

# **China's Accession to the World Trade Organization And Policy Options for Banking Reform\***

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### *Abstract*

China has committed to liberalization of banking institutions upon her accession to the World Trade Organization. Characterized by large non-performing loans, high management risk, low capital adequacy and huge employment, Chinese banks in their current status can hardly compete with foreign banks. This paper uses a banking firm model and a simulation exercise to show that improvements in Chinese banks' capital adequacy and operational efficiency depend in five policy options. Options open to the central authority include a tax reduction, interest rate liberalization and re-capitalization. Options open to banks include cost cutting and improvement in risk management. We conclude that a tax cut and another round of re-capitalization by the government may be needed if major banks in China are to reach the required capital adequacy ratio in five to six years, when they will have to compete with foreign banks on an equal footing.

Key words: China banking, capital adequacy, banking options.

*JEL* Classification: E58, O16, P34.

## I Introduction

China's imminent accession to the World Trade Organization induces a drastic process of liberalization in her domestic banking business. According to the Sino-US agreement reached in November 1999, foreign banks can conduct foreign currency business with local firms after two years of accession, and three years thereafter, foreign banks will be allowed to conduct domestic currency business with local firms and individuals. In short, restriction on foreign banks in conducting Renminbi (Rmb) business will completely be removed after five years of accession, and domestic banks have to compete effectively with foreign banking institutions.

Chinese banks have gone a long way since economic reform first adopted in 1978. A process of banking revitalization in the 1980s brought back a number of key banking institutions, and the 1995 Bank Law established a five-tier banking structure (Li 1994, EAAU 1999). When it comes to the participation of foreign banks, however, most foreign banks can only conduct business in foreign currencies with foreign firms and individuals. Licenses have been granted to a total of 32 foreign banks to conduct Renminbi businesses with foreign firms and individuals in restricted areas including Shanghai and Shenzhen. Chinese domestic banks are practically protected from foreign competition.

Over the last decades, state-owned banks in China served a social function in maintaining the "banks - state-owned-enterprises - employment" relationship (Li 1996). The lack of commercial banking independence and the presence of imprudent internal bank management practices resulted in large non-performing loans (NPLs), estimated to be about 25-30 percent of total loans in late 1990s (Ma 2000a, 2000b, 2001). Since 1997, the Chinese Government took a number of steps to restructure the state-owned banks and introduce a prudential management system. These measures included a re-capitalization of the four state-owned commercial banks in 1998 and the transfer of NPLs amounted to Rmb 1.4 trillion to Asset Management Companies (AMCs) in 1999 and 2000, a gradual withdrawal of government intervention in bank operations, the experiment with a new loan classification system, and the strengthening of internal risk management practices. Despite these efforts, Chinese banks remain under-capitalized, and their financial performance falls short of international standards. The problem is aggravated by a lack of accurate financial statistics, the incomparability with international accounting standards,

and the lack of understanding in the impact of various reform measures on banks. More specifically, it is unclear whether the Chinese banking problem can adequately be addressed by the on-going bank restructuring measures, and what other measures are required to prepare the Chinese banks to compete, on an equal footing, with well-capitalized and cost-efficient foreign banks.

This paper first discusses the banking reform in China. By using financial statistics of Chinese banks, a “Virtue Bank” is created in order to assess the feasibility of various policy options that can help to strengthen their capital adequacy ratios and competitiveness. A simulation exercise concentrated on the analysis of five policy options (interest rate liberalization, cost reduction, tax reduction, risk reduction and further re-capitalization) to improve banks’ capital position and profitability. Section II looks at China’s banking reform and performance. Section III constructs a “banking firm” model that can be used to simulate the financial performance of Chinese banks. Section IV reports the simulation exercise, while the last section concludes the paper.

## II Reform and Performance of Chinese Banks

Although a number of Chinese national banks were re-vitalized in the 1980s, it was not until 1995 that a Bank Law that provided a five-tier banking structure was introduced (Tang and Li 1997, EAAU 1999). The People’s Bank of China (PBC) becomes the central bank that supervises and regulates the financial sector and determines monetary policy. To avoid regional influences, the number of regional PBC branches has been reduced from 27 to only 9 supra-regional offices. A new function of the PBC is to introduce effective prudential controls along the standards stated in the 25 core principles of the Bank for International Settlement (BIS). Three policy banks (State Development Bank, China Import and Export Bank, and Agricultural Development Bank) were established in 1994 with the aim to remove state-owned commercial banks from policy lending. Assets of policy banks were much lower (less than 9 percent of total banking assets in 1998) than the state-owned commercial banks. The Agricultural Development Bank, for example, was faced with huge loss (EAAU 1999).

The third-tier composes of the four big state-owned commercial banks: Bank of China (BOC), Industrial and Commercial Bank of China (ICBC), Construction Bank of

China (CBC) and the Agricultural Bank of China (ABC). These “big-four” dominated bank lending, providing over 80 percent of finance to enterprises. Despite their sector-oriented exposure, these banks have increasingly been competing for business across sectors. For example, the BOC undertakes most foreign exchange business and has extensive foreign operations. In an attempt to reduce the non-performing loans (NPLs), each of these “big four” state-owned commercial banks since 1998 has established their Asset Management Companies (AMCs) to buy up a total close to RMB 1.4 trillion of their NPLs by the end of 2000 in order to transfer these non-performing assets to local and foreign investors. These drastic reforms are seen as a way to prepare the banks for the upcoming accession into the World Trade Organization.

Table 1: The Asset Management Companies and NPLs (RMB Billion)

Bank	AMC	NPL Absorbed	NPL Disposed
BOC	Dongfang	267.4	18.8
CBC	Xinda	373.0	38.0
ICBC	Huarong	407.7	7.9
ABC	Great Wall	345.8	-

Sources: *South China Morning Post*, February 19, 2001; *China Daily*, February 19, 2001; *Mingpao*, February 17, 2001; *Xinhua News Agency*, January 12, 2001.

As Table 1 shows, by December 2000, Huarong had purchased RMB 407.7 billion assets from ICBC, involving about 71,000 debtor enterprises. The bad debt absorbed by Dongfang involved over 20,000 debtors of the BOC. The disposal of NPLs that began in 2000 was expected to take several years to complete. Among the assets disposed of, the average recovery rate was 26 percent. As a result, three of the four state-owned commercial banks had experienced large increase in profits and a drop in bad loans in 2000. For example, the profit of ICBC increased by 28 percent, a before-tax increase of RMB 5.06 billion (US\$610 million) in 2000, the best result since the mid-1990s. Similarly, the pretax profit of CBC increased by 15.3 percent (RMB8.5 billion, or US\$1.02 billion), while the pretax profit of BOC went up to RMB11.6 billion (US\$1.4 billion), equivalent to a minor percentage increase between 1999 and 2000.<sup>1</sup>

<sup>1</sup> *Xinhua News Agency*, January 12, 2001.

Other commercial banks and foreign banks constitute the remaining tiers in the banking structure. Other commercial banks compose of five nationwide banks (China Communications Bank, China Everbright Bank, CITIC Industrial Bank, China Investment Bank and Huaxia Bank), seven regional banks (including China Minsheng Bank, the first private local bank) and a considerable number of city banks that are amalgamates of urban credit cooperatives. About ten new private banks are waiting for a bank license, and four have been waiting for final approval. They are the Tailong Bank of Zhejiang province, Ruifeng Bank of Liaoning province, China Great Wall Bank of Shaanxi province, and the fourth bank from Jiangsu province. A fifth bank from Guangzhou has also been proposed.<sup>2</sup>

Foreign banks include the eight joint venture banks and branches of foreign banks. A number of closures of banks and financial companies occurred in the second half of the 1990s, due largely to the institutions' inability to repay their debts. Established in 1993, for example, the Hainan Development Bank, with a total debt of RMB 14.2 billion was ordered to close in June 1998 since much of the loans were allocated to the speculative real estate market and became almost worthless after the market crash (EAAU 1999).

Among the "big four", the Bank of China is most transparent and includes most detailed figures in the annual report. Between 1995 and 1999, total assets of BOC have increased by 29.8 percent, but its overdue loans, doubtful loans and bad loans – according to Chinese classification – have all increased. Bad loans, for example, have increased by 472.7 percent, while loan loss provision has increased by only 58.2 percent. Total income and total expenses increased between 1996 and 1997, but declined afterwards. After-tax profit also dropped since 1997. Other Chinese banks experienced an increase in their total assets over the years, but do not disclose the details of loans in their annual reports. Total income and after tax profit of some banks have fallen since 1997.

Table 2 shows the sizes of major banks in 1999. The Bank of China is the only bank that releases detailed loan data. Among the eight banks reported, the Industrial and Commercial Bank of China has the largest total assets, total income and total expenses, while the Construction Bank of China faces the largest corporation tax and has the largest after-tax profit. Although the total asset of Construction Bank of China is lower than the

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<sup>2</sup> *Business Weekly*, November 12, 2000; *Mingpao*, November 14, 2000.

Bank of China, the number of employees in the Construction Bank of China is over sixty percent larger than the Bank of China in 1999.

Tables 3 and 4, respectively, show the financial ratios of the big four state-owned commercial banks and four other commercial banks. The level of non-performing loan in many Chinese banks deteriorated between 1995-99. The overdue loan to total asset ratio of Everbright Bank of China jumped drastically over the years. On the contrary, loan loss provisions to overdue loans showed a declining trend. The income and revenue of most Chinese banks declined over the years. The total interest income to total asset ratio, for example, decreased in all banks, while the return on asset ratios (ROA) of all banks decreased since 1997. The return on equity ratios (ROE) and Tier 1 capital asset ratios performed differently among banks.

At the aggregate level, recent studies (Li and Liu 2000, Liu and Li 2000) show that state influence in fixed asset investment has been reduced considerably. For example, in total fixed asset investment, state appropriation as a percentage of GDP and total investment in fixed assets has declined from 5.5% to 0.9% and from 28.1% to 2.8% between 1981 and 1997, respectively. In the same period, foreign direct investment increased from 0.7% to 3.6% and from 3.8% to 10.8%, respectively. Reform in banking institutions, however, has not gone far. The large level of NPLs suggests that national banks have not followed market principles. A market equilibrium interest rate cannot be maintained as the authority has continuously manipulated it. Large inter-enterprise debts imply not only a loose lending policy and an agency problem, but also the lack of collateral means that the ultimate responsibility of debt cannot be located. For domestic banks to compete effectively with foreign banks, drastic reform measures have to be conducted.

Table 2: Financial Data of Major Chinese Banks in 1999 (RMB Million)

	BOC	CBC	ICBC	ABC	Minsheng	CMB	GDB	EBC
Total Assets	2,903,922	2,201,065	3,539,866	2,275,835	36,596	164,478	121,897	167,893
Risk-weighted	1,423,286							
Total Loans	1,364,219	1,200,945	2,427,122	1,589,666	24,291	164,478	121,897	78,654
Overdue loans	134,274							30,658
Doubtful loans	53,553				404			
Bad loans	14,869				29			
Loan Loss Provisions	39,561	11,683	16,609		127	213	372	1,587
Total Income	145,918	115,733	195,016	96,793	1,676	8,027	6,001	6,070
Total Expenses	143,501	97,853	178,122	96,660	583	6,083	5,786	5,021
Corporation Tax	2,179	2,408	1,362	0	62	546	45	
After Tax Profit	4,424	4,958	2,764	-355	235	975	181	677
Employees No.	197,534	324,000						

Notes: BOC = Bank of China and wholly owned subsidiaries; CBC = Construction Bank of China; ICBC = Industrial and Commercial Bank of China; ABC = Agricultural Bank of China; Minsheng = China Minsheng Bank; CMB = China Merchants Banks; GDB = Guangdong Development Bank and wholly owned subsidiaries; EBC = Everbright Bank of China.

Sources: annual reports of individual banks.

Table 3: Financial Ratios of State-Owned Commercial Banks in China.

	BOC					CBC		ICBC		ABC	
	1995	1996	1997	1998	1999	1998	1999	1998	1999	1998	1999
1. Overdue loans / Total assets	2.88	3.16	3.24	3.16	4.62						
2. Doubtful & Bad loans / Total assets	0.88	0.83	1.34	1.66	2.36						
3. Loan loss provisions / Overdue loans	38.77	35.04	37.03	41.74	29.46						
4. Total interest income / Assets	6.31	6.12	6.44	5.86	4.59	6.46	5.04		4.64	5.73	4.19
5. After tax profit / Assets (ROA)	0.32	0.37	0.37	0.20	0.15	0.06	0.23		0.08	-0.05	-0.02
6. Pre-tax profit / Assets	0.69	0.79	0.54	0.30	0.23	0.09	0.33		0.12	-0.05	-0.02
7. After tax profit / Equity (ROE)	9.92	10.70	10.03	3.97	2.98	1.08	4.64		1.52	-0.68	-0.26
8. Pre-tax profit / Equity	21.14	22.89	14.77	5.96	4.45	1.64	6.89		2.27	-0.68	-0.26
9. Tier 1 capital asset ratio	3.27	3.45	3.68	5.10	5.11	5.22	4.86	5.68	5.13	6.67	5.91
10. CAR=Tier 1 ratio + Tier 2 ratio			10.67	10.74	10.43						
11. After tax profit / Employees			4.70	2.87	2.24	0.29	1.53				
12. Pre-tax profit / Employees			6.93	4.31	3.34	0.43	2.27				
13. Total assets / Employees			1,275	1,417	1,470	508	679				
14. After tax profit / Operating Expenses	33.62	43.01	34.61	17.33	12.56	4.02	18.17		1.59	-4.07	-1.46
15. Pre-tax profit / Operating Expenses	71.62	92.05	50.98	26.06	18.75	6.08	26.99		2.38	-4.07	-1.46
16. Total assets / Operating Expenses	10,359	11,641	9,380	8,566	8,246	7,116	8,066		2,042	9,015	9,380

Notes: BOC = Bank of China and wholly owned subsidiaries; CBC = Construction Bank of China; ICBC = Industrial and Commercial Bank of China; ABC = Agricultural Bank of China.

Source: annual reports of individual banks.

Table 4: Financial Ratios of Four Commercial Banks in China.

	EBC					Minsheng		CMB			GDB		
	1995	1996	1997	1998	1999	1998	1999	1997	1998	1999	1997	1998	1999
1.	1.94	2.65	5.94	8.41	18.28			4.38	4.70	6.09			
3.	5.48	4.26	5.30	6.21	5.17			4.97	6.17	2.13			
4.	7.92	6.09	6.84	5.62	2.88	5.60	4.43	6.44	5.12	3.87	5.83	4.67	3.58
5.	1.08	1.49	1.81	1.17	0.40	0.78	0.64	1.63	1.10	0.59	0.25	0.21	0.15
6.	1.60	1.89	2.66	1.74	0.40	0.95	0.81	2.41	1.45	0.92	0.26	0.25	0.18
7.	19.99	32.12	19.73	14.44	7.33	12.22	15.33	26.77	18.15	8.20	5.78	4.69	4.16
8.	29.55	40.66	28.99	21.42	7.33	14.94	19.37	39.56	23.97	12.80	5.88	5.76	4.94
9.	5.40	4.65	9.17	8.13	5.50	6.39	4.19	6.10	6.05	7.22	4.36	4.39	3.57
14.	14.54	23.31	36.88	28.11	13.50	34.20	32.37	34.67	25.25	16.17	11.15	10.40	7.07
15.	21.50	29.51	54.18	41.69	13.50	41.80	40.91	51.23	33.36	25.22	11.35	12.77	8.40
16.	1,347	1,560	2,039	2,393	3,348	4,379	5,041	2,124	2,302	2,728	4,430	5,056	4,763

Notes: EBC = Everbright Bank of China; Minsheng = China Minsheng Bank; CMB = China Merchants Bank; GDB = Guangdong Development Bank and wholly owned subsidiaries.

Source: annual reports of individual banks.

Table 6: The Calculation of Weights for the Virtue Bank

	ABC	BOC	CBC	ICBC	CMB	Minsheng	EBC	GDB	Total
Total asset (TA)	2,275,835	2,903,922	2,201,065	3,539,866	164,478	36,596	167,893	121,897	11,411,552
% Share	19.94	25.45	19.29	31.02	1.44	0.32	1.47	1.07	100.00
Weighted TA	453,876	738,967	424,524	1,098,067	2,371	117	2,470	1,302	2,721,713
Current asset (CA)	1,754,903	2,790,161	397,462	2,193,576	112,312	34,539	110,537	99,256	1,787,057
CA/TA	77.11	96.08	18.06	61.97	68.28	94.38	65.84	81.43	
Weighted CA/TA	15.38	24.45	3.48	19.22	0.98	0.30	0.97	0.87	65.66
Fixed total asset (FA)	46,491	42,624	66,507	76,140	2,482	843	1,481	2,108	
FA/TA	2.04	1.47	3.02	2.15	1.51	2.30	0.88	1.73	
Weighted FA/TA	0.41	0.37	0.58	0.67	0.02	0.01	0.01	0.02	2.09
Loans	1,589,666	1,364,219	1,200,945	2,427,122	91,610	24,291	78,654	55,150	
Loans/TA	69.85	46.98	54.56		55.70	66.38	46.85	45.24	
Weighted Loan/TA	13.93	11.95	10.52	21.27	0.80	0.21	0.69	0.48	59.87
Cash	32,913	31,531	33,017	24,952	3,007	4,248	745	1,515	
Cash/TA	1.45	1.09	1.50	0.70	1.83	11.61	0.44	1.24	
Weighted Cash/TA	0.29	0.28	0.29	0.22	0.03	0.04	0.01	0.01	1.16
Investment (I)	179,649	25,974	501,025	323,947	21,446	6,916	17,894	13,714	
I/TA	7.89	0.89	22.76	9.15	13.04	18.90	10.66	11.25	
Weighted I/TA	1.57	0.23	4.39	2.84	0.19	0.06	0.16	0.12	9.56
Total liab. & equity(LE)	2,275,835	2,903,922	2,201,065	3,529,866	164,478	36,596	167,893	121,897	
Current liabilities (CL)	1,828,584	2,704,908	1,995,442	1,617,198	141,268	34,143	140,985	100,069	
CL/LE	80.35	93.15	90.66	45.69	85.89	93.30	83.97	82.09	
Weighted CL/LE	16.02	23.70	17.49	14.17	1.24	0.30	1.24	0.88	75.03
Deposits (D)	1,592,515	1,984,910	1,764,433	2,982,400	132,080	34,143	107,744	90,947	
D/LE	69.97	68.35	80.16	84.25	80.30	93.30	64.17	74.61	
Weighted D/LE	13.96	17.39	15.46	26.13	1.16	0.30	0.94	0.80	76.14
Equity (E)	134,466	148,382	106,869	181,475	11,883	1,533	9,235	4,355	
E/LE	5.91	5.11	4.86	5.13	7.22	4.19	5.35	3.57	
Weight E/LE	1.18	1.30	0.94	1.59	0.10	0.01	0.08	0.04	5.24
Interest income (II)	95,341	113,459	110,883	147,173	5,462	1,368	4,065	4,363	

II/Total income (TI)	98.50	77.76	95.81	75.47	68.05	80.00	66.97	72.70	
Weighted II/TI	19.64	19.79	18.48	23.41	0.98	0.31	0.99	0.78	84.38
Non-oper. income (NOI)	233	607	288	7,029	19	*18	13	1,639	
NOI/TI	0.24	0.42	0.25	3.60	0.24	1.65	0.21	27.31	
Weighted NOI/TI	0.05	0.11	0.05	1.12	0.00	0.01	0.00	0.29	1.62
Interest expense (IE)	55,332	84,435	59,707	114,056	2,769	582	2,315	2,916	
IE/Total expenses (TE)	57.24	58.84	61.02	64.03	45.52	44.46	46.11	50.40	
Weighted IE/TE	11.42	14.97	11.77	19.86	0.66	0.14	0.68	0.54	60.04
Turnover & surtax (TS)	4,288	5,522	7,929	12,768	424	*60	371	311	
TS/TE	4.43	3.78	6.85	6.55	5.28	5.49	6.11	5.18	
Weighted TS/TE	0.88	0.96	1.32	2.03	0.08	0.02	0.09	0.06	5.44

Notes: Values are in RMB million. Weights and ratios are in percentages. \* = Estimated. BOC = Bank of China and wholly owned subsidiaries; CBC = Construction Bank of China; ICBC = Industrial and Commercial Bank of China; ABC = Agricultural Bank of China; EBC = Everbright Bank of China; Minsheng = China Minsheng Bank; CMB = China Merchants Bank; GDB = Guangdong Development Bank and wholly owned subsidiaries.

### III Efficiency and the Banking Firm

In order to compete with foreign banks once China has acceded the World Trade Organization, national banks in China have to improve their overall efficiency and competitiveness. Chinese national banks have to shed their social function and aim to function like a banking firm that maximizes profits (Santomero 1984). In this section we consider a simplified bank's net profit ( $\pi^n$ ) function and the equation for calculating its equity (E). Equity and net profit are governed by the following relationships:

$$E_t = E_{t-1} + \pi_t^n - \uparrow L_t \quad (1)$$

Equity this period equals to equity of last period plus net profit of this period less the amount of write-off of bad loans ( $\uparrow$  is the bad loan ratio and L is total loan). The Chinese authority has reported a bad loan ratio of 3 percent at the end of 2000 (based on Chinese standard).<sup>3</sup> In turn, net profit is total profit ( $\pi_t$ ) less corporate tax,  $t_1$ , which currently is 33 percent, thus:

$$\pi_t^n = (1 - t_1) \pi_t \quad (2)$$

Total profit is total revenue (R) less total cost (C).

$$\pi_t = R_t - C_t \quad (3)$$

Total cost is the interest payment to deposits ( $I_D \cdot D$ ) and operating cost (c) that depends on the level of employment (e). Thus

$$C_t = I_D \cdot D_t + c(e)_t \quad (4)$$

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<sup>3</sup> *Mingpao*, January 18, 2001.

Net revenue is the bank's income (Y) less the amount of turnover and surtax,  $t_2$ . Currently, this is equal to 8 percent. Income of the bank (Y) depends on the loan interest earned on performing loans.

$$R_t = (1 - t_2) Y = (1 - t_2) I_L (1 - n) L \quad (5)$$

$n$  is the non-performing loan ratio (larger than the bad loan ratio,  $n > \uparrow$ ). Thus by substituting, the bank's pretax profit equation becomes:

$$\pi_t = R_t - C_t = (1 - t_2) I_L (1 - n) L - I_D D_t - c(e)_t \quad (6)$$

Equation (6) suggests that for banks in China to act like banking firms there are various options to improve their competitive position. Firstly, Chinese banks should undertake operational restructuring, such as cutting redundant employees and branches and improving risk management. These measures will reduce cost,  $c(e)$ , and the NPL ratio ( $n$ ). For the government, it can consider another round of re-capitalization, which will allow the banks to reduce the bad loan ratio,  $\uparrow$ . A lower bad loan ratio will in turn reduce the NPL ratio. The government can also consider a reduction in tax burden on banks (i.e. a reduction in  $t_1$  and/or  $t_2$ ). Finally, interest rate liberalization will allow banks to set rates according to their risk, and this will likely lead to a wider interest spread (e.g. through a higher  $I_D$ ).

Commercial banks' income is partly determined by the interest spread between loan and deposit rates. Currently, the regulated interest rates lead to a narrower interest rate spread than the market equilibrium rate. In 1999, the average interest spread (defined as the interest income/loans minus interest expenses/deposits) was 3.57 percent in China. The average interest spreads in Hong Kong and the United Kingdom in 1999 were 4 percent and 5.33 percent, respectively. China's interest rate differential, on the contrary, is higher than other countries, like Canada (1.53 percent) and Japan (2.04 percent) in 1999. Since Chinese banks' NPLs are very high compared to banks in OECD countries, we expect that interest rate liberalization could further increase Chinese banks interest spread.

A tax reduction is an immediate way to improve banks' profits. The two taxes levied on Chinese banks are the turnover tax and surtax of 8 percent imposed on banks income and the corporate tax of 33 percent imposed on profits. We argue that the 8 percent turnover and surtax be removed, as is the practice in most other countries. Similarly, the profit tax rate of 33 percent is high. In Hong Kong, banks' pay 16 percent of profit tax. Both Japan and the United Kingdom imposed a maximum corporate tax of 30 percent in 1999, declined from 37.5 percent and from 33 percent in 1995, respectively. The corporate tax for Indonesia and Korea are progressive, rises from 10 to 30 percent and from 16 to 28 percent, respectively.<sup>4</sup> In 1999, the corporate tax paid by six Chinese banks as reported in Table 2 amounted to a total of RMB 6,602 million, equivalent to 0.58 percent of total government revenue, 0.062 percent of total taxes, 0.08 percent of GDP and 0.74 percent of industrial and commercial tax. Thus, a reduction on tax levied from Chinese banks will not impose too high a fiscal burden on the state, but could improve the banks' profit considerably.

Employment reduction and branch rationalization are two other obvious options for Chinese banks to reduce operating costs. Over the past decades, the "banks-SOEs-employment" relationship served as a social safety net for a large number of inefficient and unskilled workers. Each of the three major banks – the Construction Bank of China, Agriculture Bank of China and the Industrial and Commercial Bank – employs about half a million people. These are huge numbers compared to global banking institutions with much larger assets and capital. For example, Citigroup employs 200,000 people, and Deutsche Bank employs just 90,000 people, but the assets they manage are about three times that of the average Chinese big-four bank. Although one can argue that the Chinese labor cost is low, anecdotal evidence suggests that many Chinese bank employees are indeed "under-employed". In addition to employment reduction, Chinese banks can substantially reduce their number of branches. Over the past decades, many of their branches were established as the banks' administrative setup had to mimic that of the government. This resulted in a large number of unprofitable and poorly managed branches. Branch consolidation and reduction that already began two years ago, however, will continue over the next few years.

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<sup>4</sup> IFS-CD Rom version 1.1.53, International Monetary Fund, February 2001.

There is also a potential for reducing NPLs through improving risk management capacities. While most Chinese banks now evaluate projects based on borrowers' repayment capacities, collateral, and overall customer relationships, and credit risk assessment are still seriously constrained by the lack of complete and reliable credit information, industry and company analysis, and quantitative analytical tools (e.g., credit scoring models). Some PBC's local branches are building the commercial credit database, and six licenses were granted to local credit rating agencies, but their technology and analytical sophistication lag far behind world standards. In addition, Chinese banks and credit rating agencies lack qualified credit analysts. We have estimated – in a separate note – that a successful application of the credit information system and quantitative credit risk management technologies can reduce Chinese new NPLs by 30-40 percent.

#### IV Establishing the “Virtue Bank”

The establishment of the “Virtue Bank” helps to see how the various policy variables can help to improve banking efficiency in China. Based on the available banking data, weights are being constructed to work out the data for the Virtue Bank.

The capital asset ratio (CAR) is one of the most important criteria Chinese banks have to fulfill. The Bank of International Settlement (BIS) proposes a risk-based CAR of 8 percent. Although the Bank of China has provided its own calculation (see Table 3) of the CAR, the same ratio of other banks is not available. Accounting standards of Chinese banks are not in line with international standards (Ng and Turton 2001). In general, Chinese banks exercise a looser accounting definition on NPLs, interest income, loan loss, investment, and capital assets. In the case of capital asset ratio, the definitions for tier-1 capital and tier-2 capital differed mainly by the inclusion of bad loans, as shown in Table 5.

Conversions based on international accounting standards can help to work out the “true” accounting picture. By using the China Minsheng Bank as an example, Ng and Turton (2001) show that the Minsheng Bank faces a doubtful and bad loan ratio of 4.5 percent, as compared to a ratio of 2.6 percent before conversion in 1999. The return on equity (ROE) ratio is 6 percent, as compared to a ratio of 14.9 percent before conversion. The CAR (tier-1 + tier-2) based on Chinese accounting standards is 22.7 percent, but

drops to 15.5 percent when international accounting standards are used. This gives a conversion ratio of 0.683.

Table 5: Comparison of Capital Adequacy Ratio Calculation

Chinese Accounting Standards	International Accounting Standards
<u>Tier-1 Capital =</u> (Shareholders funds) – (50% of equity investment and bad loans that have not been written off)	Shareholders’ funds less revaluation surplus.
<u>Tier-2 Capital =</u> (Loan loss & other provisions + bonds with maturity of five years or more) – (50% of equity investments and bad loans that have not been written off)	General provisions, assets and equity revaluation surplus.

Source: Ng and Turton, 2001, p. 5.

The 1999 data of the eight banks shown in Table 2 are used to create a Virtue Bank, which can be regarded as the weighted average of the eight banks, whose actual performance can either be better or worse. In reality, we agree that most of the existing banks in China will perform worse than the Virtue Bank. This is because the better availability of Bank of China data has influenced the weights used to calculate the Virtue Bank. As compared to other banks, the Bank of China has an above average performance.

From the total assets of the eight banks, sum to RMB 11,411,552 million, we work out the proportion of total asset of each bank as weights. As shown in Table 6, the Bank of China will have 25.45 percent of the aggregated total asset. This generated a weighted total asset of RMB 738,967 million. This is repeated for other banks, and this gives a sum of weighted total asset of all banks that amounts to RMB 2,721,713 million. To get the weight for current assets, we multiple the percentage share from total assets to the percentage share of the current assets. For the Bank of China, the weight is 24.45 percent (25.45 x 96.08). Summing up all banks, the weighted current asset is 65.66 percent of total asset, equivalent to RMB 1,787,057 million. The same method of weight calculation is applied to all other financial variables, and the resulting financial statement of the Virtue Bank is shown in Table 7.

Table 7: Financial Performance of the Virtue Bank, 1999. (RMB Million)

Total Assets	2,721,713
Current assets	1,787,057
Long-term and other assets	934,655
Cash	31,465
Total Loans	1,629,385
Overdue loans	179,232
Non-performing loans	146,645
Doubtful loans	97,763
Bad loans	48,882
Loan loss provision	17,817
Total Liabilities and Equity	2,721,713
Current liabilities	2,042,223
Deposits	2,072,411
Owner's equity	142,673
Other liabilities	506,628
Total Income	139,527
Interest income	117,724
Non-interest income	19,348
Operating income	137,072
Non-operating income	2,455
Total Expenses	130,149
Interest expenses	78,137
Non-interest expenses	52,634
Operating expenses	128,771
Non-operating expenses	1,378
Turnover Tax and Surtax	7,587
Operating Profit	714
Investment income (assume a return of 2%)	5,202
Profit Before Taxation	7,651
Income tax	2,525
Net profit	5,216

We make the following assumptions in calculating the Virtue Bank. Overdue loans are 11 percent of total loans. Non-performing loans is 9 percent, which is divided between doubtful loans (6 percent) and bad loans (3 percent). This makes a total overdue (including doubtful and bad) loan ratio of 20 percent at the end of 2000, broadly consistent with the statement made by Governor Dai Xianglong. Loan loss provision is 1 percent, and corporate tax on bank's profit is 33 percent. Operating profit is operating income less operating expenses and turnover tax and surtax. Investment income equals to

before-tax profit less operating profit less non-operating income plus non-operating expenses.

The capital inadequacy of Chinese banks can be seen from the comparison of the key financial ratios with foreign banks, as shown in Table 8. Some of the key financial ratios (notably the CAR, ROA and ROE) of the Virtue Bank are converted into international accounting standards based on the conversion factors derived in Ng and Turton (2001). The general conclusions one can draw on the Virtue Bank can be summarized as follows:

1. The Virtue Bank is grossly under-capitalized if bad loans were written-off from the balance sheet. Given the estimated bad loan ratio (international accounting standard) of 5 percent, its actual Tier 1 ratio is negative, compared with an average Tier-1 ratio of 7.5 percent for the foreign banks.
2. The Virtue Bank is not cost-efficient. Its cost/income ratio is about 50 percent higher than the average of major foreign banks (see Table 8). Personnel expenses, rental and administrative expenses are too high relative to the bank's income.
3. The Virtue Bank's profitability is low. Its return on assets (ROA) and return on equity (ROE) are only 10 to 30 percent of the foreign banks' average. This reflects both the high operation cost and high tax rates imposed on Chinese banks.

Table 8: International Comparison of Bank Performance

	CitiCroup 9-00 (US\$ bn)	Chase Manhattan 6-00 (US\$ bn)	First Union 9-00 (US\$ bn)	Deutsche Bank 9-00 (Euro bn)	HSBC 12-99 (US\$ bn)	Virtue Bank 12-00 (RMB bn)
Assets	804.3	396.0	246.6	839.0	569.1	2,982.0
Equity	53.6	24.9	14.8	35.1	33.0	125.1
NPL ratio	1.4	1.0	0.7		4.1	15.9
Tier-1 ratio	8.4	8.7	6.9	5.9	8.5	3.4
ROA	1.6	1.2	1.1	0.8	1.0	*1.0
ROE	7.2	19.8	18.6	18.2	17.8	*13.0
Cost/Income	65.5	59.3	64.0	72.0	54.1	*85.0

Notes: \* = Calculation based on Chinese accounting standards. Tier 1 = Tier 1 capital to risk weighted assets ratio; ROA = return on assets; ROE = return on equity. Income = interest income – interest expense + non-interest income. Cost refers to non-interest expense.

The weak Chinese banks will face a survival problem once market access to foreign banks is given. A liberalized banking sector implies that domestic banks will no longer be protected from foreign competition, and foreign banks will compete effectively with national banks in both Renminbi and foreign currency businesses. The development of banking business between domestic and foreign banks would produce a “zero-sum” outcome, in which the economic gains from loans and deposits by local firms and individuals in foreign banks would be a loss to national banks, and vice versa, after China acceded to the World Trade Organization. The lack of competitiveness among national banks would encourage local businesses and individuals to patronize foreign banks. A “welfare loss” situation may emerge should foreign banks control the majority of banking businesses. This is because foreign banks can effectively deal with both the Renminbi and foreign currency, and the large involvement of foreign banks may exert pressure on China’s monetary policy and foreign exchange policy. On the contrary, foreign competition produces a “welfare gain” in the form of a more efficient banking sector and an enlarged banking business that can facilitate other aspects of business development.

## V When Can Chinese Banks Catch Up?

A minimum criterion for a Chinese bank to compete with foreign banks is that its CAR should reach the BIS’s norm of 8 percent. By using the financial data of the Virtue Bank in 1999, this section employs a few crucial financial assumptions and relaxes the policy variables gradually in order to see the number of years Virtue Bank will take to reach the 8 percent by the international accounting standard. One major assumption is a constant annual increase of 12 percent in total liabilities. We use this increase to calculate the various annual figures, such as total loans, cash, owner’s equity, paid in capital and so on. The second assumption is the conversion factor of 0.683 for the CAR calculation. This assumes that the total CAR conversion factor in Ng and Turton (2001, p. 12) is applicable to an average bank in China. We start with 2000 figures, which are derived

from the 1999 figures based on the growth rates between 1998 and 1999. This assumes that the growth pattern remained the same between 1998/99 and 1999/2000.

We progressively exercise the five policy variables in four scenarios, as shown in Table 9. Scenario 1 begins with a widening of interest spread from 3.5 percent in 2000 to 4.7 percent in 2003 and thereafter, and—due to improvement in risk management—a reduction in the bad loan/total loan ratio from 3 percent to 0.5 percent between 2000 and 2013, and in the doubtful loan/total loan ratio from 6 percent to 3.3 percent in the same period. With these assumptions, it will take the Virtue Bank a long time, up till 2015, to reach the 8 percent capital adequacy ratio, as shown in Table 10.

Scenario 2 includes, in addition to the measures adopted for Scenario 1, a tax cut. The turnover and surtax/operating income ratio of 5.44 percent will be reduced to zero (namely,  $t_2 = 0$ ). In absolute value terms, the amount of government revenue lost will be RMB 9,761 million in 2001, RMB 11,667 million in 2002 and so on. The average turnover tax and surtax paid by the “big four” amounted to RMB 7,627 million in 1999. The tax cut will help Chinese banks to achieve the 8 percent capital adequacy ratio in 2012, three years earlier than in Scenario 1.

Scenario 3 involves the measures for Scenario 2 plus a reduction in operating expenses—due to employee and branch reductions. Assuming the interest expense/operating expense ratio increased to 64 percent in 2002, but stabilized at 63 percent in 2003 and thereafter. As compared to the previous scenarios, the cut in operating expenses has a smaller impact on the required capital adequacy ratio, as it only pushes the realization year forward to 2011, two years earlier than scenario 2. In absolute terms, the estimated operating expenses saved amount to RMB 9,417 million in 2001, RMB 7,577 million in 2002 and so on.

It seems that the above four policies are not sufficient to turn the Virtue Bank to an adequately capitalized bank anytime in the next 5-6 years, within approximately the time frame of the Sin-US agreement. Scenario 4 assumes a further re-capitalization by the government, or by foreign institutions, in addition to the four measures used in Scenario 3. Here we assume that the government undertakes another round of re-capitalization in 2001. From a NPL ratio of 20 percent, the re-capitalization reduces the

NPL ratio to around 10 percent in 2001. This re-capitalization package can help the Virtue Bank to reach the required capital adequacy ratio in an earlier date of 2005/2006.

The sharp cut in the NPL ratio is achieved by a transfer of NPLs in the amount of about RMB 130 billion to the AMCs. Assuming there is also some improvement in risk management, this requires an estimated issuance of RMB 130 billion in government (or AMC) bonds. As the assets of the Virtue Bank account for about 24 percent of China's big four banks, we estimate that this new round of re-capitalization—if it is to cover all big four banks—will increase government debt by about RMB 540 billion (or 6 percent of GDP). Of course, the average quality of these NPLs taken over by the government or AMCs is likely to be better than the ones transferred to AMCs in 1999-2000. With a relatively high loan recovery rate, the present value of the total costs for this round of re-capitalization will probably be around 4 percent of GDP, far less than the 23 percent of GDP estimated for the 1998-2000 re-capitalization and AMC operations (see Ma 2001). Of course, if the government wants to see a more rapid increase in the banks' capital adequacy ratio compared with our simulation, then a more drastic re-capitalization should be considered.

## VI Conclusion

This paper employs the “banking firm” idea and argues that the competitiveness of Chinese banks can only be improved if there are drastic changes in their capital position and operating efficiency. The government and the banks themselves will have to share the responsibilities for these improvements. For the banks themselves, they will have to make a great deal of efforts to improve their risk management capacities, cut employees, and rationalize their branch systems. We also expect the planned interest rate liberalization will offer some scope for increased interest spread and thereby improve banks' profitability.

Nevertheless, these measures are not strong enough to bring Chinese banks the needed capital adequacy in 5-6 years. Should the Chinese banks be given a level playing field for competition with foreign banks – i.e. to achieve the minimum capital adequacy requirement, government assistance in the form of a tax cut and another round of re-

capitalization seems inevitable. Specifically, the government should consider eliminating the turnover and surtax on banks, and provide a capital injection of around RMB 500-600 billion to the big four banks in the next one or two years. The cost of these operations to the government is manageable from the debt sustainability point of view, and they may help avoid a larger fiscal cost in the future.

Table 9: Ratios Used in Simulation (%)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Scenario 1:														
Interest Rate on Loans	7.3	7.5	8.0	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5
Interest Spread	3.5	3.7	4.2	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
Doubtful Loan / Total Loan	6.0	5.5	5.3	5.1	4.9	4.7	4.5	4.3	4.1	3.9	3.7	3.5	3.3	3.3
Bad Loan / Total Loan	3.0	2.4	2.4	2.1	1.8	1.6	1.4	1.2	1.0	0.8	0.6	0.5	0.5	0.5
Scenario 2:														
Turnover Tax + Surtax	8	0	0	0	0	0	0	0	0	0	0	0	0	0
Scenario 3:														
Interest Expenses / Operating Expenses	60.7	60.7	64.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0
Scenario 4:														
Bad Loan / Total Loan	3.00	1.76	0.94	0.43	0.41	0.39	0.38	0.36	0.34	0.33	0.31	0.29	0.27	0.26
Doubtful Loan / Total Loan	6.00	3.22	1.46	1.41	1.35	1.29	1.23	1.17	1.11	1.05	1.00	0.94	0.88	0.82
Overdue Loan / Total Loan	11.00	5.00	4.80	4.60	4.40	4.20	4.00	3.80	3.60	3.40	3.20	3.00	2.80	2.60
NPL ratio	20.00	9.98	7.21	6.43	6.16	5.88	5.61	5.33	5.06	4.78	4.50	4.23	3.95	3.68

Table 10: Simulation Results for the Virtue Bank

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Scenario 1	4.80	5.10	5.38	5.67	5.96	6.17	6.40	6.65	6.89	7.14	7.42	7.60	7.72	7.79	7.89	8.00
Scenario 2	4.80	5.38	5.67	5.97	6.26	6.48	6.71	6.94	7.19	7.44	7.70	7.88	7.98	8.08		
Scenario 3	4.80	5.38	5.88	6.12	6.39	6.58	6.81	7.04	7.29	7.54	7.81	7.99	8.12			
Scenario 4	4.84	6.41	7.32	7.72	7.84	7.95	8.08									

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