China's Financial Market Fragmentation, 1978–2004

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Abstract

This paper empirically examines the emergence of financial market fragmentation in China after 1978-reform. It argues that the emergence of financial market fragmentation in China after 1978 is inherent in two salient features of Chinese economic reform, namely, decentralization and gradualism. The low capital mobility between different market segments is largely attributable to the distortions in the financial system generated by the initiatives of local governments.

Using provincial loans and deposits data, this paper found that the mobility of financial capital has been actually low across Chinese provinces in the reform period. In addition, financial market fragmentation as assessed by provincial loan-deposit correlation is a new phenomenon emerged since the mid-1980s. Also, the loan-deposit correlation has been significantly influenced by the local fiscal policies and the size of state-owned sector.

INTRODUCTION

China's economic reform after 1978 has been widely acknowledged to be successful. However, with regard to financial sector reform, as mentioned by Laurenceson and Chai (2003: 3), "the standard view holds that China's financial sector, in contrast to most other areas of the economy, remains, 'essentially unreformed'".[1] On the issue of China's financial reform and development, Lardy (1998), Tam (1995) and Cull and Xu (2000, 2003), emphasized the fact that excessive interventions by various levels of governments in financial sector have greatly distorted the activities of financial institutions. Flows of financial capital to certain preferred borrowers, often state-owned enterprises (hereafter, SOEs), are encouraged, while others are discouraged. The consequence is the huge amount of non-performing loans accumulated in state-owned banks. Li K. (1994), Li D. (2001) and Bai et al. pointed out that China's financial system after 1978-reform is featured by financial repression mainly through interest rates control.[2] Park and Sehrt (2001), Aziz and Duenwald (2002) and Boyreau-Debray (2003) shed light on the relationship between Chinese financial intermediation and economic performance,

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and found that financial intermediation did not contribute much to economic growth in China.

A relevant issue to Chinese financial reform which has not been fully understood is the mobility of financial capital. In their pioneering study on the Chinese domestic capital market, Boyreau-Debray and Wei (2004) made the first attempt to quantitatively assess the capital mobility in China applying Feldstein-Horioka test.[3] Using provincial investment and saving data, they found that, the capital market in China is far from the state of integration, and the capital mobility across Chinese provinces even decreased over the 1990s. Following them, Qi (2004) found that capital flows in the commercial sector was actually mobile after 1978-refom, using disaggregated investment and saving data.

This paper, using banking sector data, complements above-mentioned two studies in analyzing the causes of emergence of financial market fragmentation in China. In addressing the issue, we first discuss the relevance of financial reform to two selected facts in the particular context of Chinese economic reform. We depict the relationship between decentralization reform and financial sector reform, SOE reform and financial sector reform respectively. Through it, we will identify two causes of emergence of financial market fragmentation in China after 1978. One is the decentralization reform. Accompanied by decentralization reform, investment decision has been largely rendered to local governments. Revenue-constrained local governments in turn intensified their control over local financial resources to finance local economic growth. Another one is the gradualism feature of Chinese reform. The need for bailing out state-owned sector strengthens the desire of local governments to control over local financial resources. As a consequence, provincial financial resources have been largely enclosed into provincial jurisdiction by local governments after the reform. Afterwards, employing a modified Feldstein-Horioka test, we empirically test the financial capital mobility across Chinese provinces using aggregate loans and deposits data of banking sector. The test will be conducted using two datasets, one for state-owned banks, another one for all financial institutions over several sub-time periods. In addition, we will also examine the impact of local fiscal policies and size of state-owned sector respectively on cross-provincial financial capital mobility. Finally, the paper concludes with findings of both descriptive and empirical analyses.

1　CHINA'S ECONOMIC TRANSITION AND FINANCIAL SECTOR

In an integrated financial sector, financial institutions should have the discretion to lend anywhere while enterprises to borrow anywhere in the economy. In China, however, the cross-regional lending through banking sector has been limited.[4] There are three main channels for transferring financial resources through banking sector across regions in China, i.e., within-bank transfer (fund reallocation among regional branches of national banks), between-bank transfer (inter-bank market trading) and central bank lending to the regions. Since credit plan[5] had been used by Chinese central bank for credit management until 1998, within-bank transfer of financial resources has been limited for a long time.

With respect to between-bank transfer, a national unified inter-bank market was finally established in 1996. Before that, although the inter-bank market had been permitted from 1986 to 1993, the trading was segmented by administrative jurisdictions. Even within one province, there were several city-level inter-bank markets. The role of central bank lending to the regions, mainly the re-lending to the local branches of commercial banks in resource allocation has become limited after the centralization of central bank re-lending in 1994 and the merge of provincial branches of the central bank into nine regional branches in 1998. Even before 1994, since the re-lending had been through local branches of the central bank, those branches heavily influenced by local governments were often keen to increase the lending inside their jurisdictions. We next turn to the analysis on the causes of low financial capital mobility across regions in China.

1.1   Decentralization and Intensified Local Financial Control

Local governments in the reform period have been eagerly seeking financial resources to finance local economic growth. Benefiting from decentralization policy, they gained much power to interfere into local economic activities. Given constrained fiscal situation, their need for investment resulted in strengthening control over local financial resources. As argued by Zhang (1998), Zhou (2004), Hu and Zhou (2001), local governments actually have shown a strong tendency to prevent financial resources from flowing out of their jurisdiction and to pursue the allocation of funds within their jurisdiction in the reform period. Accordingly, financial resources have been largely segmented within the localities from where they were generated. Each province has become one de facto segment of the financial market.

1.1.1   Decentralization and Local Investment Expansion

In addition to the responsibility to provide public services, local governments in China have long been expected to be involved in production activities to promote local economic growth (Xu 1998: 35). After 1978, this tendency has been strengthened because: first, more political and economic authority has been delegated from central to local levels of governments; second, the achievements of local governments are evaluated mainly based on the performance of local economic growth, which in turn determines the future promotion of local political leaders. Since investment is considered as the future production capacity, economic competition among provinces was frequently transformed into investment competition. In 2004, local investment accounted for 87.6 percent of total investment in urban area.[6] Local governments now make extremely vast majority of the investment.

Table 1 shows the investment in capital construction and technical innovation by administrative relationship. These two types of investment accounted for over 55 percent of the total investment in fixed assets in most of the years. In 1980, central and local governments were each responsible for about half of the investment value, whereas in 2003, the central government comprises only 19.2 percent. In 2003, the total value of the two types of investment projects initiated at the local level

Table 1　Investment in Capital Construction and Innovation by Administrative Relationship

	as % of Total Investment in Fixed Assets	Value (100 million yuan)		Percentage	
		Central Projects	Local Projects	Central Projects	Local Projects
1980	76.4	316.4	379.9	45.4	54.6
1985	59.9	680.1	843.5	44.6	55.4
1990	56.1	1147.6	1386.4	45.3	54.7
1995	53.5	4052.1	6650.8	37.9	62.1
1996	53.4	4629.6	7604.0	37.8	62.2
1997	55.5	5266.0	8573.0	38.1	62.0
1998	57.9	5862.7	10570.5	35.7	64.3
1999	56.7	5628.7	11311.7	33.2	66.8
2000	56.3	6152.8	12382.1	33.2	66.8
2001	55.7	6530.3	14213.6	31.5	68.5
2002	56.1	6482.0	17935.2	26.5	73.5
2003	56.7	6063.4	25470.0	19.2	80.8

Note: Total investment in fixed assets refers to the volume of activities in construction and purchases of fixed assets and related fees, expressed in monetary terms, including investment in capital construction, investment in innovation, investment in real estate and other investment. (*China Statistical Yearbook* 2004: 269)

Data Source: *China Statistical Yearbook* 2004.

accounted for 2.6 times of the local government revenues and 1.5 times of the local government expenditures. In order to satisfy their investment expansion, local governments have exerted administrative power to force financial institutions to provide financing. Especially, after the reform of "grants to loans" (*Bogaidai*) implemented in 1985, loans have replaced budgetary appropriation mostly to provide financing for local investment.

1.1.2　Local Governments' Fiscal Capacity vs. Financial Capacity

Hu and Zhou (2001), Zhou (2003, 2004) argued that, the extractive capacity of the government for social resources can be divided into two categories: extractive capacity for fiscal resources and extractive capacity for financial resources. In other words, governments have two alternatives to finance their behaviors. Zhou computed two indicators to assess the fiscal and financial capacities of the central government. One is budgetary revenues-to-GDP ratio, which shows the relative size of the fiscal resources mobilized by the central government. The other one is the ratio of total deposits in state-owned banks[7]-to-GDP, which shows the relative size of financial resources controllable by the central government. After comparing these two indicators, he argued that, although from the fiscal perspective the central government is weak in China, from the financial perspective, the central government is strong, i.e., "weak fiscal capacity" vs. "strong financial capacity"(Zhou 2004: 185).

Following Zhou, this paper estimates the fiscal and financial capacities of local governments by computing local budgetary revenues-to-local GDP ratio and local deposits in state-owned banks-to-local GDP ratio. Two additional ratios are also introduced: one is local budgetary expenditures-to-local

Figure 1   Local Governments' Fiscal Capacity vs. Financial Capacity

A: Fiscal capacity（％）

B: Financial capacity（％）
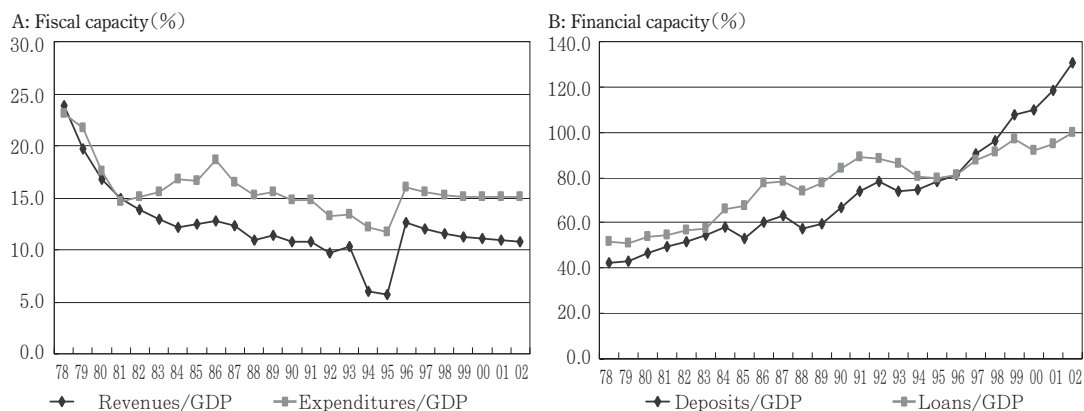
Notes: 1. Revenues/GDP refers to the average of provincial budgetary revenues-to-GDP ratios. Expenditures/GDP refers to the average of provincial budgetary expenditures-to-GDP ratios.
  2. Deposits/GDP refers to the average of provincial deposits-to-GDP ratios. Loans/GDP refers to the average of provincial loans-to-GDP ratios. Both deposits and loans refer to aggregate value of state-owned banks.
  3. Simple average is taken across all provinces for which data are available.

Data Sources: *Comprehensive Statistical Data and Materials on 50 Years of New China (Xin Zhongguo Wushinian Tongji Ziliao Huibian)*. Provincial statistical yearbooks, various issues.

GDP ratio; another one is the ratio of local loans in state-owned banks-to-local GDP. These two ratios are informative because: first, while revenue data show the amount of fiscal resources collected by the local government, expenditure data indicate the exact amount spent at the discretion of the local government;[8] second, since the lending practice of state-owned banks in localities is highly influenced by local governments, the loans-to-GDP ratio gives a rough estimate of the financial resources controlled by the local government.

The estimation results are presented in Figure 1 A and B. On the fiscal side, contrary to the usual perception of strong fiscal capacity and weak financial capacity at the local level, we actually do not witness any substantial increase in fiscal capacity of local governments despite the fiscal distribution having favored local governments for a long time since 1978. On the financial side, the financial capacity of local governments assessed by either ratio show a monotonically increasing tendency over the whole reform period. Financial resources were de facto primary tools of local governments for economic interventions after 1978-reform.

1.2   SOEs Reform and Financial Support

The gradualism feature of Chinese reform has indeed prevented the emergence of obvious economic losers, but the process has been financed by the building up of huge financial liabilities on the part of SOEs in the state banking system (Lardy 1998: 4). In the reform period, financial institutions have continuously directed large amount of resources to ailing SOEs, while non-SOEs have been frequently precluded from the formal financial market. Vast majority of non-performing

loans in Chinese state banks thus were not inherited from pre-reform era, but were created after the reform as the by-product of gradualism strategy of the reform.

1.2.1　Size of State-owned Sector

The Chinese economic transition is featured by gradualism. Commitment to support SOEs is inherent to the gradualism nature of Chinese reform because SOEs have replaced governments to provide most of the social welfare in urban areas, such as housing, pension and so forth. The governments consequently have to support SOEs so as to ensure smooth advancement of the reform. The past experiences of Chinese reform revealed that the provinces with larger shares of agricultural sector at the beginning of the reform witnessed faster economic growth, while the provinces with larger state-owned industrial sector have lagged behind (Dayal-Gulati and Huisain 2000). Although showing a decreasing importance, state-owned sector still maintains a big share in Chinese economy. As Table 2 shows, in 2004, state-owned sector still accounted for one-quarter of urban employment and one-third of total investment and output. In addition, according to Laurenceson and Chai (2003: 9)'s estimation, state-owned sectorl absorbed over 90 percent of total state-owned bank lending in late 1990s.

Table 2　Share of Employment, Investment and Output of State-owned Sector in Total

	Employment (Urban)		Investment		Output	
	Number (10,000 persons)	Percent	Value (billion yuan)	Percent	Value (billion yuan)	Percent
1980	8019.0	76.2	74.6	81.9	391.6	76.0
1985	8990.0	70.2	168.1	66.1	630.2	64.9
1990	10346.0	60.7	298.6	66.1	1306.3	54.6
1995	11261.0	59.1	1089.8	54.4	3122.0	34.0
1996	11244.0	56.4	1200.6	52.4	3617.3	36.3
1997	11044.0	53.1	1309.2	52.5	3596.8	31.6
1998	9058.0	41.9	1536.9	54.1	3362.1	28.2
1999	8572.0	38.2	1594.8	53.4	3557.1	28.2
2000	8102.0	35.0	1650.4	50.1	4055.4 *	47.3*
2001	7640.0	31.9	1760.7	47.3	4240.8	49.6
2002	7163.0	28.9	1887.7	43.4	4517.9	40.8
2003	6876.0	26.8	2166.1	39.0	5340.8	37.5
2004	6709.9	25.3	2502.8	35.5	6597.1	35.2

Notes: 1. Employment (%) = employment in urban state-owned units / total employment in urban area.

　　　　2. Investment (%) = total investment in fixed assets by state-owned units / total investment in fixed assets by all units of various types of ownership.

　　　　3. Output (%) = gross value of industrial output by SOEs / gross value of total industrial output, where SOEs include both wholly state-owned enterprises and enterprises in which the state holds the majority of shares. * indicates that the figures since 2000 are not comparable with previous years due to the change in statistical scope.[9]

Data Sources: *Comprehensive Statistical Data and Materials on 50 Years of New China (Xin ZhongguoWushinian Tongji Ziliao Huibian), China Industry Economy Statistical Yearbook 2002, China Statistical Yearbook 2003.*

1.2.2   Stagnating SOE Reform and Non-performing Loans in Banking Sector

The issue of SOE reform and non-performing bank loans has been addressed frequently. SOEs received large amount of cheap credits that helped them survive the reform period. Those credits are the source of non-performing loans which have accumulated in Chinese financial sector because the financial performance of SOEs did not witness obvious improvement in the reform period. In 1998, over 40 percent of the SOEs were operating at losses despite the large amount of implicit subsidies from bank loans and other policy protections (Lin, Cai and Li 1998: 422).

Xu (1998: 16) argued that the distinction between the responsibilities of the various levels of Chinese governments depends mainly on "ownership", i.e., each level of government is in charge of the expenditures of all institutions and enterprises owned by it. This feature suggests that the burden to preserve state-owned sector has been largely transferred to local governments since the ownership of most SOEs have been rendered to local governments after decentralization reform.[10] Consequently, poor-performed local SOEs put tremendous pressure on local governments in the reform period. Revenue-constrained local governments in turn had to resort to local financial institutions to extend "soft loans" to SOEs. Those policy-directed loans granted to loss-making SOEs were the origin of non-performing loans accumulated in banking sector. According to an estimation made by Lin and Li (2003: 31), in 2001, final losses[11] from non-performing loans amounted to 1.7 times of total government revenues and 29 percent of GDP.

2   CHINA'S FINANCIAL MARKET FRAGMENTATION----AN EMPIRICAL TEST

Up to this point, it has been argued that, due to two reasons inherent to Chinese reform strategy, systematical financial market fragmentation emerged in China after 1978. Financial resources appear to be enclosed by local governments within the localities from where they originated. Financial resources were actually used as a policy instrument by local governments to intervene the local economy and preserve state-owned sector. In this section, empirical evidence is explored to test these descriptive arguments.

2.1   Basic Model Specification

This section utilizes a modification of Feldstein-Horioka test to examine Chinese financial market fragmentation by testing the financial capital mobility across provinces. The original simple version of Feldstein-Horioka test on world capital market integration is given by the equation:

$$\left(\frac{I}{Y}\right)_i = \alpha + \beta \left(\frac{S}{Y}\right)_i$$

where $\left(\frac{I}{Y}\right)$ is the ratio of gross domestic investment to GDP and $\left(\frac{S}{Y}\right)$ is the corresponding ratio of

gross domestic saving to GDP. In their pioneering paper, Feldstein and Horioka (1980) argued that, with perfect capital mobility, there should be no correlation between the amounts of domestic investment and domestic saving. In a world with high capital mobility, this implies that estimated β from above equation would tend to be zero. Following them, substantial literatures using cross-country data have found a high positive correlation between national investment and savings ratios. However, few of those studies were willing to interpret their results as an evidence of low capital mobility because, in the international context, high investment-saving correlation can be consistent with high capital mobility in the presence of other factors such as currency premium, government responses to current account balance. Responding to these critics, a group of studies including Sinn (1992), Bayoumi and Rose (1993), Thomas (1993), Yamori (1995), Dekle (1996) applied the test to inter-regional data of a certain country in which context the above-mentioned critics were not valid. They found that, in developed countries with highly integrated capital market such as USA, UK, Japan and Canada, inter-regional investment and savings ratios generally presented insignificant or weak negative correlation.[12] Furthermore, in a recent study using data on Japanese prefectures, Iwamoto and Wincoop (2000) found that short-term capital flows were more mobile than long-term capital flow.

Boyreau-Debray and Wei (2004) provided the first trial of conducting Feldstein-Horioka test on Chinese provincial data. They found a highly significant positive correlation between provincial investment and savings ratios among Chinese provinces. They came to the conclusion that capital mobility is very low in China, and the inter-regional investment-saving correlation in China is similar to the cross-country level among OECD countries.

The present study differs from Boyreau-Debray and Wei (2004) in two aspects. First, the scope of this study is the capital mobility through banking sector. For that reason, this study utilizes two datasets of provincial loans and deposits instead of investment and savings data. One dataset is of state-owned banks, another one is of total financial institutions. As pointed out by Boyreau-Debray and Wei (2004: 14), because China's capital market is largely dominated by the banking system, it is particularly informative to test the loan-deposit correlation in studying China's capital market fragmentation.[13] Therefore, the approach utilized in this study is not a standard Feldstein-Horioka test. We describe it as a modified Feldstein-Horioka test. Secondly, the main methodology used in this study is regression analysis. A simple correlation analysis is included only for the comparison purpose with Boyreau-Debray and Wei (2004). A regression analysis is more consistent with the original methodology proposed by Feldstein and Horioka (1980). Hopefully, the results of this study can provide further pieces in understanding China's capital mobility.

We specify the basic equation as follows:

$$\left(\frac{L}{Y}\right)_i = \alpha + \beta \left(\frac{D}{Y}\right)_i \tag{1}$$

where $\left(\frac{L}{Y}\right)_i$ stands for the ratio of total loans to GDP in province i, and $\left(\frac{D}{Y}\right)_i$ is the corresponding

ratio of total deposits to GDP in province i. Equation (1) takes the same form as simple version of Feldstein-Horioka test. Testing hypotheses of our equation are as follows.

First, estimated β should be significantly different from zero and shows a positive sign. In the extreme, the estimated value may be close to 1, indicating perfect capital immobility. Our assumption following Feldstein and Horioka (1980) is, if there is no existence of fragmentation in financial market with each province as a segment, the loans extended by financial institutions located in a certain province would not depend closely on the deposits generated within the province.[14]

Second, fragmentation is a new phenomenon accompanied by decentralization and SOE reforms. We therefore divide the reform period into short sub-time periods to examine the changes of estimated β along the time. The estimated β is supposed to become significant since mid-1980s, i.e. after the start of initial decentralization and SOE reforms.

Third, financial market fragmentation in China is significantly affected by policy variables, precisely, local fiscal policies and the size of local state-owned sector. A province implementing more expansionary fiscal policies, or bearing larger state-owned sectors tend to be more eager to transfer local deposits into local loans, and to be more constrained by local deposits than other provinces. To test current hypothesis, we use a modification of equation (1) with interaction terms, including deposit-to-GDP ratio respectively with measurements of local fiscal policies and size of state-owned sector.

2.2　Data Description

There are two datasets used for the empirical investigation. All data are taken from officially published sources, including *Comprehensive Statistical Data and Materials on 50 Years of New China (Xin Zhongguo Wushinian Tongji Ziliao Huibian)*, various issues of *Almanac of China's finance and banking*, various issues of *China Statistical Yearbook*, and provincial statistical yearbooks.

Dataset 1 covers the time period from 1978 to 2002, 29 provinces (or provincial-level autonomous regions and municipalities) except for Chongqing and Sichuan due to missing data. Loans and deposits refer to the year-end balance of state-owned banks. Dataset 2 covers the time period from 1993 to 2004, all 31 provinces. Loans and deposits refer to the year-end balance of all financial institutions. Two different datasets will be used for the analysis because dataset 1 covers the whole reform period although it loses the information on other financial institutions, whilst dataset 2 covers all financial institutions with much shorter time period. In addition, through the comparison of the results based on two datasets, we hope we can draw some implications on the difference in lending practices of state-owned banks and other financial institutions.

Figure 2 A and B depict scatter plots of the loan-to-GDP and deposit-to-GDP ratios for each dataset respectively. From the plots, Beijing is plotted on the right-above corner, an observation which has both particularly high loan-to-GDP and deposit-to-GDP ratios. This suggests that Beijing is

Figure 2   Scatter Plots of Loan-to-GDP and Deposit-to-GDP Ratios

A: Dataset 1 (state-owned banks)   B: Dataset 2 (all financial institutions)
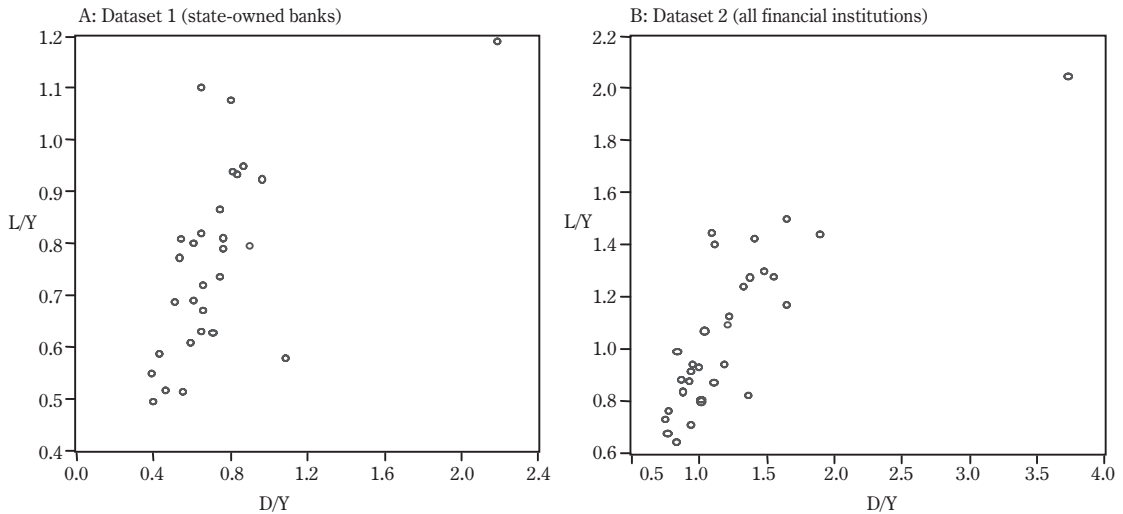
Note: All values averaged for whole sample periods, exactly, 1978–2002 for dataset 1, 1993–2004 for dataset 2.

presumably to be an outlier exerting substantial influence on correlation between loan-to-GDP and deposit-to-GDP ratio. We therefore run regressions for the samples both including and excluding Beijing to capture the difference.

2.3   Regression Results

2.3.1   Basic Results

Table 3 presents the results of simple correlation analysis.

In the case of dataset 1, we split the whole time period into two sub-periods, 1980s and 1990s, and then split each sub-period further to two shorter periods. In the case of dataset 2, we split the time period 1993–2004 into two sub-periods. The purpose of this time division is to capture the variation of capital mobility in banking sector, i.e., the evolution of fragmentation over time. The division of time period 1980s into two is expected to examine from when the financial market becomes fragmented. The division of time period 1990s is to compare with Boyreau-Debray and Wei (2004)'s argument that the capital mobility across Chinese provinces decreased over the 1990s.

The correlation coefficients of each variable across successive sub-sample periods show a relatively stable pattern. This suggests a stable relationship between loan-to-GDP and deposit-to-GDP ratios over time. In the case of dataset 1, between 1978–1989 and 1990–2002, the loan-to-GDP ratio correlation is 0.63. For sub-periods, 1978–1983 and 1984–1989, 1984–1989 and 1990–1995, the correlation is 0.65 and 0.77 respectively. Finally, the loan-to-GDP ratio correlation between 1990–1995 and 1996–2002 is 0.81. With respect to deposit-to-GDP ratio, the correlation across sub-periods is particularly high. In all combinations, it is over 0.90. A similar stable pattern over time periods is also

Table 3   Loan-to-GDP and Deposit-to-GDP Correlation

A: Dataset 1 (state-owned banks)

	Time Period	Cross Correlation across Time	Pairwise Correlation1	Pairwise Correlation2
	1978–2002	-	0.62	
	1978–1989	0.63	0.21	0.664
	1978–1983	0.65	-0.02	
L/Y	1984–1989	0.77	0.46	
	1990–2002	-	0.71	0.505
	1990–1995	0.81	0.51	
	1996–2002	-	0.81	
	1978–2002	-	-	
	1978–1989	0.91	-	
	1978–1983	0.91	-	
D/Y	1984–1989	0.95	-	
	1990–2002	-	-	
	1990–1995	0.95	-	
	1996–2002	-	-	

B: Dataset 2 (all financial institutions)

	Time Period	Cross Correlation across Time	Pairwise Correlation
	1993–2004	-	0.83
L/Y	1993–1998	0.74	0.68
	1999–2004	-	0.90
	1993–2004	-	-
D/Y	1993–1998	0.94	-
	1999–2004	-	-

Notes: 1. As to dataset 1, Heilongjiang lost 2001 and 2002 data, Zhejiang lost 1999 data, Shanghai, Anhui and Jiangxi lost 2002 data. As to dataset 2, Shanxi, Hubei and Guangxi lost 1993 data, Shanxi and Guangxi lost 1994 data.
   2. Column of "cross correlation across time" presents the correlation coefficients of values between two successive time periods for each variable.
   3. Column of "pairwise correlation" presents the correlation coefficients of (L/Y) and (D/Y) for each sample period indicated.
   4. As to dataset 1, 29 observations for all sample periods. As to dataset 2, 31 observations for all sample periods.
   5. Last column of table for dataset 1 is taken from Boyreau-Debray and Wei (2004) for comparison purpose. 0.505 is for period 1990–2001.

observed in the case of dataset 2.

As a comparison to Boyreau-Debray and Wei (2004), we also compute pairwise correlation coefficients between loan-to-GDP and deposit-to-GDP ratios for all corresponding time periods. In general, simple correlation analysis here supports Boyreau-Debray and Wei (2004)'s findings. In almost all cases, a high positive correlation between loan-to-GDP and deposit-to-GDP ratios is found. Especially, comparing the correlation coefficients of 1980s and 1990s, increase in the correlation suggests a significant deterioration in capital mobility in 1990s. However, two questions which

deserve further studying arise from this simple correlation analysis are: first, in sub-period 1978 –
1983, a slightly negative correlation, -0.02, is found in the case of dataset 1. This finding probably
suggests that the fragmentation in Chinese financial market is a relatively new phenomenon after the
initial reforms conducted in early 1980s. Secondly, in 1990s, correlation coefficients increased
substantially in both datasets. It is doubtful whether this evidence suggests deterioration of financial
capital mobility in China in latter half of 1990s or not. We may go back to these two points later on in
regression analysis.

Estimation results based on equation (1) are reported in Table 4. All regressions are estimated
using long-term averages of loan-to-GDP and deposit-to-GDP ratios for a cross-section of Chinese
provinces. From the table, following four implications can be drawn.

First, the phenomenon of fragmentation in Chinese banking sector emerged only after mid 1980s.
Focusing on the regression results from dataset 1, we can examine the evolution of the estimate of β
over the whole reform period. We find that, in the 1980s, actually there is no statistically significant
association between loan-to-GDP and deposit-to-GDP ratios. Only after 1984, a weak positive
association, 0.296 at 5 percent significance level while including Beijing, 0.359 while excluding
Beijing, emerges. In contrast, the estimate of β is positive and highly significant in all estimations
conducted for the time periods in 1990s. This finding corresponds well with our descriptive argument
that fragmentation in financial market has emerged accompanied by the decentralization and SOE
reforms conducted in early stages of reforms. Our hypotheses about the emergence and evolution of
financial market fragmentation are verified by the regression results from dataset 1. Especially,
regarding the 1990s, the estimate of β in the estimations excluding Beijing is close to 1, an evidence
of perfect capital immobility in Feldstein-Horioka test. The changes in deposit-to-GDP ratio would
lead to the changes in loan-to-GDP ratio of almost same amount. This suggests that most of the newly
increased deposits tend to remain in the jurisdiction wherein the deposits were generated. Therefore,
it can be concluded that there is the presence of barriers to financial capital mobility through banking
sector across Chinese provinces.

In addition, we find that Beijing indeed has substantial influence on regression results. Taking a
closer look at the regression results in 1990s, the estimates of β are statistically significant in all
settings, and the values of the estimates of β increase substantially after excluding Beijing. For the
sub-period 1990 – 2002, it increases from 0.438 to 0.755. The increases are even more drastic in the
case of regressions conducted for sub-periods 1990 – 1995 and 1996 – 2002. The estimated β in all
cases actually almost double its value after excluding Beijing. In other words, the evidence of
fragmentation is strengthened while excluding Beijing from the sample. These facts cast doubt on the
studies including Beijing as an observation.

Secondly, the regression results based on dataset 2 also indicate the strong presence of
fragmentation in Chinese financial market in 1990s. For the whole period, the estimated β is exactly,

Table 4 Regression Results: the Relationship between Loan-to-GDP and Deposit-to-GDP Ratios

A: Dataset 1 (state-owned banks)

Dependent Variable: L/Y

Sample Period	Including Beijing				Excluding Beijing			
	$\hat{\alpha}$	$\hat{\beta}$	adj. R^2	F-stat.	$\hat{\alpha}$	$\hat{\beta}$	adj. R^2	F-stat.
1978–2002	0.516	0.345	0.362	16.91***	0.418 [h]	0.493 [h]	0.232	9.169***
	7.746***	4.112***			2.928***	2.182**		
1978–1989	0.578	0.113	0.007	1.194	0.641	-0.020	-0.038	0.014
	9.494***	1.092			7.427***	-0.118		
1978–1983	0.547	-0.013	-0.036	0.014	0.597	-0.134	-0.005	0.862
	9.591***	-0.119			8.537***	-0.929		
1984–1989	0.562	0.296	0.183	7.264**	0.528 [h]	0.359 [h]	0.074	3.148*
	8.035***	2.695**			3.584***	1.228		
1990–2002	0.488	0.438	0.483	27.130***	0.228	0.755	0.441	22.299***
	5.845***	5.209***			1.653	4.722***		
1990–1995	0.556	0.394	0.237	9.711***	0.279	0.799	0.362	16.365***
	5.518***	3.116***			1.955*	4.045***		
1996–2002	0.421	0.472	0.641	51.086***	0.191	0.718	0.509	28.970***
	5.447***	7.147***			1.439	5.382***		

Notes: 1. ***, **, * indicate significance at the 1, 5 and 10 percent levels, respectively.
    2. Numbers below the estimated parameters are t-statistics.
    3. In all estimations, White test is used to test for the presence of heteroskedasticity. Small h after estimated parameters indicates that, in that specific estimation, t-statistics computed from heteroskedasticity-robust standard errors is reported due to the presence of heteroskedasticity.
    4. 29 observations for all estimations including Beijing, 28 observations for all estimations excluding Beijing.

B: Dataset 2 (all financial institutions)

Dependent Variable: L/Y

Sample Period	Including Beijing				Excluding Beijing			
	$\hat{\alpha}$	$\hat{\beta}$	adj. R^2	F-stat.	$\hat{\alpha}$	$\hat{\beta}$	adj. R^2	F-stat.
1993–2004	0.490	0.470	0.700	61.862***	0.272	0.668	0.576	40.333***
	6.134***	7.865***			2.200***	6.351***		
1993–1998	0.525	0.453	0.443	24.891***	0.287	0.718	0.530	33.654***
	5.348***	4.989***			2.364***	5.801***		
1999–2004	0.418	0.507	0.811	129.784***	0.219	0.661	0.641	52.697***
	5.901***	11.392***			1.760*	7.259***		
1996–2002	0.499	0.462	0.629	51.815***	0.265	0.670	0.540	34.987***
	5.718***	7.198***			1.950*	5.915***		

Notes: 1. ***, **, * indicate significance at the 1, 5 and 10 percent levels, respectively.
    2. Numbers below the estimated parameters are t-statistics.
    3. 31 observations for all estimations including Beijing, 30 observations for all estimations excluding Beijing.

0.470 while including Beijing, and 0.668 while excluding Beijing. Our results are, therefore, highly consistent with Boyreau-Debray and Wei (2004) in the fact-finding of extremely low financial capital mobility in China in 1990s. In addition, similar to the results of dataset 1, Beijing again appears to give substantial impact on regression results. After excluding Beijing, we get higher values of the estimates of β, an evidence of low capital mobility.

Thirdly, comparing the results from two different datasets, we find that the results based on dataset 2 always show a higher R^2 than the results of dataset 1. Better fitness of the estimations suggests stronger explanatory power of dataset 2 which covers all financial institutions in the economy. In addition, the comparison of the results suggest that, in the context of financial capital mobility, the lending practices between state-owned banks and other financial institutions may not be very different from each other. Although we are not able to compare their practices directly due to the data availability problem, we can draw this implication through comparing the regression results from two separate datasets. We find that there appears no significant difference between the values of estimated β. Especially, as to the regression results for the same time period (1996–2002), the estimated β is 0.718 in dataset 1 and 0.670 in dataset 2 (both excluding Beijing). The reduction in the estimated β is too minor to be mentioned. This further justifies our argument that capital mobility within Chinese banking sector is extremely low with each province as a market segment. Furthermore, the degree of fragmentation appears not reduced after including other financial institutions.

Finally, in the estimations using both datasets which exclude Beijing, the estimate of β appears to decline slightly within 1990s. In the case of dataset 1, estimated β decreases from 0.799 to 0.718, while in the case of dataset 2, it decreases from 0.718 to 0.661. This may suggest an improvement of capital mobility in banking sector over 1990s accompanied by financial reforms in the early and mid 1990s.[15] However, the results must be interpreted more carefully because we do not know whether the decrease is statistically significant or not. Therefore, we next turn to a two-period cross section regression to examine whether this improvement in 1990s is significant or not. The specification of two-period cross section regression equation takes the form:

$$\left(\frac{L}{Y}\right)_i = \alpha + \beta_0 P + \beta_1 P\left(\frac{D}{Y}\right)_i + \beta_2\left(\frac{D}{Y}\right)_i \qquad (2)$$

where $\left(\frac{L}{Y}\right)_i$ and $\left(\frac{D}{Y}\right)_i$ stand for the corresponding ratios of total loans to GDP and total deposits to GDP in province i as before. P is a dummy variable which takes 1 for second time period and 0 for first time period. In the case of dataset 1, that indicates 1 for sub-period 1996–2002, 0 for sub-period 1990–1995. In the case of dataset 2, that indicates 1 for sub-period 1999–2004, 0 for sub-period 1993–1998. The coefficient β_0 represents the changes in loan-to-GDP ratio over two time periods for reasons that are not captured by the explanatory variable, namely, deposit-to-GDP ratio. The coefficient of interaction term between time period dummy P and deposit-to-GDP ratio, β_1 measures the changes

in effect of deposit-to-GDP ratio across two time period. The effect of deposit-to-GDP ratio on loan-to-GDP ratio in first time period is captured by β_2, while the effect of deposit-to-GDP ratio on loan-to-GDP ratio in second time period is $\beta_1 + \beta_2$. Therefore, through testing the significance of β_1, we can identify if there is improvement in financial capital mobility in 1990s in China.

The regression results based on equation (2) are reported as follows. Again, we exclude Beijing from the sample in both estimations.

A: Dataset 1 (state-owned banks)

$$\left(\frac{L}{Y}\right) = 0.279 - 0.089P - 0.081P\left(\frac{D}{Y}\right) + 0.799\left(\frac{D}{Y}\right)$$

(1.948*) (-0.456)   (-0.338)   (4.031***)   *adj. R^2=0.439   F-stat.* =15.375***

White Heteroskedasticity test (with cross terms): *F-stat.* =0.652 (Probability: 0.661)

B: Dataset 2 (all financial institutions)

$$\left(\frac{L}{Y}\right) = 0.287 - 0.068P - 0.057P\left(\frac{D}{Y}\right) + 0.718\left(\frac{D}{Y}\right)$$

(2.526**) (-0.389)   (-0.377)   (6.201***)   *adj. R^2=0.602   F-stat.* =30.710***

White Heteroskedasticity test (with cross terms): *F-stat.* =0.766 (Probability: 0.579)

We find that, in both cases, the coefficient of interaction term between time period dummy P and deposit-to-GDP ratio is not statistically significant. This indicates that there is no significant change in the effect of deposit-to-GDP ratio to loan-to-GDP ratio across two time periods within 1990s. We thus conclude that there is no significant improvement in financial capital mobility across Chinese provinces in comparison to early 1990s.

2.3.2 Effects of Local Fiscal Policies and State-owned Sector on Loan-Deposit Relationship

As discussed in section 1, the causes for Chinese financial market fragmentation after 1978-reform are, first, decentralization and consequent investment expansion led by local governments; secondly, gradualism feature of Chinese reform and governments' tacit promise to support ailing state-owned sector. Although it is difficult to trace the causal relationships between these two points and financial market fragmentation using regression analysis, we can at least examine the impact of local governments' policies and size of state-owned sector on provincial patterns of loan extension.

The specifications of estimation equations take the form:

$$\left(\frac{L}{Y}\right)_i = \alpha_0 + \alpha_1 F_i + \alpha_2 F_i\left(\frac{D}{Y}\right)_i + \alpha_3\left(\frac{D}{Y}\right)_i \tag{3a}$$

$$\left(\frac{L}{Y}\right)_i = \beta_0 + \beta_1 S_i + \beta_2 S_i\left(\frac{D}{Y}\right)_i + \beta_3\left(\frac{D}{Y}\right)_i \tag{3b}$$

where F is the ratio of local government expenditures to GDP, a measure of local governments' fiscal policies. In the context of our discussion, investment expansion at provincial level after the

decentralization reform is accompanied by the decreasing fiscal extractive capacity and increasing financial extractive capacity of local governments. This suggests that the desire of local governments to promote local economic growth may result in the control over financial resources in place of inadequacy of fiscal resources. S is the ratio of investment in fixed assets by state-owned sector to total investment in fixed assets, a measurement of the size of state-owned sector. Interpretation of variable S is straightforward. If local governments are expected to support state-owned sector, size of state-owned sector would give significantly positive impact on loan extension in a province.

Following Wooldridge (2003: 194–196), we further manipulate the equation (3a) and (3b) to equation (4a) and (4b).[16]

$$\left(\frac{L}{Y}\right)_i = \gamma_0 + \gamma_1 F_i + \alpha_2 (F_i - \overline{F})\left[\left(\frac{D}{Y}\right)_i - \left(\frac{\overline{D}}{Y}\right)\right] + \gamma_3\left(\frac{D}{Y}\right)_i \tag{4a}$$

$$\left(\frac{L}{Y}\right)_i = \eta_0 + \eta_1 S_i + \beta_2 (S_i - \overline{S})\left[\left(\frac{D}{Y}\right)_i - \left(\frac{\overline{D}}{Y}\right)\right] + \eta_3\left(\frac{D}{Y}\right)_i \tag{4b}$$

where $\overline{F}$, $\overline{S}$ and $\left(\frac{\overline{D}}{Y}\right)$ are the mean of F_i, S_i and $\left(\frac{D}{Y}\right)_i$ respectively. It is easy to see that the coefficients of interaction terms maintain, while γ_1 and η_1 measure the effects of local fiscal policy and state-owned sector on loan-to-GDP ratio at the mean value of deposit-to-GDP ratio. Likewise, estimated γ_3 and η_3 measure the effects of deposit-to-GDP ratio at the mean values of F and S respectively.

The coefficients of interaction terms, α_2 and β_2, represent the joint effects of fiscal policies and state-owned sector respectively with deposit-to-GDP ratio. Although local fiscal policies and size of state-owned sector may give impact on loan extension of banking sector independently, in our context, this impact may also depend on the magnitude of local deposit. Interaction terms exactly measure the constraint of local fiscal situation and size of sate-owned sector putting on loan-deposit relationship.

Regression results based on equation (4a) and (4b) are reported as follows. Here, we also exclude Beijing from the sample in both estimations. Both of F and S are averaged for sample periods same as loan-to-GDP and deposit-to-GDP ratios. Two more points addressed here are: first, since there is no statistically significant fragmentation observed in 1980s, only data in 1990s are used for estimations in this section. Secondly, since there are no statistically significant changes in effect of deposit-to-GDP on loan-to-GDP across two sub-periods within 1990s, it is not necessary to conduct sub-period studies anymore. All variable used for estimation are averaged over whole sample periods.

A: Dataset 1 (state-owned banks)

Eq. (4a): $\left(\frac{L}{Y}\right) = 0.295 + 0.019F - 0.073 (F - \overline{F})\left[\left(\frac{D}{Y}\right) - \left(\frac{\overline{D}}{Y}\right)\right] + 0.446\left(\frac{D}{Y}\right)$

$\qquad\qquad$ (2.490**) (2.675**) (-3.558***) $\qquad\qquad\qquad\qquad$ (2.385**)

$\qquad$ *adj. R^2*=0.614 *F-stat.* =15.328***

$\qquad$ White Heteroskedasticity test (with cross terms): *F-stat.* =0.810 (Probability: 0.603)

Eq. (4b): $\left(\dfrac{L}{Y}\right) = 0.025 + 0.010S - 0.029\,(S - \overline{S})\left[\left(\dfrac{D}{Y}\right) - \left(\dfrac{\overline{D}}{Y}\right)\right] + 0.293\left(\dfrac{D}{Y}\right)$

(0.221) (4.836***) (-3.278***)   (2.010*)

adj. R^2 =0.724 *F-stat.* =24.652***

White Heteroskedasticity test (with cross terms): *F-stat.* =1.781 (Probability: 0.144)

B: Dataset 2 (all financial institutions)

Eq. (4a): $\left(\dfrac{L}{Y}\right) = 0.452 + 0.012F - 0.089\,(F - \overline{F})\left[\left(\dfrac{D}{Y}\right) - \left(\dfrac{\overline{D}}{Y}\right)\right] + 0.426\left(\dfrac{D}{Y}\right)$

(3.579***) (2.488**) (-3.545***)   (3.249***)

adj. R^2 =0.671 *F-stat.* =19.366***

White Heteroskedasticity test (with cross terms): *F-stat.* =0.781 (Probability: 0.625)

Eq. (4b)[17]: $\left(\dfrac{L}{Y}\right) = 0.003 + 0.008S - 0.012\,(S - \overline{S})\left[\left(\dfrac{D}{Y}\right) - \left(\dfrac{\overline{D}}{Y}\right)\right] + 0.493\left(\dfrac{D}{Y}\right)$

(0.017) (2.604**) (-1.333)   (5.134***)

adj. R^2 =0.680 *F-stat.* =20.109***

White Heteroskedasticity test (with cross terms): *F-stat.* =4.701 (Probability: 0.003)

As indicated by regression results, first, both local fiscal policies and state-owned sector are significant variables in explaining provincial loan-to-GDP ratio. At the average level of deposit-to-GDP ratio, every one additional percentage increase in either F or S would yield about one percentage increase in local loan-to-GDP ratio, which is actually a measurement of depth of local financial intermediation.

Secondly, with the inclusion of fiscal policy and size of state-owned sector as additional explanatory variables, we find that the estimated coefficient of deposit-to-GDP ratio decreased substantially. Especially with respect to the estimation of equation (4b) using dataset 1, the coefficient decreased from 0.755 to 0.293 with the inclusion of size of state-owned sector as additional explanatory variable. This suggests that the lending practices of state-owned banks are extremely sensitive to the larger presence of state-owned sector.

Thirdly, both our measures of local fiscal policies and size of state-owned sector appear to give a statistically significant interaction effect together with provincial deposit ratio on local loan extension. On the whole, we find that fiscal expansion and size of state-owned sector at the provincial level give positive effect on loan extension. However, we interestingly find that the estimated coefficients for interaction terms alone show a negative sign. This implies that an additional increase in deposit-to-GDP ratio would generate a smaller increase in loan-to-GDP ratio in the provinces which implement more expansionary fiscal policies and bear a larger state-owned sector. To be exact, loan extension in

those provinces tends to be constrained more by local deposits, or we may interpret that those provinces have less room to transfer local deposits into loans. Put inversely, the provinces which boast sufficient fiscal resources tend to have less incentive to control over local financial resources, and also mobilize financial resources to support state-owned sector.

3　Conclusions

This paper examined the Chinese financial system from the perspective of financial market fragmentation. The study described two reasons for the existence of systematic fragmentation in China's financial sector, namely, decentralization and gradualism. The paper showed that financial market fragmentation is inherent to the decentralization and gradualism features of China's economic reform after 1978. The mobility of financial resources as measured by bank loan-deposit correlation is extremely low across Chinese provinces.

These findings suggest that less influence by local governments in financial sector may help improve the capital mobility in Chinese banking sector. The results also pose doubts on current strategy focusing on recapitalizing and commercializing large state-owned banks to reform financial system.[18] Commercialization may not lead to the improvement in practices of Chinese financial institutions without breaking off their close ties with governments and state-owned enterprises at the local level. The problem of Chinese financial system is actually a reflection of deeply rooted structural problems in Chinese economy which has not been solved by previous steps of gradual reform. Financial reform, therefore, should be incorporated into the consideration simultaneously together with the reforms in administration system and state-owned sector.

Notes

1　Despite over two decades of reforms, Chinese financial sector still maintains a highly-controlled and monopolized bank-based structure. The entry to financial service, especially commercial banking, is tightly controlled. Capital markets play a small role in financing Chinese economy. According to García-Herrero et al. (2005: 9), in 2004, bank loans represented 83 percent of the funds raised by the non-financial sector, while stocks only 5 percent and bonds 12 percent (11 percent for government bonds and 1 percent for corporate ones). Four large state-owned commercial banks together accounted for 54.6 percent of assets in banking sector in 2004 (García-Herrero et al. 2005: 10).

2　Ceilings on lending interest rates for financial institutions (excluding credit cooperatives) were removed as of October 29, 2004. Until then, financial institutions were limited in a small floating range, exactly, at most one or three-quarter times of the benchmark lending rates set by the central bank.

3　Refer to section 2.1 for a detailed discussion on Feldstein-Horioka test.

4　For the detailed discussions, refer to Boyreau-Debray and Wei (2004) and Park and Sehrt (2001).

5　Under credit plan system, credit quotas were first imposed on the head office of each commercial bank, which in turn were broken into quotas allocated to the local branches. As a matter of fact, except for the credit plan on

commercial banks, there was also a broader credit plan that covered rural credit cooperatives and all other non-bank financial institutions, with the exception of financial leasing companies since 1988.

6 *China Statistical Yearbook* 2005.

7 State-owned banks refer to the *Guojia Yinhang* in Chinese language. *Guojia Yinhang* include People's bank of China, policy banks, four big state-owned commercial banks and postal saving offices, see definition in *Almanac of China's Finance and banking* 2003: 459.

8 The budgetary revenue data (*Benjishuru*) from Chinese official sources do not include (exclude) fiscal transfers from (to) the central government, while the budgetary expenditure data (*Benji Zhichu*) equals budgetary revenues plus fiscal transfers from the central to local governments, minus fiscal transfers from the local to central government (Ma 1997: 452).

9 Since 2000, the minimum value for statistical recording changed to the enterprises with an annual sales income of over 5 million yuan. Because most of the non-state-owned enterprises are small- and medium-scale enterprises, the share of SOEs jumped sharply from 28.2 % in 1999 to 47.3% in 2000.

10 Most SOEs were relegated to local governments in the early 1980s. By 1985, the state-owned industrial enterprises controlled by the central government accounted for only 20 percent of the total industrial output at or above the township level, while provincial and municipality governments controlled 45 percent and county governments, 35 percent (Lin, Tao and Liu 2003: 15).

11 Final losses refer to the part of non-performing loans which finally could not be paid back.

12 See Coakley, Kulasi and Smith (1998) for a comprehensive review of Feldstein- Horioka test literature. Regarding to inter-regional studies, see Hericourt and Maurel (2005: 20) for a summary of literature. Although Feldstein-Horioka test has been subject to critics on its validity in explaining international capital mobility, it, in Boyreau-Debray and Wei (2004)'s words, turns out to be a reasonable indicator of the degree of capital market integration across different regions within a country. See original reasoning in Boyreau-Debray and Wei (2004: 10).

13 Boyreau-Debray and Wei (2004) also performed correlation analysis using state-owned bank data from 1978 to 2001. The correlation coefficients suggested low capital mobility within Chinese banking sector.

14 For a similar discussion, see Park and Sehrt (2001: 614). They argued that, if the inter-bank market within the province is free, lending by any one bank should be affected by total deposits in the province rather than the bank's own deposits.

15 Chinese government had conducted a series of reforms in early and mid-1990s in financial sector to improve the managerial incentives and prudential financial regulation, including: gradual abolishment of credit plan since 1994, adoption of a new Commercial Bank Law, establishment of policy banks to take over policy lending from wholly state-owned commercial banks, establishment of a national-wide inter-bank market in 1996, and merge of provincial branches of central bank into nine regional branch in 1998.

16 For a detailed discussion on models with interaction terms and the explanation for this manipulation, refer to Wooldridge (2003: 194–196). Multiplying out the interaction terms in equation (4a) and comparing the parameters with equation (3a), we can easily see:

$$\left(\frac{L}{Y}\right)_i = \left[\gamma_0 + \alpha_2 \overline{F}\left(\frac{\overline{D}}{Y}\right)\right] + \left[\gamma_1 - \alpha_2\left(\frac{\overline{D}}{Y}\right)\right]F_i + \alpha_2 F_i\left(\frac{D}{Y}\right)_i + \left[\gamma_3 - \alpha_2 \overline{F}\right]\left(\frac{D}{Y}\right)_i$$

$$\text{and } \gamma_1 = \alpha_1 + \alpha_2\left(\frac{\overline{D}}{Y}\right), \ \gamma_3 = \alpha_3 + \alpha_2 \overline{F}.$$

Same manipulations and interpretations for equation (3b) and (4b).

17 T-statistics computed from heteroskedasticity-robust standard errors is reported due to the presence of heteroskedasticity.

18 In 1998, an injection of RMB 270 billion capital into the four wholly state-owned commercial banks is implemented through issuing special government bonds, and then in 1999, four asset management companies (AMCs) were established to take over RMB 1,400 billion of non-performing loans from four big state-owned commercial banks. However, new non-performing loans continue to increase. At the end of 2003, the government re-injects of USD 45 billion in to Bank of China and China Construction Bank to recapitalize them. Currently, the

government is keen on introducing foreign investors to diversify property rights structure and listing the four wholly state-owned commercial banks overseas. Up to now, the entry to commercial banking by domestic investors is still tightly controlled, although Chinese financial system would open up fully to foreign investors since December 11, 2006 according to WTO accession agreement.

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