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Comparing the performance of Chinese banks: A principal component approach[☆]

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Abstract

Using previously unavailable central bank data, this paper first uses principal component analysis to derive four measures of a bank's ability to perform the core task of financial intermediation. This study then compares the performance of China's state banks, joint-stock banks, and city commercial banks along these measures. In terms of overall performance and in credit risk management, joint-stock banks perform significantly better than both the state banks and the city commercial banks. In China, unlike in other developing countries, the size of the bank is not correlated with their performance. Mid-size national joint-stock banks perform considerably better than the Big Four banks and smaller city commercial banks (CCBs). We further conduct regional and jurisdictional analysis of the CCBs, which indicates that a mix of geographical and historical legacies drives the substantial variation in CCB performance.

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JEL classification: G21; G28; P31; P34

Keywords: China; Banks; Finance; Transition economy; Principal component analysis

1. Introduction

Since China launched its sweeping economic reform, state intervention in many sectors of the economy has been substantially reduced or eliminated entirely. Yet, a series of recent studies, beginning with Lardy's seminal book, point out that the state continues to play a dominant role in the financial sector (Huang & Bonin, 2001; Lardy, 1998; Park & Seprt, 2001; Park & Shen, 2002). The high degree of state intervention has resulted in, among other things, a high non-performing

[☆] We would like to thank Tom Rawski for generously providing extensive comments to a preliminary draft of this paper. We would additionally like to thank anonymous reviewers for providing helpful and constructive comments. Of course, all errors are our own.

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loan ratio in the Chinese banking system. Estimates of China's non-performing loan ratio vary between the official 20% to Western estimates of 40–50% (Berger, Nast, & Raubach, 2002; Chan, Mukherji, Chew, & Napier, 2001; Roubini & Setser, 2005). Although these estimates provide a general sense of the Chinese banking sector's performance, especially the performance of the Big Four state banks, there have been few comprehensive studies of the other segments of the banking sector. This study aims to provide evidence for the on-going discussion on the causes of China's banking problem, as well as to fill in the empirical gaps in our understanding of the city commercial banks.

Both the general literature on banking and the literature on China provide plausible theories about the determinants of Chinese bank performance, but bank data have been scarce for most banks, thereby preventing rigorous testing of these frameworks. Up to this point, analysts were not even sure how Chinese banks are performing on a number of important dimensions. As a first step toward parsing the determinants of bank performance, we use internal People's Bank of China (PBOC) data to derive four core measures of bank performance: overall performance, liquidity management, credit risk management, and capital profitability. Deriving these four scores with principal component analysis (PCA), we compare the performance of city commercial banks (CCBs) with that of the state banks and joint-stock banks. We further compare CCB performance in different regions and administrative jurisdictions. These inter-segmental and interregional comparisons constitute an important first step toward identifying the causal mechanisms that drive Chinese bank performance.

2. Domestic determinants of bank performance

The main approaches to explain the problems in the Chinese banking sector include the incomplete legal and regulatory environment, the government's concern for unemployment, ownership of banks, and external political interference (Bowles & White, 1993; Huang & Bonin, 2001; Lardy, 1998; Park & Sehart, 2001). Despite the rich array of explanations for the banking sector's poor performance, it has been difficult to isolate the causes of banking problems, primarily due to the incompleteness of banking data. Although we do not have all the necessary data, our dataset enables us to eliminate some of the most common explanations, thus clarifying our understanding of the problem.

In the literature on financial intermediation, a main issue is how the legal and regulatory environment affects the relative performance of different kinds of banks. In general, intermediaries (banks) enhance the efficiency of capital allocation by lowering the cost of monitoring entrepreneurs (borrowers) for the investors (depositors) (Diamond, 1984; Yanelle, 1997). Banks that can do this well would most likely yield a non-negative return. Given a relatively complete set of legal and credit monitoring institutions, larger institutions with a more diversified holding of independent borrowers are most able to reduce the average cost of monitoring each borrower (e.g. Diamond, 1984).

In developing countries with incomplete legal and monitoring institutions, however, there are compelling reasons to think that smaller, local financial institutions might have an advantage. Stiglitz (1990) argues that where legal and credit monitoring systems are incomplete, local financial institutions gain an advantage by having borrowers monitor each other, a mechanism which he calls "peer monitoring." Empirical evidence from Korea reveals that this mechanism might have saved the vast majority of small Korean credit association from financial woes after the Asian Financial Crisis (Bongini, Ferri, & Kang, 2002). Moreover, because smaller institutions often serve as the exclusive financial institutions for small and medium enterprises (SMEs), it

makes defaulting on loans extremely costly for SMEs, thus fostering a long-term cooperative relationship between local banks and SMEs (Berger & Udell, 1995; Keeton, 1995; Strahan & Weston, 1998). The findings of this paper, however, support neither point of view. While small city commercial banks (CCBs) have a highly varied performance record, the best performing banks in China are mid-size joint-stock banks (JSBs) instead of the big state behemoths.

In cross-national research on bank performance, economists find that ownership structure has a significant impact on bank performance (Grigorian & Manole, 2002). There is good reason to think that the same logic applies to China. With private and foreign shareholders, national joint-stock banks (JSBs) and city commercial banks (CCBs) may be less prone to make policy loans than their state-owned counterparts (Han, 2000; Li, 2000). In fact, this logic has created momentum within the government to privatize parts of the state banking system (Bloomberg, 2002). Based on this hypothesis, we would expect both CCBs and JSBs to outperform the Big Four state banks in credit risk and profitability. Again, the findings of the paper cast serious doubt on this claim. While joint-stock banks in China perform the best, CCBs, which are also structured as share-holding companies, run the gamut between star performers to the worst banks in China.

Finally, since socialist economies operate on the basis of hierarchical power rather than of the market, economic outcomes invariably stem from political incentives (Kornai, 1992: 33). Within this rubric, several political factors can play a vital role in determining banking performance. First, poor banking performance might simply be the product of the government's obligation to keep SOEs alive for social stability reason (Brandt & Zhu, 2000; Huang & Bonin, 2001; Lardy, 1998; Pei, 1998). If that were the case, we would expect banks located in China's northeastern rustbelt and the west to perform worse than those on the prosperous coast. Also, we would expect banks located in places with a high concentration of SOE workers to perform worse than banks in areas dominated by the private sector. Finally, we would again expect the Big Four banks to lag behind because they traditionally bore the greatest policy burden. Our findings provide some evidence to support these hypotheses, as CCBs in the northeast rustbelt indeed perform worse than their peers on the east coast. However, CCBs in western China, especially the northwest, are among the best banks in China.

Similarly, according to Yang, inland provinces suffer from a vicious cycle of extraction by the eastern provinces, reliance on central subsidies, and malnourished private sector (Yang, 1997). If that were true, inland banks and bank branches would suffer from frequent local governmental intervention, high credit risk, and low profitability because local bank illiquidity is one of the few ways whereby the local government can blackmail the central government for more funding. Likewise, prosperous coastal provinces with a vibrant private sector and a fiscal surplus should have thriving banks with few problems. Our findings clearly suggest strong regional patterns in bank performance, although the precise causal mechanism remains unclear.

Another approach within this rubric examines the relationship between different levels of governments and the various kinds of banks. Here, however, dissimilar assumptions can yield drastically different predictions. For example, if we assume that the central government sees the Big Four state banks as vital policy tools, we would expect better short-term performance among the Big Four state banks than among the small city commercial banks because Big Four banks are "too big to fail" (Bongini et al., 2002). Moreover, as national-level bureaucratic entities, state banks directly participate in the policy making process at the State Council level, which allows them to lobby for preferential policies. Local commercial banks can only lobby indirectly through the local governments. Thus, under these assumptions, we would expect the Big Four state banks to perform much better than the CCBs, with the JSBs perhaps in the middle.

The findings presented in this paper suggests an even more complicated mechanism than the “too big to fail” story. To be sure, the Big Four state banks are too big to fail and enjoy numerous forms of government subsidies. As a result, their overall performance and credit management are within reasonable range. However, they do not perform nearly as well as the JSBs because of the moral hazard created by their strategic importance in the economy. Our findings suggest — although by no means conclusively — that public scrutiny from listing and the threat of closure drive JSBs to excel.

Another political economy approach examines the impact of administrative location on banking performance. Administratively, bank branches and banks are scattered in centrally administered cities like Beijing, Tianjin, and Shanghai, in provincial cities, or in county and prefecture cities. Presumably, banks in major metropolitan areas are under the most regulatory scrutiny because of their strategic importance. Provincial branches of the Big Four or city commercial banks located in provincial capitals would also be closely monitored by central regulators and would presumably have a close working relationship with the provincial government.¹ Meanwhile, banks at lower levels of government are on average less regulated.

Given these conditions, a bank’s administrative location is expected to have two effects on bank performance. First, a bank’s location in an administratively important city suggests tighter regulation, which would result in less credit and capital risk. Second, depending on the mix of policies, close ties with the provincial government can either increase the share of policy loans in a bank’s portfolio or artificially lower a bank’s risk level and inflate its profitability due to subsidies from the provincial government. Meanwhile, a prefecture level bank is further away from the regulators’ scrutiny and is subjected to more direct intervention by cash-strapped sub-provincial governments. The conflicting logics at work here mirror our ambiguous finding in this regard. While CCBs located in the three municipalities definitely perform better, their counterparts in provincial capitals and in prefecture level cities perform at about the same level.

The limited data we have are far from sufficient to rigorously test all of the above hypotheses. For example, both the social stability perspective and the fiscal blackmail perspective predict poor bank performance for northeastern China. Without good longitudinal data on CCB performance, SOE concentration, and fiscal balance, it would be impossible to parse out which explanation holds more weight. Despite these drawbacks, there is sufficient data to raise serious doubts about some of the conventional wisdom mentioned above. Moreover, many of the following comparisons further add to our confidence about some commonly asserted notions about Chinese bank performance.

3. Data

Our data come from the 2002 People’s Bank of China Banking Survey provided to us by PBOC officials, which includes bank-level data on the Big Four state banks, 11 joint-stock banks and 112 city commercial banks (see Appendix for the names of these banks). This data are collected by the PBOC through its regional offices and are aggregated at the Beijing headquarters. Some indicators are collected quarterly, while others are collected annually. The dataset contains numerous indicators unavailable in public sources. For example, since the PBOC has data on the risk level of various loans, they are able to calculate risk adjusted capital adequacy ratio, whereas an analyst using publicly available data is only able to calculate a simple capital adequacy ratio. Because of PBOC restrictions, we are only allowed to conduct indirect analysis on the data.

¹ This is especially the case after the formation of CBRC, which has provincial level jurisdiction rather than inter-provincial jurisdiction that the PBOC has.

By 2002, the major state banks and joint-stock banks have begun publishing data on credit risk and asset quality. Thus, we are able to compare published data with our data for the major banks to ascertain the discrepancies between the two data sources. According to PBOC officials, discrepancies between the two data sources are expected since the PBOC collects many of its data from banks during the first quarter of the year, while major banks publish their data later in the year. In the interim, both the PBOC and the banks themselves have had an opportunity to verify and revise some of the figures. Moreover, published NPL figures are calculated on the basis of both the new five-category classification and the old “one overdue, two stagnant” (*yiyu liangdai*) system, which classifies loans as normal (*zhengchang*), overdue (*yuqi*), doubtful (*daizhi*), and lost (*daizhang*). In the mean time, NPL ratios reported in the PBOC dataset are solely calculated in the four-category “one overdue, two stagnant” system.

Up to 2002, the four-category system was still the standard measure of NPLs in the PBOC dataset because statistics departments in many banks still used the four-category system.² We are fully aware that the “one overdue, two stagnant” system reports a lower NPL ratio than the five-category system, but we are mainly interested in the relative performance of banks, not the absolute level of NPL ratio.³ As Table 1 reveals, banks that adopted the five-category system, including Bank of China and the China Construction Bank, reported much higher NPL ratios than the NPL ratios stated in the PBOC dataset. The discrepancies between published and PBOC NPL ratios are much less for banks that published four-category NPL ratios.

For capital adequacy ratios (CAR), the discrepancies mainly stem from the difference between the more accurate risk adjusted CARs reported in the PBOC data and the simple CARs calculated by the authors on the basis published capital and asset figures (Table 1). If we take into account the effects of the two different loan classification systems and the different ways of calculating CARs, the PBOC data more or less conform to published data, at least in the ten banks for which published data are available.

4. Methodology

In order to analyze the data without breaking our agreement with PBOC officials, we compare bank performance along four dimensions using principal component analysis (PCA). Following Canbas, Cabuk and Bilgin Kilic (2005), we use PCA to jointly take into account the information provided by 10 financial ratios (Table 4) and generate four orthogonal indexes to measure banks' performances. Factor scores were then calculated for each of the bank, and these scores were used for comparing banking performance. Although our approach departs from the conventional “frontier analysis” favored by the bank efficiency literature, we follow the prevailing wisdom in the literature that bank performance is best measured by a group of indicators rather than by one single indicator (Berger & Humphrey, 1997, Fraser, Phillips, & Rose, 1974). Our PCA approach closely follows researchers who want to gauge the relative *health* of banks rather than the relative *efficiency* of banks (Canbas et al., 2005).

As a first step, we determine how many factors we make use in our analysis. Table 2 reports the estimated factors and their eigenvalues. Only those factors accounting for greater than 10% of the

² Although we did not receive the latest PBOC data, we were told by PBOC officials that the four-category system still applied to 2003 PBOC data.

³ Internal PBOC studies reveal that the five-category system increases NPL ratio by as much as 14%. See Geng & Qu, 2002. Xi guoyou shangye yinhang ‘yiyu liangdai’ fahe ‘wuji fenlei’ fa huafen buliangdaikuan chabie (Analyzing the difference in categorizing non-performing loans between the ‘one overdue, two stagnant’ and the ‘five-category’ method in state banks). Jinrong Cankao (Financial Reference) 2002.

Table 1

A comparison of non-performing loan ratios and capital adequacy ratios between published data and PBOC data in 2002 for a selected group of banks

	Published NPL ratios	PBOC NPL ratios	Published capital adequacy ratios	PBOC capital adequacy ratios
Industrial and Commercial Bank of China	22.21	22.47	5.54	5.8
Bank of China	22.49	18.79	8.15	8.75
China Construction Bank	15.17	11.89	6.91	7.03
China Merchant Bank	4.7	5.08	12.57	14.69
CITIC Industrial Bank	15.16	8.97	5.85	5.76
Fujian Industrial Bank	3.13	3.23	8.14	8.23
Bank of Communication	NA	14.22	8.83	5.95
Huaxia Bank	4.24	5.56	NA	8.37
Shenzhen Development Bank	10.29	10.29	9.49	9.78
Minsheng Bank	2.2	2.11	8.22	8.48

BOC and CCB only published five-category NPL ratios. CITIC Bank only published NPL amount and short-term and long-term loan amount. Sources for the published figures include: Bank of China, 2003. 2002 Annual Report. Beijing: BOC, Bank of Communication, 2003. Annual Report 2002. Shanghai: BOCO, China Construction Bank, 2003. Annual Report 2002. Beijing: CCB, China Merchant Bank, 2003. Annual Report 2002. Shenzhen: CMB, CITIC Industrial Bank, 2003. Annual Report 2002. Beijing: CITICIB, Fujian Industrial Bank, 2003. Annual Report 2002. Fuzhou: FIB, Huaxia Bank, 2003. Huaxia Gufen Youxian Gongsi 2003nian disan jidu baogao (Huaxia Share Holding Company's third quarter report in 2003). Beijing: Huaxia Bank, Industrial and Commercial Bank of China, 2003. Annual Report 2002. Beijing: ICBC, Minsheng Bank, 2003. Zhongguo Minsheng Yinhang gufen youxian gongsi 2002niandu nianbao (China Minsheng Bank Share-holding Company's 2003 Annual report. Beijing: MSB, Shenzhen Development Bank, 2004. Shenzhen Fazhan Yinhang gufen youxian gongsi 2003 nian niandubaogao (Shenzhen Development Bank Share-holding Company's 2003 Annual Report). Shenzhen: SDB.

variance (eigenvalues > 1) are kept in the analysis. As a result, only the first four factors are finally retained (Table 2). Among them, the first principal component factor (F1) accounts for 28% of the variance of the 10 financial ratios. The other three component factors (F2, F3, F4) account for 14%, 11% and 10% of the total variance respectively. F1 through F4 altogether explain 64% of the total variance of the financial ratios.

Table 3 presents the factor score coefficient matrix (w_{jk}) estimated by PCA. To enhance these factors' interpretability, we use the varimax factor rotation method to minimize the number of variables that have high loadings on a factor. In other words, varimax rotation produces results which make it the most likely to identify each variable with a single factor. This approach greatly enhances

Table 2

Eigenvalues of factors

Component	Eigenvalue	Proportion	Cumulative
F1	2.833	0.283	0.283
F2	1.418	0.142	0.425
F3	1.136	0.114	0.539
F4	1.001	0.100	0.639
F5	0.910	0.091	0.730
F6	0.803	0.080	0.810
F7	0.692	0.069	0.879
F8	0.565	0.057	0.936
F9	0.475	0.048	0.983
F10	0.168	0.017	1

Table 3

Factor score coefficient matrix (w_{jk})

	SLALR	SLDR	OLR	SLR	LLR	CCR	CAR	CRR	AP	CP
F1	0.136	0.167	-0.316	-0.359	-0.159	0.482	0.116	0.509	0.434	0.088
F2	0.423	-0.360	0.383	-0.293	0.246	0.044	0.573	-0.053	-0.057	0.250
F3	-0.466	0.143	0.333	-0.095	0.647	0.331	-0.016	0.211	-0.068	-0.255
F4	-0.216	0.440	-0.034	-0.176	0.174	-0.144	-0.064	-0.146	-0.024	0.807

SLALR: Asset turnover ratio; SLDR: Ratio of long-term debt to short-term debt; OLR: Overdue loan ratio; SLR: Stagnant loan ratio; LLR: Lost loans ratio; CCR: Core capital ratio; CAR: Capital adequacy ratio; CRR: Capital risk ratio; AP: Asset profitability ratio; CP: Capital profitability ratio.

our ability to make substantive interpretation of the main factors. Table 4 presents the factor loadings, where variables with large loadings (>0.5) for a given factor are highlighted in bold.

As seen on Table 4, F1 reflects overall solvency of the banks and is highly correlated with core capital ratio, capital risk ratio, asset profitability, and doubtful loan ratio (*daizhi*). As this factor explains the most variance in the data, it constitutes the most informative indicator of a bank's overall health. A high score in F1 suggests that a bank is doing well overall (low credit risk, high capital adequacy, and high profitability). F2 likely reflects liquidity in a bank, as it is closely correlated with the ratio of liquid asset to liquid debt, risk adjusted capital adequacy ratio, and ratio of short- to long-term debt. However, high liquidity does not necessarily imply good overall performance; it may also be a manifestation of a bank's low efficiency in asset utilization such that it keeps a high ratio of liquid assets and maintains high risk-adjusted capital adequacy ratio by acquiring treasury bonds instead of lending (Jiao, 2002: 85). Because of the ambiguity surrounding this variable, it is valuable to consult other indicators in conjunction with this liquidity indicator to evaluate the overall risk level of a bank.

F3 in all likelihood reflects credit risk because it is highly correlated with bad loan (*daizhang*) and overdue loan ratios (*yuqi*). Under the four-tier loan classification system, overdue loans are loans that are overdue by less than 3 years, while bad loans are loans owed by bankrupt entities (Fei, 1998). Here, it is puzzling that doubtful loan ratio, which is the proportion of loans overdue by over 3 years, is so weakly correlated with bad and overdue loan ratios. This perhaps has something to do with Ministry of Finance rules on bad debt provisioning which compel some banks to shift all emerging bad loans into the doubtful loan category, leaving bad loans and doubtful loans weakly correlated (Bureau of Economic Prediction of the State Information Center, 1999). Contrary to the first two factors, since this factor is positively correlated to credit risk, an

Table 4

Factor loadings of ten financial ratios after varimax rotation

	F1	F2	F3	F4
Core capital ratio	0.895	0.020	0.023	-0.045
Capital risk ratio	0.885	-0.018	-0.151	-0.042
Asset profitability	0.646	0.041	-0.334	0.115
Doubtful loan ratio	-0.590	-0.221	-0.076	-0.353
Short-term liquid asset-liability ratio	0.071	0.719	-0.250	0.121
Risk adjusted capital adequacy ratio	0.210	0.605	0.250	0.188
Ratio of short to long-term debt	0.249	-0.566	-0.128	0.285
Lost loan ratio	0.003	-0.134	0.803	0.025
Overdue loan ratio	-0.335	0.198	0.678	-0.082
Capital profitability	-0.039	0.044	-0.020	0.913

Table 5
2002 Market share of State banks, Joint-stock banks, and CCBs in lending, deposits, and assets

	Lending share	Deposit share	Asset share
Big Four	0.716	0.730	0.712
JSBs	0.209	0.200	0.207
CCBs	0.075	0.070	0.081

The remaining market share is divided by policy banks, rural credit cooperatives, and trust and investment companies.
Source: 2002 PBOC Banking Survey.

increase in this factor indicates an unhealthy bank. Finally, F4 consists of one profitability ratio, capital profitability, which measures net profit as a share of bank capital base.

In order to facilitate analysis and interpretation, we further standardize the factor scores assigned to each bank along a 1–10 scale. Suppose that X_i represents the F1 factor score for the i th bank. We calculate the standardized F1 factor score for the i th bank using the following formula, where X_{\min} is the lowest F1 score in the sample and X_{\max} is the highest F1 score in the sample:

$$\frac{X_i - X_{\min}}{X_{\max} - X_{\min}} \times 10$$

In the case of F3, because the factor score has an inverse relationship with bank health, we employ the slightly different equation below to standardize it. Now, higher scores for the standardized F3 represent better health in that category:

$$\frac{X_{\max} - X_i}{X_{\max} - X_{\min}} \times 10$$

The findings below are all reported in the standardized scores with higher values indicating better performance which allow readers not only to gauge a bank's performance in a given dimension relative to another bank, but also relative to the entire spectrum of banks.

5. Comparing different types of banks

The banking sector in China is essentially divided into four major categories. First and foremost, the state banks, composed of both the policy banks and the Big Four state banks, make up the bulk of the market (see Table 5).⁴ Because policy banks are policy agencies concerned with objectives other than profitability, this study confines itself to the analysis of the Big Four state banks. Second, national level joint-stock banks (JSBs) have mixed ownership and command an increasing share of the market.⁵ Third, city commercial banks (CCBs) are joint-stock banks that limit their operation to one city and surrounding area. Most of them were founded in the mid to late 90s when city governments consolidated urban credit cooperatives (Han, 2000). In 2002, there were a total of 112 CCBs scattered around China. Although CCBs command only a small slice of the Chinese banking market (Table 5), they still control resources in the hundreds of

⁴ The Big Four State banks comprise of the Agricultural Bank of China (ABC), the Industrial and Commercial Bank of China (ICBC), the Bank of China (BOC), and the Construction Bank of China (CCB).

⁵ According to official classification, national joint-stock banks include Bank of Communication (BOCO), CITIC Industrial Bank (CIB), China Everbright Bank (CEB), Huaxia Bank (HXB), Minsheng Bank, Guangdong Development Bank (GDB), Shenzhen Development Bank (SDB), China Merchant Bank (CMB), Shanghai Pudong Development Bank (SPDB), Fujian Industrial Bank (FIB), and the Yantai Housing and Savings Bank (YHSB).

billions of RMB and play an important role in local development (Han, 2000). The fourth type of financial institutions is the rural credit cooperatives (RCCs), but due to the unavailability of data, they remain beyond the scope of this study.

5.1. Risk and profit comparison between different segments

Table 6 compares the mean factor scores of the three segments of the banking sector along F1 to F4. The factor scores are continuous variables ranging from 0 to 10, with 10 equivalent to the performance of the best bank in the group. First, although both joint-stock banks and city commercial banks have share-holding structure, joint-stock banks perform much better on some important dimensions. Second, joint-stock banks on average perform better than both state banks and CCBs in almost every category. Third, the performance of CCBs is highly varied, a topic explored in further detail later.

For F1, which measures overall health, the Big Four state banks and the CCBs both have an average score around 7.4, while joint-stock banks do better at 8.14. This accords with anecdotal evidence that national joint-stock banks perform better than both the Big Four banks and the CCBs. It is worthwhile to note that the overall performance of CCBs varies greatly, producing a standard deviation of 1.5 on a scale of 10.

For F2, which reflects liquidity of the banks, joint-stock banks (JSBs) once again out-perform other types of banks, although not significantly so. There is, however, considerable variation in JSB performance in this category, again calling into question whether low liquidity risk necessarily reflects healthy performance. In contrast to F2, JSB's performance truly stands out in F3, which is highly correlated with overdue and bad debt ratios. JSB performance in this category is substantially higher than that of the Big Four state banks and of the CCBs. In combination with its performance in F1, JSB performance in this category suggests much better credit risk management than the other types of banks. JSB performance in this category is also uniformly stellar, as the standard deviation for JSB is relatively small at 0.29. While on average CCBs have higher credit management scores than the Big Four banks, they also have much greater variance in performance. Finally, for F4, which is closely correlated with capital profitability ratio, all three types of banks on average perform at the same level, although the variation of performance among CCBs is again much higher.

The most encouraging finding in this comparison is the spectacular performance of the joint-stock banks, which perform better than the other two types of banks over all and in credit risk management. Several factors may well have contributed to their outstanding performance. Although it is at first tempting to attribute the joint-stock banks' success to their ownership structure, one has to remember that JSBs are nominally structured the same way as CCBs, which on average do not perform much better than the Big Four banks. One reason for their stellar performance is that many of them are now under public scrutiny. SPDB, Minsheng Bank, China

Table 6
Mean and standard deviation of performance scores for State banks, Joint-stock banks, and City Commercial Banks

	F1		F2		F3		F4	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Four	7.49	0.46	4.26	0.66	6.36	0.55	7.22	0.21
JSBs	8.14	0.62	5.29	1.35	7.10	0.29	7.17	0.46
CCBs	7.36	1.50	4.61	1.50	6.57	1.26	7.32	0.93

Merchant Bank, and Huaxia Bank have all publicly listed their shares. Second, joint-stock banks have been the most active in terms of importing Western management and accounting standards, at times even through inviting foreign banks to become major shareholders.⁶ Finally, joint-stock banks are not too big to fail. As the bankruptcy of the Hainan Development Bank attests, the State Council is not afraid of closing down joint-stock banks.

The findings above suggest that at least in the case of China, the size of financial institutions has little to do with their performance. Because different types of banks are subject to different regulatory environment, JSBs, which are under the purview of both central regulatory authorities and in many cases the financial market, perform the best. In contrast, small-scale CCBs have widely varied performance because they are at the mercy of the plethora of market and regulatory environments at the local level. At the same time, the Big Four state banks' mediocre performance reflects a mix of generous central subsidies and moral hazard due to their size.

5.2. *The best and the worst*

As another way to compare the different types of banks, we examine the healthiest banks and the least healthy banks along four factor dimensions to see what banks fall on the extremities. The interesting pattern that emerges is that CCBs comprise both the best and the worst performers in all four categories, again suggesting considerable diversity in CCB performance. Since CCBs are similar in size and ownership structure, this pattern suggests that other factors play important roles in determining CCB performance. Moreover, the analysis below suggests considerable balance-sheet manipulation by local bankers and officials.

For F1-overall performance—many of the worst performers are CCBs in northeastern China, accompanied by CCBs in Guangdong, Hunan, and Henan. The worst bank in China in terms of overall performance is the Hengyang City Commercial Bank in Hunan Province. Two of Hunan's five CCBs (Hengyang, Zhuzhou) are among the worst banks in overall performance. Guangdong likewise has two CCBs (Zhuhai and Foshan) among the worst banks for F1. Besides Kaifeng CCB in Henan, the rest of the banks among the worst ten banks are all located in the northeast (Jilin, Changchun, Anshan, Fushun, Shenyang). All of these cities are heavily burdened with defunct state-owned enterprises and unemployed workers.

Unlike the distinct geographical pattern shown among the worst banks, [Table 7](#) reveals that the best banks in overall performance are scattered all over China. The top two banks in overall performance (F1) are located in Henan (Luoyang) and Hunan (Changsha) respectively. Their stellar performance stands in sharp contrast to the dismal performance of their peers in the same provinces. The coexistence of the best and the worst banks in the same province might not be a coincidence. Provincial governments at times shift lost loans away from one or two CCBs and into other CCBs within the province in order to create star performers ([Wu & Jiang, 2001](#)). Beyond these two banks, the Shandong-based Yantai Housing and Savings Bank (YHSB), which became the Hengfeng Bank in 2003, held a fairly healthy portfolio of secured assets. Weihai is also located in Shandong Province, while Quanzhou, Nanjing, and Ma'anshan are located elsewhere on the prosperous east coast. Among the remaining banks, Daqing and Wulumuqi CCB are both located in resource-rich regions. Finally, Nanchong is located in the mountainous region of central Sichuan.

⁶ Citibank successfully acquired 5% of Shanghai Pudong Development Bank in 2002. Similarly, Newbridge Capital managed to acquire almost 18% of Shenzhen Development Bank shares. See [Leahy J \(2003\)](#). Chinese overture interrupted — A banking takeover that would set the tone for future foreign investment in the country is stalled by a bitter lawsuit, *Financial Times*, London, pp. 11.

Table 7
The best and the worst banks in four performance dimensions

	The worst ten banks in China in four PC categories				The best ten banks in China in four PC categories			
	F1	F2	F3	F4	F1	F2	F3	F4
1	Hengyang 0	Fushun 0	Jilin 0	Fushun 0	Luoyang 10	Jilin 10	Weifang 10	Nanning 10
2	Zhuhai 1.983	Nanning 0.398	Fushun 3.388	Weifang 5.829	Changsha 9.734	Hengyang 9.604	Mianyang 9.103	Guilin 8.643
3	Zhuzhou 4.229	Foshan 1.932	Ganzhou 3.684	*YHSB 5.955	*YHSB 9.533	*YHSB 8.899	Hengyang 8.449	Jilin 8.535
4	Jilin 4.477	Zhanjiang 2.073	Yueyang 3.687	Luoyang 6.237	Weihai 9.524	Xiaogan 7.659	Zhanjiang 8.311	Yueyang 8.449
5	Changchun 4.567	Chongqing 2.087	Zhengzhou 4.119	Xiaogan 6.401	Daqing 8.925	Weifang 7.516	Kaifeng 8.299	Zhengzhou 8.403
6	Kaifeng 4.570	Yingkou 2.581	Cangzhou 4.407	Daqing 6.621	Ma'anshan 8.914	Kaifeng 7.130	Shenyang 8.104	Hu'hehaote 8.234
7	Anshan 4.945	Wuhan 2.647	Dandong 4.447	Mianyang 6.638	Quanzhou 8.904	Dandong 6.965	Zibo 7.959	Hengyang 8.139
8	Fushun 5.084	Yichang 2.846	Wulumuqi 4.665	Yangzhou 6.683	Nanjing 8.836	Tianjin 6.463	Hangzhou 7.879	Chongqing 8.097
9	Shenyang 5.419	Zhuhai 2.873	Xiaogan 5.116	Nanjing 6.825	Wulumuqi 8.768	Nanjing 6.460	Zhuhai 7.824	Ningbo 8.046
10	Foshan 5.426	Anshan 2.929	Luoyang 5.140	Foshan 6.849	Nanchong 8.750	Daqing 6.286	Weihai 7.734	Guiyang 7.990

Source: 2002 PBOC Banking Survey. Factor scores are recorded below the names of banks. * indicates joint-stock bank. Names of abbreviated bank names can be found in the Appendix.

In the liquidity category (F2), the worst performers overlap somewhat with the worst performers in the F1 category, including Fushun, Foshan, Zhuhai, and Anshan. Many of the remaining CCBs scoring poorly in liquidity management are located in inland provinces, including Nanning, Chongqing, Wuhan, and Yichang. When we examine the top performers in liquidity, we find some of the worst performers in the F1 category, including Jilin, Hengyang, and Kaifeng. These banks' presence at the top of the F2 category is likely the product of their near-stasis condition, which prevents them from acquiring further short-term liabilities (deposits). Instead, they are probably surviving on long-term loans from the government or from the PBOC and storing non-performing loans. On the other hand, the presence of YHSB, Nanjing CCB, and Daqing CCB at the top of the F2 category suggests that they conduct liquid management well.

F3 measures credit management in the banks, and we find some of the worst overall performers among the worst performers in F3. These banks include Jilin and Fushun. However, we also find two banks on the top-ten list in F1 in the bottom-ten list for F3: Wulumuqi CCB and Luoyang CCB. Since F1 is correlated with doubtful loan ratio, while F3 is correlated with overdue and lost loan ratios, Wulumuqi and Luoyang's dismal performance in F3 is likely related to the large store of historical NPLs on their books. Under the loan classification system, doubtful loans do not become lost loans unless the debtors are declared bankrupt (Fei, 1998). With the closure of many SOEs in the 90s, many doubtful loans became lost loans and sat permanently in the books of smaller financial institutions. These two banks likely suffer from a large portfolio of historical debt on their portfolios, but are otherwise doing fine. Among the remaining banks doing poorly in F3, all of them are either located in the northeast (Cangzhou, Dandong) or in inland provinces (Ganzhou, Yueyang, Zhengzhou, and Xiaogan).

On the other hand, we find four banks at the top of the F3 category among the worst banks in the F1 category. In this case, the presence of Hengyang CCB, Shenyang CCB, Kaifeng CCB, and Zhuhai CCB on the top-ten list for F3 strongly suggests that local governments intervened to beautify the balance-sheets of these banks. Again, since F1 is correlated with doubtful loans while F3 is strongly correlated with bad loans, it seems likely that the local government wrote-off or reclassified the lost loans on these banks' balance-sheets. As a result of these interventions, the balance-sheets of these banks show nearly zero lost loan ratios, but extremely high doubtful loan ratios. Examining the original data, it becomes apparent that government intervention to clean up lost loans also occurred in other CCBs at the top of the F3 category, including CCBs in Weifang, Mianyang, Zhanjiang, and Weihai. The only banks which genuinely possess healthy balance-sheets are Hangzhou CCB and Zibo CCB. Government interventions to clean up CCBs balance-sheets explain why almost none of the JSBs (except for YHSB) rank among the top ten in either the F1 or in F3 category. JSBs are often under stricter scrutiny by shareholders and by the financial press, and unless they encounter liquidity problems, the central government is loath to intervene to beautify their balance-sheets.

F4 is strongly correlated to capital profitability, or the ratio of 2002 net profit to capital base. Here, the results are difficult to interpret because we cannot assume that all banks have similar capital base. Risk adjusted capital adequacy ratios vary widely between banks (see Table 1) and are at times much lower or higher than the 8% required by the Basel Accord. High capital profitability can then suggest either strong profit or weak capital base. Likewise, low capital profitability denotes either weak profit or strong capital base. This likely explains the presence of some otherwise healthy banks in the bottom-ten list for F4, including YHSB, Daqing, and Nanjing. Likewise, some otherwise problematic banks are among the top-ten in the F4 category, including Jilin, Yueyang, Zhengzhou, and Hengyang. In addition to weak capital base, these banks' presence on the top-ten list for F4 suggests some degree of balance-sheet manipulation to boost profit by listing the loan-lost reserve as profit, which explains the coincidence of high NPL ratios, low capital adequacy, and high profit in these banks (Cheng & Gu, 2000).

6. Regional comparison of CCBs

As a tentative step toward understanding the political economy that drives relative bank performance in China, we further compare CCBs along the four dimensions by region. Because we do not have the data on the performance of Big Four and JSB branches in the provinces, we can only compare the CCBs in various provinces and regions with each other. Despite this drawback, we feel that such a comparison provides a rough gauge on the extent to which local governments intervene in local financial institutions across regions because CCBs are still very much under the sway of the local governments even after the banking centralization in 1998 (Han, 2000).

6.1. Provincial comparison

In the first part, we measure how F1–F4 distribute over different provinces (Table 8). In order to facilitate comparison, we choose the ratio of one CCB's asset to total provincial CCB asset as the weight so that the average performance of one province is the asset-weighted average of the factor scores in that province. In this way, the CCBs with greater assets are weighted more heavily in evaluating the average provincial performance along the four dimensions.

Looking at the asset-weighted performance of CCBs for F1 on Table 8, it becomes apparent that CCBs with high asset level tend to do well, as the average provincial weighted scores

Table 8
Asset-weighted average CCB performance by province

	F1	F2	F3	F4
An'hui	9.02	5.66	8.30	2.25
Beijing	9.17	6.25	9.70	1.61
Chongqing	5.36	0.00	7.00	5.34
Fujian	9.44	6.40	7.27	0.75
Gansu	6.06	4.81	9.75	1.36
Guangdong	7.03	4.93	7.69	3.23
Guangxi	8.68	0.18	6.51	10.00
Guizhou	8.99	3.76	7.40	5.29
Hebei	6.08	3.45	8.20	1.82
Heilongjiang	7.05	3.26	8.01	3.47
Henan	7.34	6.24	4.10	2.81
Hubei	5.98	1.25	8.41	3.94
Hunan	8.15	5.42	5.03	3.19
Inner Mongolia	8.31	4.02	7.02	4.72
Jiangsu	8.25	6.47	8.63	0.93
Jiangxi	6.11	2.57	5.35	3.66
Jilin	0.00	10.00	0.00	4.28
Liaoning	4.86	3.29	8.53	0.55
Ningxia	6.91	3.91	9.30	3.47
Qinghai	6.85	5.18	7.49	1.71
Shandong	7.77	6.49	9.72	0.00
Shanghai	8.80	6.01	7.62	2.72
Shannxi	8.11	4.34	8.91	3.40
Shanxi	5.68	3.88	7.36	0.83
Sichuan	6.81	4.89	10.00	1.60
Tianjin	9.10	9.33	6.75	0.40
Xinjiang	10.00	4.32	1.28	3.16
Yunnan	8.42	4.51	5.61	4.10
Zhejiang	7.76	4.86	9.16	2.97

Source: 2002 PBOC Banking Survey. Provincial averages are weighted by asset size, on a ten-point scale relative to other provinces.

converge toward the top of the ten-point scale with little variance. Provinces with particularly high average scores include Beijing, Anhui, Fujian, Shanghai, Jiangsu, Tianjin, and Xinjiang, as well as several less obvious provinces like Guangxi, Guizhou, Inner Mongolia, Shaanxi and Yunnan. Not surprisingly, the province with the lowest asset-weighted average F1 score is Jilin. Chongqing, Liaoning, and Shanxi also have low average scores for F1. Though not uniformly so, CCBs located in coastal provinces seem to have better overall performance, with the notable exception of Guangdong Province, which has some of the worst performing CCBs in China.

For F2, which reflects liquidity management, banks with high asset level do not necessarily perform better, as the mediocre provincial averages reveal. The star performers in this category include Beijing, Fujian, Jiangsu, Jilin, and Tianjin. In the case of Jilin, bank stasis is almost certainly responsible for high liquidity scores, rather than prudent liquidity management. It is not surprising that Beijing-based CCBs have low liquidity risks, as they are under the strict scrutiny of central regulators.

In the F3 category, which is closely associated with lost and overdue loans, the top performers include Beijing, Gansu, Ningxia, Shandong, Shaanxi, Sichuan, Jiangsu and Zhejiang. Again,

Beijing's high performance is probably explained by stricter regulatory attention rather than by the maturity of the private economy in the city. For some reason, CCBs in Gansu and Ningxia on average perform quite well in F3, as well as in F1. This may be partially explained by the enormous central subsidies that have poured into western provinces since 2000 (Shih, 2004). The low performers in this category include Jilin, Xinjiang, Henan, Hunan, and Jiangxi. Both Jilin and Xinjiang do poorly in F3 because their sole CCBs are both heavily laden with bad debt. The provincial average F4 scores are even more difficult to interpret than that for individual banks as there is very little variation in them. This likely has to do with the ambiguous meaning of capital profitability when there is large variance in capital base of banks.

In sum, the provincial comparisons give further credence to the notion that provinces heavily burdened by SOEs, especially those in the northeast, are more prone to bank failures. It remains unclear, however, whether this is due to pervasive SOE bankruptcy in the late 90s or to continual government intervention to maintain social stability. The low correlation between doubtful and lost loan ratios in the data, however, provides some indication. Jilin and to a lesser extent Liaoning likely suffer from both problems since they have low scores for both F1 and F3, which suggest a large store of doubtful loans owed by operating SOEs and lost loans owed by bankrupt SOEs. A province like Xinjiang, in contrast, has relatively low amount of doubtful loans, but a large store of NPLs owed by bankrupt SOEs. This analysis also gives us more confidence that CCBs located along China's coast and in major metropolis are indeed performing better than their counterparts elsewhere. Contrary to our expectation, CCBs in the western provinces of Xinjiang and Shaanxi are among the best in China, possibly due to the massive infusion of subsidies into western China since 2000.

6.2. Regional comparison

In order to solidify our regional stereotypes, we further compare CCB performance by region. Although a rough indicator, many of China's regions possess unique features that are suggestive of explanations for banking performance. For example, it is often assumed that western China is blighted with no access to ports, little arable land, and thus a high reliance on state subsidies and policy loans. With this in mind, we divide China into seven regions: central and south China (Henan, Hubei, Hunan, An'hui and Jiangxi), the east coast (Jiangsu, Zhejiang, Fujian, Shandong, Guangdong and Hainan), the north (Inner Mongolia, Hebei and Shanxi), the northeast (Jilin, Liaoning and Heilongjiang), the southwest (Chongqing, Sichuan, Guizhou, Yunnan, Guangxi and Tibet), the northwest (Shaanxi, Gansu, Qinghai, Ningxia and Xinjiang), and the three municipalities (Beijing, Shanghai and Tianjin). We similarly weigh CCBs within each region according to their share of total CCB assets in that region.

According to Table 9, CCBs in the three municipalities directly administered by the central government (Beijing, Shanghai, Tianjin) enjoy the strongest overall bank performance, as measured by F1. The asset-weighted average score for the three municipalities sits nearly at the top of the 10-point scale at 8.34. This is explained by a mixture of the vibrant private economies in these cities — especially in the case of Shanghai — and strict regulatory oversight, as is the case in Beijing. Following the three municipalities, the east coast and the northwest have similar weighted average F1 scores. Contrary to initial expectations, northwestern China has some of the healthiest CCBs in China. In our previous analysis, we find that Xinjiang and Shaanxi have particularly healthy CCBs. In the case of Xinjiang, we can attribute the banks' performance to its abundance of natural resources, but this cannot be said for Shaanxi, as well as Ningxia and Gansu.

Table 9
Weighted average of CCB performance by region

	F1	F2	F3	F4
The Central and South China	7.67	4.32	6.2	2.43
The East Coast	7.85	4.88	7.03	2.66
The North China	7.25	4	6.7	2.62
The Northeast China	6.45	4.12	6.61	2.74
The Northwest China	7.95	4.27	6.6	2.45
The Southwest China	7.65	3.79	6.78	2.25
The Three Municipalities	8.34	5.26	6.87	2.65

Source: 2002 PBOC Banking Survey. Regional averages are weighted by asset size.

These CCBs' relatively healthy performance deserves further in-depth research. In the case of the east coast, its overall performance score would be much higher without the poor performance of several Guangdong CCBs. On the low end, northeastern China expectedly stands out with a low average F1 score.

For F2, Table 9 reveals once again that the three municipalities stand out in managing liquidity risks, again probably due to a mix of high business turnover and stricter regulatory oversight by central agencies. After the three municipalities and the east coast, none of the other regions stand out in their liquidity scores. For F3, an indicator of credit risk management, both the east coast and the three municipalities enjoy fairly high asset-weighted average scores, while central-south China has the lowest score. The difference, however, is not great. F4 scores at the regional level are again extremely difficult to interpret due to the dearth of variation. This analysis at the regional level further confirms the poor performance of CCBs in the northeast, as well as relatively healthy performance of CCBs located in major metropolises, on the east coast, and in northwestern China.

6.3. Comparison by administrative status

Finally, we compare the performance of banks in provincial cities (PCs), non-provincial cities (NPCs), and the three centrally administered municipalities. Again, we weigh the asset share of CCBs in each of the three administrative categories. Looking at Table 10, we find that the three municipalities once again stand out relative to CCBs in the other two categories. CCBs in the three municipalities have significantly higher F1 and F2 scores than CCBs in either provincial capitals or in non-provincial capital cities. It is somewhat surprising that CCBs in provincial capital cities do not perform better than CCBs in non-provincial capital cities in F1 and F2, given stricter regulatory scrutiny and more subsidies in provincial capitals. These advantages are probably offset by the frequent interventions by powerful provincial governments. When we

Table 10
Weighted average CCB performance of provincial cities, non-provincial cities, and the three municipalities

	F1	F2	F3	F4
Non-provincial capital cities	7.52	4.6	6.79	2.71
Provincial capital cities	7.6	4.29	6.72	2.43
The three municipalities	8.34	5.26	16.87	2.65

Source: 2002 PBOC Banking Survey. Administrative averages are weighted by asset size.

categorize CCBs by administrative status, there is little difference between CCB performance in credit management (F3) and capital profitability (F4).

7. Conclusion

The empirical evidence presented above constitutes another incremental step on the road toward understanding the factors that drive Chinese bank performance. In addition to casting serious doubts on some conventional notions and confirming some of our suspicions, this paper also proposes additional hypotheses about the political-economy of Chinese bank performance for future studies. Of the three general factors driving banking outcomes in China — economic conditions, bank characteristics, and political environment, — this study finds evidence that economic and political factors play a larger role than bank characteristics such as ownership and size.

CCBs, although they are joint-stock banks, do not necessarily perform better than state banks. This suggests that the relative success of the JSBs is not just caused by diversified ownership, but also by greater competition, more market scrutiny, and the possibility of exiting the market. Moreover, unlike previous works on Korea, this study finds scant evidence that smaller banks perform better than large banks or vice versa. In certain areas, CCBs suffer from rampant local government predation rather than benefit from peer monitoring. Meanwhile, because the Big Four banks are too big to fail, they do not perform as well as the mid-size JSBs. While JSBs by no means operate under perfect market conditions, they benefit both from the size advantage and from less government intervention and protection.

Our regional and jurisdictional analysis of the CCBs indicates that a mix of geographical and historical legacies and political intervention drives the substantial variation in CCB performance. The Northeast clearly suffers from the legacy of central planning, although northwestern China for some reason hosts some of the healthiest banks in China. Given the limitation of our data, we are unable to establish the exact mechanism by which these factors affect CCB performance. Nonetheless, our jurisdictional analysis of CCBs suggests a fine line between administrative monitoring, which improves banking performance — especially in the three municipalities directly monitored by the central government, — and administrative intervention, which is detrimental to banks. Stronger bureaucratic entities arguably have a tendency to do both. Further research is needed to establish when governments are likely to do more monitoring than intervention, and vice versa.

Although tentative, the findings of this paper suggest both promises and worries in recent financial development. First, this study suggests that listing the shares of the Big Four banks might result in some marginal improvement in bank performance due to greater market scrutiny of their performance. Listing, however, still does not solve the moral hazard problem because the Big Four banks remain “too big to fail.” As long as Big Four managers perceive themselves as policy makers rather than bankers, they will not make loans according to commercial criteria, but according to political signals emanating from the State Council. This research also raises doubt about the wisdom of further expanding the number of city and regional commercial banks. In 2004, the State Council planned to expand the number of city commercial banks, especially in the Northeast, where a “Northeast Revitalization Bank” (*Dongbei Zhenxing Yinhang*) was planned to help with the government’s drive to revive the rustbelt (Zhang, 2003). In the absence of new mechanisms to prevent local governments from intervening, these new banks, even if they are formed as joint-stock entities, are unlikely to perform any better than existing city commercial banks. The central government instead can focus its energy on deriving credible mechanisms to prevent governmental intervention in existing banks.

Appendix A

The big-four state banks

Chinese name of banks	English name of banks
中国工商银行	Industrial & Commerical Bank of China (ICBC)
中国建设银行	China Construction Bank (CCB)
中国银行	Bank of China (BOC)
中国农业银行	Agricultural Bank of China(ABC)

11 Joint-stock banks

招商银行	China Merchants Bank(CMB)
上海浦东发展银行	Shanghai Pudong Development Bank(SPDB)
华夏银行	Hua Xia Bank (HXB)
福建兴业银行	Fujian Industrial Bank (FIB)
深圳发展银行	Shenzhen Development Bank(SDB)
中信实业银行	Citic Industrial Bank (CIB)
烟台住房银行	Yantai Housing Saving Bank (YHSB)
光大银行	China Everbright Bank (CEB)
交通银行	Bank of Communications (BOCO)
广东发展银行	Guangdong Development Bank (GDB)
民生银行	China Minsheng Banking Group (CMBG)

112 city commercial banks

洛阳	Luoyang	攀枝花	Pan' zhihua
长沙	Changsha	上海	Shanghai
泉州	Quanzhou	乌鲁木齐	Wulumuqi
马鞍山	Ma'anshan	苏州	Suzhou
南充	Nanchong	柳州	Liuzhou
福州	Fuzhou	黄石	Huangshi
泸州	Luzhou	台州	Taizhou
南京	Nanjing	南通	Nantong
合肥	Hefei	厦门	Xiamen
大庆	Daqing	湖州	Huzhou
东莞	Dongguan	深圳	Shenzhen
扬州	Yangzhou	绍兴	Shaoxing
北京	Beijing	天津	Tianjin
芜湖	Wuhu	西安	Xi'an
济南	Ji'nan	嘉兴	Jiaying
包头	Baotou	昆明	Kunming
蚌埠	Bangbu	桂林	Guilin
贵阳	Guiyang	杭州	Hangzhou

(continued on next page)

Appendix A (continued)

112 city commercial banks (continued)

Chinese name of banks	English name of banks	Chinese name of banks	English name of banks
新乡	Xinxiang	辽阳	Liaoyang
临沂	Linyi	郑州	Zhengzhou
锦州	Jinzhou	孝感	Xiaogan
焦作	Jiaozuo	沈阳	Shenyang
南宁	Nanning	湛江	Zhanjiang
岳阳	Yueyang	丹东	Dandong
哈尔滨	Ha'erbin	佛山	Foshan
遵义	Zhunyi	秦皇岛	Qing'huangdao
常州	Changzhou	赣州	Ganzhou
连云港	Lian'yungang	营口	Yingkou
呼和浩特	Hu'hehaote	鞍山	Anshan
淄博	Zibo	乐山	Leshan
银川	Yinchuan	开封	Kaifeng
宁波	Ningbo	长春	Changchun
淮阴	Huaiyin	株洲	Zhuzhou
青岛	Qingdao	吉林市	Jilin
温州	Wenzhou	珠海	Zhuhai
大连	Dalian	抚顺	Fushun
成都	Chendu	衡阳	Hengyang
石家庄	Shi'jiazhuang	镇江	Zhenjiang
武汉	Wuhan	阜新	Fuxin
湘潭	Xiangtan	咸阳	Xianyang
南阳	Nanyang	威海	Weihai
南昌	Nanchang	烟台	Yantai
潍坊	Weifang	无锡	Wuxi
兰州	Lanzhou	日照	Rizhao
万县	Wanxian	淮北	Huaibei
德阳	Deyang	广州	Guangzhou
绵阳	Mianyang	廊坊	Langfang
唐山	Tangshan	九江	Jiujiang
盐城	Yancheng	自贡	Zigong
大同	Datong	西宁	Xining
太原	Taiyuan	徐州	Xuzhou
宜昌	Yichang	汕头	Shantou
金华	Jinhua	安庆	Anqing
荆州	Jingzhou	齐齐哈尔	Qi'qihaer
重庆	Chongqing	葫芦岛	Hu'ludao
沧州	Cangzhou	宝鸡	Baoji

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