credit rating system in ABC and requested ABC to grant loans according to a company's creditworthiness.
199207	PBOC decided to intervene in the management of non-bank financial institutions by assigning officials to those institutions.
199400	The Chinese government converted four "specialized" banks into "commercial" banks by transferring their responsibilities for making noncommercial loans to three newly established "policy" banks. The first China's central and commercial banking laws was passed to allowed new, non-state-owned banks to set up business.
199400	PBOC liberalized the interest rates for the four stated-owned commercial banks within bounds (upper bounder 20%, lower bounder 10% respect to the fixed interest rate set by PBOC).
199507	A new commercial bank law went into effect.
199511	China launched its first national inter-bank market linking 30 short-term credit offices across China into a single computer network.
199608	PBOC overtook ABC in supervision RCCs.
199600	China Minsheng Banking Corp., the nation's first publicly traded private bank, was established.
199800	PBOC abolished the "credit plan" requirement for commercial banks. Credit risk control becomes one of the most important topics.
199808	TICs and other financial companies were regulated. The number of those financial institutions shrank.
199810	RCCs and UCCs were re-audited and regulated. Some RCCs and UCCs were closed.

**Table a2 (continued): Financial reforms in China**

Date	Events
199907	(Controls on credit operations) Some controls on Renminbi (RMB) loans to foreign-funded enterprises (FFE) under foreign exchange liens or guarantees were eased.
199900	Four asset management companies established to offload \$169 billion in nonperforming loans from the four state-owned banks.
200007	A personal credit rating system was launched in Shanghai to assess consumer credit risk and set ratings standards. This helps in developing China's consumer credit industry, and increases bank loans to individuals.
200100	During the third quarter, the government crackdown illegal bank loans to stock market speculators and its practice of selling of shares to finance pension obligations.
200100	China becomes a member of the World Trade Organization; commits to opening up its financial services industry on equal terms to foreign banks by 2006.
200100	HSBC Holdings becomes the first foreign bank to buy a stake in a mainland Chinese bank.
200201	The regulations governing foreign banks and financial institutions were issued by the PBOC and were to take effect on 1 February, replacing the five sets of regulations in force since 1996.
200401	The Chinese government has dipped into its US\$400bn foreign exchange reserves in order to recapitalize two of the 'Big Four' state-owned banks, in a move to accelerate reform in the country's ailing financial sector.
200405	Liu Mingkang, head of the China Banking Regulatory Commission, said that China's banks should sue the firms and people whose bad debts are destabilizing the banking system.
200406	China's banking regulator has ordered tighter scrutiny of bank lending as part of a government campaign against reckless investment.

Source: Bekaert, G., and Harvey, C. R., Chronology of Economic, Political and Financial Events in Emerging Markets: China. [http://www.duke.edu/~charvey/Country\\_risk/couindex.htm](http://www.duke.edu/~charvey/Country_risk/couindex.htm)

Almanac of China's Finance and Banking (1986-2004)

## Surveys: The bank 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 the total bank loans had been extended to the non-state-owned sector during the first 9 months in 2002. This survey covers 184 cities from 30 provinces of China, 10,804 non-state-owned enterprises and 2,633 banks (branches) and non-bank financial institutions.

Satisfaction ratios reported by banks (2002.1-2002.9)

Institutions	Loans required (Billion RMB)	Satisfaction ratio
<i>State-owned banks</i>	1,138.9	84.1%
<i>National and regional banks</i>	596.24	80.9%
<i>City commercial banks*</i>	149.68	84.5%
<i>Foreign banks</i>	122.66	75.4%
<i>Non-bank financial institutions</i>	208.95	85.5%

\*transformed from urban credit cooperatives

The satisfaction ratio varies among different types of applicants. For example, the satisfaction ratio of large non-state-owned enterprises is 85% while that of small and medium non-state-owned enterprises is only 69.5%. Moreover, ownership also matters for the satisfaction ratio. For instance, Hong Kong, Macao and Taiwan funded enterprises have a satisfaction ratio of 88.6%, which is the highest among all kinds of enterprises. Private enterprises, on the contrary, have the lowest satisfaction ratio of 73.8%.

Ranked financing channels by enterprises

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 shows that after the deregulation of interest rate discrimination, bank loans become the most important sources for SMEs in Weizhou city, whose economic growth is typically driven by the private sector.

This survey covers 190 SMEs and 13 banks and credit cooperatives in Wenzhou. The survey

shows that 61% of the debts of the SMEs were bank loans at 2002.

78% of the SMEs in the survey answered they would first go for bank loans (or credit cooperative loans) when needing 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 that reported by small sized enterprises is only 60.5%.

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