

CHINA'S STATE-OWNED BANKS' LENDING PRACTICES, 1994-2004: EMPIRICAL  
TESTS AND POLICY IMPLICATIONS

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June 2007

*Abstract*

More than half of the assets in China's banking system are accounted for by four huge state-owned commercial banks. Three of these banks have recently gone public as joint stock companies trading in Hong Kong. This paper examines the changing factors influencing these banks' lending behavior over the post-1994 period on a province-by-province basis.

Determinants include the concentration of state-owned enterprises and the level of provincial prosperity as well as the banks' overall non-performing loan levels. We allow for a shift in lending patterns after the constraints imposed by the government's credit plan were relaxed in 1998.

JEL Code: G21

Keywords: Chinese banks; lending; state-owned enterprises; provincial income; privatization; World Trade Organization

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## INTRODUCTION

Despite facing increasing domestic and foreign competition, China's four largest state-owned commercial banks (SOCBs) remain dominant players in China's banking industry and still accounted for over half of the total assets in China's banking system in 2006.<sup>1</sup> Three of the four, Bank of China (BOC), China Construction Bank (CCB) and the Industrial and Commercial Bank of China (ICBC), have undertaken initial public offerings in Hong Kong and, by 2007, ranked amongst the world's top ten commercial banks in terms of market value.<sup>2</sup> As recently as 1998, however, these institutions, like the other SOCB, the Agricultural Bank of China (ABC), were not only entirely government-owned but also forced to conform to a national credit plan that largely allocated funds based on perceived needs – and essentially regardless of creditworthiness. There has been much discussion, but little empirical evidence, regarding how much actual SOCB lending practices have changed in recent years. This paper considers a range of potential influences on their lending behavior. We look at variations in bank behavior by province, as well as over time, using over a decade of data starting in 1994. Determinants include the concentration of state-owned enterprises and the level of provincial prosperity as well as the banks' overall non-performing loan levels. We allow for a shift in lending patterns after the constraints imposed by the government's credit plan were relaxed in 1998 as well as generalized parameter “drift” over the full 1994-2004 sample period.

## EVOLUTION OF CHINA'S STATE-OWNED COMMERCIAL BANKS<sup>3</sup>

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<sup>1</sup> A fifth bank, Bank of Communications, was reclassified as a “large state-owned bank” in April 2007 but remained at only approximately a quarter the size of the others in terms of total assets (see Tucker and Anderlini, 2007). The analysis below focuses exclusively on the original four SOCBs.

<sup>2</sup> Liu Mingkang, chair of the China Banking Regulatory Commission (see *People's Daily Online*, March 2, 2007).

<sup>3</sup> For more details on the successive banking reforms, and new challenges posed by World Trade Organization membership, see Burdekin and Kochanowicz (2008).

Even after China's economic reforms began in 1978, the People's Bank of China continued to operate as a 'monobank' and controlled essentially all lending and deposit-taking activities. Its reformulation as a true central bank was approved by China's State Council in September 1983, and its former responsibility of lending to state-owned commercial and industrial enterprises was transferred to the newly-formed ICBC in 1984. Overnight ICBC became the largest of the SOCBs in asset size and it has since grown extremely rapidly, with its registered capital reaching RMB 248 billion when it was transformed into a joint-stock company in October 2005 (*People's Daily Online*, January 20, 2006). The newly-separated ABC and CCB took over lending activities in their own specialized domestic areas while BOC focused on international transactions. Three new policy banks were created in 1994 (the State Development Bank of China, the Import-Export Bank of China and the Agricultural Development Bank of China) and policy loans were transferred to these new institutions, leaving the four SOCBs, in theory, now accountable for their own profits and losses.<sup>4</sup>

The central government originally incorporated the SOCBs into its credit plan to finance its state-owned enterprises (SOEs). Even after formal funding requirements were removed in 1998, the historical burden of prior bad loans plus ongoing protection of many SOEs continued to hamper full commercialization of the SOCBs. Indeed, state-owned banks were still allocating 75% of their short-term loans to SOEs in 2003 (Chiu and Lewis, 2006, p. 208). And Barth and Caprio (2007, p. 26) argue that, with SOEs and collective enterprises continuing to receive nearly half of total corporate loans despite contributing little more than a quarter of GDP, credit is still being allocated inefficiently today (see also Dobson and Kashyap, 2006). The benefits of

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<sup>4</sup> The actual assistance rendered by the new policy banks remained in question, however. Most of their bond issues aimed at supporting lending were actually being purchased by other banks, with the four SOCBs in the lead (Barth, Koepp and Zhou, 2004).

such SOE funding certainly seem highly questionable given that provinces with greater SOE shares in industrial production have, on average, consistently experienced lower growth rates in the past (Phillips and Kunrong, 2005). Furthermore, private companies, especially those of small to medium size, often remained shut out of the formal lending market entirely (Zhu, 2002).

Under the credit plan, the big four banks had no real say in the credit worthiness of borrowers and were forced to make loans to politically motivated projects. Moreover, SOE managers were not made accountable for non repayment of loans in the past and, even if an SOE had previously defaulted on loans, the banks still lacked the authority to independently cut off new lending to that SOE. This essentially forced the banks to make new loans to cover defaulted interest payments, reporting phantom interest profits in the process. And, until 1998, banks were not allowed to classify more than one percent of their portfolio as a NPL. Thus, the government not only forced the banks to make bad loans, but also would not let them write them off.

The practice of assigning loan quotas to every region under each year's credit plan further prevented the allocation of credit from being determined by market forces. Indeed, regions with low growth potential tended to be highly dependent on SOEs and, as such, garnered relatively large amounts of loans. Forced emphasis on the weaker economic areas interfered with banks' ability to determine loans on the basis of standard risk and return criteria. Policy lending quotas were set without any reference to the banks' ability to meet the quotas. In high growth areas where deposits were high, the banks' lending options were constrained and they typically kept large (interest-bearing) excess reserves with the People's Bank. Low growth areas, meanwhile, tended to have high quotas that the banks could not meet through their deposits alone. Therefore they had to turn to the People's Bank for funds, leaving the central bank redistributing funds from high deposit areas to low deposit areas. Park and Sehart (2001, p. 626) find empirical

support for a strong inverse relationship between financial intermediation and the level of provincial economic development over the 1991-1997 period, suggesting that “factors other than economic fundamentals play an important role in lending decisions.”

The 1998 lifting of the credit plan, and the formal elimination of minimum loan quotas for each region, was intended to increase the independence of the loan portfolios of the SOCBs. The positive liberalizing effects of the policy changes were, at first, offset by large increases in lending due to the Asian financial crisis and the start of the Fixed Asset Investment Program, however. This latter program substantially raised the allocation of funds to SOEs through the SOCBs and the 1998 loan targets were set 25% above 1997 levels at RMB 1 trillion (Lardy, 1999, p. 20). Nevertheless, policy changes did start to give the banks more operational freedom. Bank managers were permitted to cut costs by laying off excess employees and closing redundant branches. And, in 1998, the NPL classification changed from the old four-level Chinese standard to a five-level accrual basis, similar to the international standard and allowing for greater transparency. The government also laid down ambitious new targets for the SOCBs that were to achieve 8% risk-adjusted capital standards by 2000 (consistent with international standards), a maximum loans-to-deposit ratio of 75%, and a liquid asset ratio of 25% (see Chiu and Lewis, 2006, p. 200).

The Ministry of Finance issued RMB 270 billion (\$US 32.5 billion) in special bonds to recapitalize the SOCBs in 1998, bringing the SOCBs closer to the 8% standard for capital adequacy. Further substantial recapitalizations were needed in 2003 and 2005, however. The 1998 bond recapitalization itself raised total bank capital from RMB 208 billion to RMB 478 billion, and the next 2003 infusion added another RMB 370 billion. At that time, US\$ 45 billion of China’s official foreign exchange reserves were drawn upon to further recapitalize BOC and

CCB in preparation for their IPOs. Yet another \$US \$15 billion in foreign exchange reserves was employed in recapitalizing ICBC in 2005. NPLs totaling RMB 705 billion were transferred to Asset Management Companies (AMCs) in May-June 2005 and, with essentially the full book value of the NPLs being replaced by new cash or by claims on the AMCs or the government itself, the total cost of the latest bailout likely exceeded \$US 80 billion (see Podpiera, 2006, p. 8). Taking into account not only the losses on the NPL transfers but also SOCB equity writedowns and carving out of doubtful loans by the People's Bank, other costs born by bank customers and foreign investors, RMB 500 billion for city commercial banks and RMB 35 billion for the Bank of Communications in 2004, Ma (2006) estimates that total restructuring costs actually amounted to as much as RMB 4047 billion by the end of 2005.

Central government rhetoric did, at last, begin to outwardly encourage bank profitability and NPL reduction as this restructuring took place. The 2003 recapitalization of BOC and CCB was accompanied by strengthened corporate governance and provisions for qualified external auditing and oversight. The targeted NPL to total loan ratio of 3-5% for 2004 was met by the CCB and essentially achieved by BOC.<sup>5</sup> Both banks also became joint-stock companies with independent directors. Table 1 shows the overall progress achieved in NPL levels between 1999 and 2005. NPL ratios below 5% have been realized recently by BOC, CCB and ICBC in the aftermath of their 2003 and 2005 recapitalizations.<sup>6</sup> But ABC's NPL ratio was still 23.4% in

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<sup>5</sup> There was also improved return on equity, especially for the CCB – previously none of the SOCBs had managed to record a return on equity of even 5% over the 2001-2003 period (Thomas and Ji, 2006).

<sup>6</sup> The three SOCBs still lagged substantially behind foreign commercial banks operating in China and Citibank in terms of their balance sheet strength, however – and their loan loss reserves covered substantially less than 100% of NPL levels in 2005 in contrast to Citibank's 158.7% coverage, for example (Barth and Caprio, 2007).

2006, leaving the year end overall NPL ratio for the four SOCBs at 9.22%, little changed from 2005, according to the China Banking Regulatory Commission (CBRC).<sup>7</sup>

The newfound strength of CCB's balance sheet made possible its successful IPO on the Hong Kong market in October 2005. BOC's own 2006 IPO realized \$US 9.73 billion, spurred by the 50% share price gains enjoyed through mid-May 2006 by CCB shareholders in little over six months (not to mention the 100% gains in shares of the Bank of Communications, China's next largest commercial bank that was later reclassified as an additional SOCB). Meanwhile, the gradual decline in ICBC's NPL ratio from 34.4% in 2000 to 19.1% in 2004 (Table 1) was accompanied by a five-fold profit increase over 2000-2004, combined with a halving in the number of branches and an employee head count reduction of around one third. Public listing required a more dramatic drop in ICBC's NPL ratio, however, which was achieved over 2005 thanks to the \$US 80 billion government support package in the first half of that year. The ICBC then became a shareholding company and Goldman Sachs, Allianz and American Express subscribed to \$US 3.78 billion in ICBC shares in 2006 to attain a 10% stake (Ernst & Young, 2006, p. 11). ICBC's 2006 IPO garnered a record \$21.9 billion and, combined with the earlier IPO's of BOC and CCB, a total of \$42.3 billion was raised from selling shares in these three SOCBs.

Berger, Hasan and Zhou (2007) point to significant efficiency gains associated with minority foreign ownership in China's banks, leaving at least the hope that meaningful benefits will accrue from the fuller opening up of the SOCBs to foreign ownership that took effect in

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<sup>7</sup> See <http://www.cbrc.gov.cn>. There is also the question of just how many additional dubious "special mention" loans may turn into future NPLs. For example, 12.7% of BOC's loans were classified as special mention in 2005 – more than double the level of acknowledged NPLs (*Financial Times*, May 12, 2006).

December 2006.<sup>8</sup> The earlier, pre-WTO, exclusion of foreign banks from the domestic deposit and loan markets reflected the government's fears that more efficient foreign institutions would threaten the state-run Chinese banks. WTO entry essentially forced the authorities to commercialize the banks, however, so that they would be prepared for the new competition. Although burdensome restrictions delayed the benefits of including more competitive, better-managed foreign banks in the financial market, the opening-up process accelerated considerably after the initial partial IPO of BOC in Hong Kong in 2002. Foreign investors have not so far evinced any real involvement with core operations, however, and their investments in non-core areas could remain profitable even if the banks' overall performance failed to improve (see Leigh and Podpiera, 2006).

Only the ABC has not announced specific plans to go public. It has continued to lag well behind the other banks and its cost-to-income ratio remained more than 20 percentage points above those of BOC, CCB and ICBC in 2005 (see Podpiera, 2006, p. 8). In mid-2007 it was estimated that restructuring ABC would probably cost more than \$US 100 billion, with approximately \$US 76 billion needed to reduce the bank's non-performing loan ratio to 5% from the 2006 ratio of 23.4% – plus another \$40 billion or so to boost the capital adequacy ratio to the international standard of 8% (McGregor, 2007, p. 18). The ABC's bad loan problems actually seem to have been compounded, to some extent, by fraud. According to a June 2006 audit conducted by China's National Audit Office, the ABC had irregular deposits of RMB 14.27 billion, problem loans of RMB 27.62 billion and fraudulently-issued debt securities totaling RMB 9.72 billion in 2004 (Aredy, 2006). The ABC was the only big-four bank still without

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<sup>8</sup> The SOCBs certainly seem to offer considerable room for improvement in this regard based upon the latest estimates of their efficiency levels and prudential ratios. And the more recently-established joint-stock banks, with more limited government ownership and control, appear to have significantly outperformed the SOCBs (Jia, 2006; Fu and Heffernan, 2007; Shih, Zhang and Liu, 2007; Ariff and Can, 2008).

any foreign ownership in 2006. Although Premier Wen Jiabao stated in January 2007 that ABC would be put on a path to its own IPO, at the end of September 2006 ABC's bad loans of \$US 95.5 billion accounted for over half the bad loans in the entire Chinese banking system.<sup>9</sup>

Table 2 depicts the historical loan distributions of the big four state-owned banks based on a grouping that divides China's 31 provinces, municipalities, and administrative regions into top, middle and bottom tiers according to the 2001-2004 per capita GDP of each region. The loan allocation to the richest provinces remained relatively stable over the 1994-2004 period for the ABC and the BOC, with the ABC averaging close to 50% for this group and the BOC around 65%. Meanwhile, the ABC, not surprisingly given its rural base, continued to allocate the largest share of loans to the poorest provinces – typically providing more than 22% to this group. The CCB and the ICBC both evince an increase in lending to the richest provinces, and decrease in lending to the poorest provinces, over the sample. This may reflect more market-based lending after the loosening of the old quota allocation controls. The CCB features the most pronounced change in behavior, with its loan allocation to the wealthiest regions rising from 48.6% in 1994 to 61.4% in 2004 while the allocation to the poorest regions fell from 22.9% to 17.5% over that same period. Overall changes in lending patterns have remained quite mild, however, and the possibility that SOCB lending may still not be line with the opportunities available in the richer regions is supported by Podpiera's (2006) finding that the big four banks lost market share to other financial institutions in those provinces featuring more profitable SOEs.

A more general perspective on lending practices is provided through the loan-to-deposit ratio shown in Figure 1. The SOCBs consistently lowered their loan-to-deposit ratio over the earlier part of the reform period and converged to a more similar level by 2001. The most

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<sup>9</sup> Assuming its balance sheet could be cleared up in time, ABC might realize about \$US 10 billion in a 2008 IPO (see Carew, 2007).

dramatic drop was enjoyed by the BOC, with a halving of its loan-to-deposit ratio since 1994 whereas the ABC showed the smallest change over the 1994-2004 period. Overall, after ranging between 0.8 and 1.2 in 1994, the loan-to-deposit ratio for the four SOCBs typically remained between 0.8 and 0.6 during 2000-2004. These data suggest that, even though changes in loan allocation across regions seem to have been more incremental in nature for most of the SOCBs, a meaningful change in total lending rates has occurred since the mid-1990s and the ending of the credit plan in 1998 (see also Jia, 2006). From 2000 on, all the SOCBs but ABC consistently attained the 75% maximum loan-to-deposit ratio targeted as part of the 1998 reforms.

#### EMPIRICAL ANALYSIS OF STATE BANK LENDING OVER THE 1994-2004 PERIOD

In this section, we seek to shed some light on whether the overall decline in loan-to-deposit ratios over the 1994-2004 period may be related to provincial factors, macroeconomic factors and/or bank-specific factors. At the provincial level, we assess the relative prosperity of each province by taking the ratio of provincial GDP to national GDP. If bank lending is redistributive in nature, as propounded under the old national credit plan, banks should lend more to poorer provinces, *ceteris paribus*, as observed by Park and Sehart (2001) for the pre-1998 period. A more market-based approach likely implies lending more to the stronger provinces, however. In this respect we allow for changes in bank behavior, both via a possible discrete jump as the banks began to enjoy freedom from the credit plan after 1998 and gradually over time. We also take into account the importance of SOEs to each province, given that government pressure for loans to loss-making SOEs may have fueled additional lending to provinces where SOEs account for a larger share of provincial GDP – a relationship that also receives empirical support from Park and Sehart (2001) for the period when banks were subject to the credit plan.

In terms of macroeconomic factors, we allow for bank responses to inflation, as represented by the consumer price index, and overall liquidity as reflected in broad money (M2) growth.<sup>10</sup> To the extent that the authorities attempt to discourage bank lending when inflation rises, a negative response to this variable would be expected. Conversely, more rapid money growth may help fuel more lending and a higher loan-to-deposit ratio. Finally, bank specific factors are taken into account via the real level of deposits available to each bank to serve as a base for lending and also via the bank's NPL ratio.<sup>11</sup> We hypothesize that banks may be more willing to offer new loans when the NPL ratio is lower.<sup>12</sup>

Summary statistics on each data series are provided in Table 3 and Table 4a and 4b give sample correlation coefficients.<sup>13</sup> Table 4a suggests that each bank's loan-to-deposit ratio has an overall positive correlation with the SOE output share while the correlation with the GDP ratio is negative in three cases out of four, implying proportionately less lending to richer provinces. It remains to be seen whether these correlations are driven by the early credit plan era, however. We also observe positive correlations with the inflation rate and the M2 growth rate but mixed results for the NPL ratio. Meanwhile, Table 4b offers some confirmation that provinces more reliant on SOEs also tend to be poorer, on average, based on the negative correlation with the GDP ratio. We also see that inflation and money growth were, not surprisingly, very closely related over our sample period.

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<sup>10</sup> We also considered the rate of growth of national real GDP but found its inclusion to often lead to singularity problems owing to multicollinearity with other variables. National GDP is, in any event, already included in the specification via the ratio to provincial GDP.

<sup>11</sup> The importance of deposit financing for loans is likely influenced by banks' access to the interbank market, which was reintroduced after 1995 (Park and Seht, 2001).

<sup>12</sup> Although this would perhaps not follow under the credit plan, NPL data is available only from 2000. It is therefore excluded from the earlier regressions that examine the full 1994-2004 sample available for the other test variables.

<sup>13</sup> These data are drawn from the *Almanac of China's Finance and Banking*, the *China Statistical Yearbook* and the Great China database (<http://www.finasia.biz/tejonline/tejonline.htm>).

In order to assess the actual significance of the different factors for bank lending behavior, we initially consider a full sample regression including each of the variables listed above (excluding the NPL ratio that is available only from 2000). The panel regression covers 31 provinces over 11 years, yielding a total of over 300 observations and is estimated using a fixed effects model with heteroskedasticity-consistent standard errors. We also allow for a constant and a time trend in the variable array and find the latter to be negative and significant at the 1% level in three out of four cases as shown in Table 5. This latter result is consistent with the overall downtrend in the loan-to-deposit ratio during 1994-2004 seen in Figure 1 above. Only ABC evinces a significant positive reaction to the SOE variable and it is insignificant in the other three cases. Meanwhile, the response to the GDP ratio is actually significant and positive in two cases, and negative and significant only for BOC, suggesting that banks were overall inclined to lend more to richer provinces. There are significant positive responses to M2 growth in two cases out of four (the other responses being insignificant) and the only significant response to inflation is negative – in the case of ABC. Finally, higher real levels of funds on deposit are associated with significantly higher loan-to-deposit ratios for CCB and ICBC – suggesting that financing loans through own deposits may have remained important for at least these two SOCBs and offering some evidence against the free intermediation of funds (cf, Park and Sehart, 2001).

In Table 6 we split our sample into 1994-1998 vs. 1999-2004 in order to allow for a possible shift in behavior associated with the lifting of the credit plan that was initiated in 1998. These results offer no support for the importance of the SOE variable, which is not significant for any of the four banks.<sup>14</sup> The GDP ratio, however, elicits a somewhat more systematic

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<sup>14</sup> A complication is the potential role played by factional ties in influencing the practical degree of “clout” associated with SOE concentration. Shih (2004) shows, for example, how the high concentration of SOEs in the

pattern. Although only three of the coefficients are statistically significant, we see that every one of the 1994-1998 coefficients is negative and every one of the post-1998 coefficients is positive. This offers at least some support for lending being redirected towards richer provinces after 1998. Otherwise, we now find significant positive reactions to both inflation and money growth in half or more of the total cases and positive and significant reactions to the deposit level in two cases – switching to a negative response after 1998 for BOC.

Given that we observe a continuing downtrend in the loan-to-deposit ratio after 1998, it is likely that freedom from the credit plan led to persistent effects extending beyond any once-and-for-all shift in behavior picked up in the Table 6 results. There are also many other potential sources of changing lending behavior, including the additional post-1998 policy moves that eventually paved the way for the public listings of BOC, CCB and ICBC as discussed above. Significant time trend effects have previously been observed by Jia (2006), who finds evidence of improving SOCB loan/asset and deposit/loan ratios over the course of his 1994-2004 sample period. We allow for generalized parameter “drift” over our sample period by adding a full set of time trend interactions to our model. Each of these extra terms represents the original right-hand-side variable multiplied by the time trend. This procedure was suggested by Farley and Hinich (1970) as an alternative way of testing for shifting slope coefficients over time and, unlike standard dummy variable and Chow tests, provides for a change that occurs gradually over the sample period (see also Howe and Upton, 1992). The results of adding the set of time trend interactions to the model are presented in Table 7 and the overall significance of these extra variables is confirmed by the F-test statistics reported at the bottom of the table. The set of time

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province of Liaoning did not prevent its overall loan-to-deposit ratio trailing the lending rates enjoyed by the neighboring province of Jilin – a province whose leaders appear to have enjoyed much closer ties to the central government elite than did Liaoning’s.

trend interactions is significant at better than the 1% level for ABC, BOC and CCB and at better than the 5% level for ICBC.

In Table 7, we see that the baseline response to the SOE share is always positive but statistically significant only for ABC as in the earlier full sample results in Table 5. There is evidence of a significantly declining response to the SOE share over time in the case of CCB. Responses to the GDP ratio are now generally insignificant while the baseline response to real deposit levels is negative for ABC and ICBC but then increases over time in each case as evidenced by the significant coefficient on the time trend interaction. Finally, both ABC and BOC evince significant negative responses to the inflation rate and positive responses to the M2 growth rate. The response to M2 becomes smaller over time in the case of ABC, however. The Table 7 results therefore yield somewhat more consistent responses to the macroeconomic variables and reactions to the SOE share that are plausible in direction albeit in most cases insignificant. The effects of the GDP ratio are called into question, however – “forcing” bank responses to this variable to change incrementally over time clearly does not gel with any such systematic variation in the actual pattern of behavior.

Finally, Table 8 examines the effect of adding bank NPL ratios to the specification over the available post-2000 sample (both with and without a time trend). There is, in fact, a significant negative reaction to NPL only in the case of BOC while a significant positive response is seen for ABC and ICBC in the regressions with the time trend left out. At best, therefore, only BOC shows any signs of being constrained by its level of non-performing loans. Otherwise, we observe a positive reaction to the GDP ratio by ABC and CCB that matches the post-1998 estimation results in Table 6 above. These two banks’ consistently positive and significant responses to this variable imply that they were inclined to lend more to richer

provinces, on average, in the post-2000 period as well as the post-1998 period. The GDP ratio remains insignificant for BOC and ICBC, however. Finally, we see less significant responses to M2 growth and inflation and no significant responses at all to the SOE share.

## CONCLUSIONS

The reallocation of funds to richer provinces seemed, based on the raw data presented earlier in Table 2, to be most dramatic for CCB over the 1994-2004 period. The empirical work offers some confirmation of CCB lending significantly more to richer provinces over the post-1998 and post-2000 sub-samples – whereas no such pattern is evident over the earlier 1994-1998 period during which the national credit plan was in force. More surprisingly, ABC, generally considered the least market-orientated of the four SOCBs, also yields some evidence of moving in this direction while, at the same time, shedding an apparent tendency to lend more to SOE-dominated provinces over the 1994-1998 period. No such obvious shifts are evident for BOC or ICBC, however, suggesting that the overall decline in loan-to-deposit ratios, not surprisingly, is at best only partially captured by the set of factors considered here. Nevertheless, there is at least some tangible evidence of a shift in bank behavior after 1998 accompanied by a reasonably consistent tendency for the SOCBs to lend more when overall liquidity is rising. In contrast to the pre-1998 pattern emphasized by Park and Seht (2001), there is little evidence of lending being SOE-driven over our sample period

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**TABLE 1: Nonperforming Loan Levels of the Big Four State-Owned Banks**

| <b>NPL %</b>         | <b>2005</b> | <b>2004</b> | <b>2003</b> | <b>2002</b> | <b>2001</b> | <b>2000</b> |
|----------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| BOC                  | 4.6         | 5.1         | 15.9        | 22.4        | 27.5        | 26.5        |
| CCB                  | 3.8         | 3.7         | 9.1         | 15.4        | 19.4        | 19.9        |
| ICBC                 | 4.7         | 19.1        | 21.3        | 25.5        | 29.8        | 34.4        |
| ABC                  | 26.3        | 26.8        | 30.7        | 36.7        | 41.4        |             |
| <b>SCB aggregate</b> | <b>10.5</b> | <b>15.6</b> | <b>17.8</b> | <b>23.1</b> | <b>25.4</b> |             |

Note: the NPL figures reflect the five-level reporting standard adopted in 1998.

Source: 2001-2005 data are as listed in Barth and Caprio (2007, p. 43) and the China Banking Regulatory Commission website (<http://www.cbrc.gov.cn>); and 2000 figures are *Bankscope* data given by García-Herrero, Gavilá and Santabárbara (2006, p. 350).

**Table 2: Loan Allocation of the Big Four State Banks**

| <b>ABC</b>       | <b>2004</b> | <b>2003</b> | <b>2002</b> | <b>2001</b> | <b>2000</b> | <b>1999</b> | <b>1998</b> | <b>1997</b> | <b>1996</b> | <b>1995</b> | <b>1994</b> |
|------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>High Tier</b> | 52.4%       | 52.2%       | 52.8%       | 50.9%       | 50.2%       | 48.2%       | 47.2%       | 53.4%       | 49.1%       | 47.5%       | 49.7%       |
| <b>Mid Tier</b>  | 24.7%       | 25.2%       | 22.8%       | 26.5%       | 27.0%       | 29.1%       | 29.7%       | 26.3%       | 28.4%       | 27.9%       | 27.6%       |
| <b>Low Tier</b>  | 22.9%       | 22.6%       | 24.4%       | 22.6%       | 22.8%       | 22.7%       | 23.1%       | 20.3%       | 22.5%       | 24.5%       | 22.7%       |
| <b>BOC</b>       | <b>2004</b> | <b>2003</b> | <b>2002</b> | <b>2001</b> | <b>2000</b> | <b>1999</b> | <b>1998</b> | <b>1997</b> | <b>1996</b> | <b>1995</b> | <b>1994</b> |
| <b>High Tier</b> | 66.5%       | 64.3%       | 64.2%       | 64.8%       | 67.4%       | 62.8%       | 63.0%       | 63.0%       | 63.0%       | 63.8%       | 64.0%       |
| <b>Mid Tier</b>  | 19.5%       | 22.6%       | 23.0%       | 21.2%       | 20.6%       | 23.3%       | 23.3%       | 23.2%       | 21.6%       | 21.1%       | 21.2%       |
| <b>Low Tier</b>  | 14.0%       | 13.0%       | 12.8%       | 13.9%       | 12.1%       | 13.9%       | 13.7%       | 13.8%       | 15.4%       | 15.0%       | 14.8%       |
| <b>CCB</b>       | <b>2004</b> | <b>2003</b> | <b>2002</b> | <b>2001</b> | <b>2000</b> | <b>1999</b> | <b>1998</b> | <b>1997</b> | <b>1996</b> | <b>1995</b> | <b>1994</b> |
| <b>High Tier</b> | 61.4%       | 57.8%       | 58.4%       | 59.6%       | 58.8%       | 56.5%       | 54.0%       | 53.1%       | 50.9%       | 49.3%       | 48.6%       |
| <b>Mid Tier</b>  | 21.0%       | 22.8%       | 23.6%       | 22.2%       | 22.5%       | 23.9%       | 26.3%       | 26.8%       | 27.2%       | 27.3%       | 28.4%       |
| <b>Low Tier</b>  | 17.5%       | 19.4%       | 18.0%       | 18.2%       | 18.7%       | 19.6%       | 19.8%       | 20.0%       | 21.9%       | 23.4%       | 22.9%       |
| <b>ICBC</b>      | <b>2004</b> | <b>2003</b> | <b>2002</b> | <b>2001</b> | <b>2000</b> | <b>1999</b> | <b>1998</b> | <b>1997</b> | <b>1996</b> | <b>1995</b> | <b>1994</b> |
| <b>High Tier</b> | 57.8%       | 58.1%       | 56.3%       | 57.9%       | 57.6%       | 54.9%       | 54.0%       | 53.8%       | 51.9%       | 51.9%       | 51.7%       |
| <b>Mid Tier</b>  | 23.3%       | 23.8%       | 25.2%       | 24.4%       | 24.6%       | 26.0%       | 26.8%       | 27.0%       | 27.7%       | 28.0%       | 28.3%       |
| <b>Low Tier</b>  | 18.9%       | 18.1%       | 18.5%       | 17.7%       | 17.8%       | 19.1%       | 19.1%       | 19.2%       | 20.4%       | 20.2%       | 20.0%       |

Notes:

China's 31 provinces, municipalities, and administrative regions are divided into 3 tiers according to their relative rankings based on 2001-2004 GDP.

Foreign currency loans and deposits are included from 2000 with the \$US amounts converted into RMB using the 8.28 fixed exchange rate that applied through July 2005.

Source: *Almanac of China's Finance and Banking*, Beijing, China, 1995-2005.

**Table 3: Summary Statistics for the Panel Data Set**

|  |      | Number of Observations | Mean | Standard Deviation | Minimum | Maximum |
|--|------|------------------------|------|--------------------|---------|---------|
| Loan/Deposit Ratio   | ABC  | 337                    | 0.94 | 0.26               | 0.10    | 1.98    |
|  | BOC  | 338                    | 0.85 | 0.39               | 0.08    | 4.62    |
|  | CCB  | 341                    | 0.76 | 0.32               | 0.00    | 4.76    |
|  | ICBC | 330                    | 0.91 | 0.23               | 0.26    | 1.58    |
| SOE Output Share   |      | 338                    | 0.40 | 0.19               | 0.02    | 0.94    |
| GDP Ratio  |      | 338                    | 1.20 | 0.87               | 0.36    | 5.24    |
| Deposits<br>(in constant value units<br>of 10 million RMB) | ABC  | 337                    | 0.54 | 0.55               | 0.02    | 3.71    |
|  | BOC  | 338                    | 0.39 | 0.62               | 0.00    | 4.70    |
|  | CCB  | 341                    | 0.55 | 0.57               | 0.06    | 3.87    |
|  | ICBC | 341                    | 0.92 | 1.06               | 0.00    | 7.48    |
| Inflation Rate   |      | 341                    | 0.05 | 0.08               | -0.01   | 0.24    |
| M2 Growth Rate   |      | 341                    | 0.19 | 0.07               | 0.12    | 0.35    |
| NPL Ratio*   | ABC  | 124                    | 0.34 | 0.06               | 0.27    | 0.41    |
|  | BOC  | 155                    | 0.19 | 0.08               | 0.05    | 0.28    |
|  | CCB  | 155                    | 0.14 | 0.06               | 0.04    | 0.20    |
|  | ICBC | 155                    | 0.26 | 0.06               | 0.19    | 0.34    |

\*Note: NPL data are available only from 2000 to 2004

**Table 4a: Correlation Coefficients for the Bank-Specific Variables**

|                    |      | Deposits | NPL Ratio | SOE Share | GDP Ratio | Inflation Rate | M2 Growth Rate |
|--------------------|------|----------|-----------|-----------|-----------|----------------|----------------|
| Loan/Deposit Ratio | ABC  | -0.46    | 0.17      | 0.32      | -0.38     | 0.02           | 0.05           |
|                    | BOC  | -0.29    | -0.18     | 0.15      | 0.03      | 0.42           | 0.41           |
|                    | CCB  | -0.27    | -0.06     | 0.20      | -0.09     | 0.35           | 0.36           |
|                    | ICBC | -0.59    | 0.08      | 0.21      | -0.40     | 0.40           | 0.42           |
| Deposits           | ABC  | -        | -0.19     | -0.55     | 0.41      | -0.29          | -0.31          |
|                    | BOC  | -        | -0.19     | -0.39     | 0.44      | -0.22          | -0.25          |
|                    | CCB  | -        | -0.20     | -0.46     | 0.53      | -0.31          | -0.33          |
|                    | ICBC | -        | -0.12     | -0.27     | 0.62      | -0.26          | -0.28          |
| NPL Ratio          | ABC  | -        | -         | 0.08      | -0.04     | -0.73          | -0.21          |
|                    | BOC  | -        | -         | 0.09      | -0.04     | -0.84          | -0.26          |
|                    | CCB  | -        | -         | 0.10      | -0.04     | -0.79          | -0.41          |
|                    | ICBC | -        | -         | 0.13      | -0.04     | -0.61          | -0.62          |

**Table 4 b: Correlation Coefficients for the Region-Specific and Macroeconomic Variables**

|                | SOE Share | GDP Ratio | Inflation Rate | M2 Growth Rate |
|----------------|-----------|-----------|----------------|----------------|
| SOE Share      | 1         |           |                |                |
| GDP Ratio      | -0.20     | 1         |                |                |
| Inflation Rate | 0.18      | -0.04     | 1              |                |
| M2 Growth Rate | 0.17      | -0.04     | 0.94           | 1              |

**Table 5: Full Sample Estimation for the Big Four State Banks**

Dependent Variable = loan/deposit ratio for each bank

Estimation Method = panel with fixed effects

Sample Period = 1994-2004

|                | ABC                | BOC                | CCB                | ICBC               |
|----------------|--------------------|--------------------|--------------------|--------------------|
| SOE Share      | 0.32**<br>(0.16)   | 1.10<br>(1.34)     | -0.16<br>(0.50)    | 0.08<br>(0.11)     |
| GDP Ratio      | 0.11*<br>(0.06)    | -0.59***<br>(0.14) | 0.13<br>(0.13)     | 0.10**<br>(0.05)   |
| Deposits       | 0.03<br>(0.03)     | -0.08<br>(0.08)    | 0.28**<br>(0.12)   | 0.03***<br>(0.01)  |
| Inflation Rate | -1.36***<br>(0.28) | 1.50<br>(0.93)     | 0.22<br>(0.41)     | -0.15<br>(0.19)    |
| M2 Growth Rate | 0.01<br>(0.31)     | -0.21<br>(0.85)    | 0.71**<br>(0.31)   | 0.43**<br>(0.21)   |
| Trend          | -0.05***<br>(0.01) | 0.003<br>(0.03)    | -0.05***<br>(0.01) | -0.04***<br>(0.00) |
| Constant       | 1.03***<br>(0.10)  | 1.09***<br>(0.58)  | 0.67**<br>(0.33)   | 0.89***<br>(0.09)  |
| R-Squared      | 0.376              | 0.304              | 0.255              | 0.729              |
| Number of Obs. | 337                | 338                | 338                | 338                |

Notes: Robust standard errors are in parentheses, and

\*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% critical levels, respectively

**Table 6: Estimation with the Sample Split in 1998**

Dependent Variable = loan/deposit ratio for each bank

Estimation Method = panel with fixed effects

Sub-Samples = 1994-1998 & 1999-2004

|                | ABC                |                    | BOC               |                   | CCB             |                    | ICBC               |                    |
|----------------|--------------------|--------------------|-------------------|-------------------|-----------------|--------------------|--------------------|--------------------|
|                | Pre-98             | Post-98            | Pre-98            | Post-98           | Pre-98          | Post-98            | Pre-98             | Post-98            |
| SOE Share      | -0.13<br>(0.27)    | 0.36<br>(0.24)     | -0.07<br>(0.22)   | 4.90<br>(3.88)    | -0.30<br>(0.80) | 0.20<br>(0.18)     | 0.09<br>(0.12)     | -0.07<br>(0.27)    |
| GDP Ratio      | -0.26**<br>(0.11)  | 0.44***<br>(0.11)  | -0.15<br>(0.18)   | 0.01<br>(0.47)    | -0.15<br>(0.34) | 0.43***<br>(0.10)  | -0.02<br>(0.09)    | 0.15<br>(0.13)     |
| Deposits       | -0.13<br>(0.09)    | 0.17***<br>(0.05)  | 0.18*<br>(0.10)   | -0.26**<br>(0.12) | 0.60<br>(0.38)  | -0.03<br>(0.04)    | -0.02<br>(0.03)    | -0.01<br>(0.02)    |
| Inflation Rate | 2.04***<br>(0.57)  | 3.10*<br>(1.65)    | 1.69***<br>(0.59) | -2.70<br>(2.60)   | 2.80<br>(1.83)  | 0.91<br>(0.69)     | 1.28***<br>(0.26)  | 1.27***<br>(0.44)  |
| M2 Growth Rate | 4.63***<br>(0.69)  | 1.89***<br>(0.63)  | -0.87<br>(0.66)   | -1.71<br>(1.74)   | -0.69<br>(1.57) | 0.85**<br>(0.35)   | -1.23***<br>(0.38) | 1.23***<br>(0.30)  |
| Trend          | 0.41***<br>(0.06)  | -0.12***<br>(0.02) | -0.03<br>(0.05)   | 0.13*<br>(0.07)   | 0.03<br>(0.10)  | -0.02***<br>(0.01) | -0.02<br>(0.03)    | -0.05***<br>(0.01) |
| Constant       | -1.16***<br>(0.33) | 0.81***<br>(0.16)  | 1.34***<br>(0.37) | -1.81<br>(2.27)   | 0.79<br>(0.60)  | 0.08<br>(0.16)     | 1.24***<br>(0.21)  | 0.85***<br>(0.19)  |
| R-Squared      | 0.479              | 0.592              | 0.639             | 0.179             | 0.087           | 0.192              | 0.619              | 0.408              |
| Number of Obs. | 151                | 186                | 152               | 186               | 152             | 186                | 147                | 180                |

Notes: Robust standard errors are in parentheses, and

\*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% critical levels, respectively

**Table 7: Estimation over the Full Sample allowing for Time Trend Interactions**

Dependent Variable = loan/deposit ratio for each bank

Estimation Method = panel with fixed effects

Sample Period = 1994-2004

|  | ABC                | BOC               | CCB               | ICBC               |
|--|--------------------|-------------------|-------------------|--------------------|
| SOE Share  | 0.33*<br>(0.17)    | 1.18<br>(0.97)    | 0.36<br>(0.41)    | 0.19<br>(0.12)     |
| GDP Ratio  | -0.05<br>(0.13)    | 0.33<br>(0.35)    | -0.06<br>(0.46)   | 0.11<br>(0.08)     |
| Deposits   | -0.65***<br>(0.13) | -0.30<br>(0.24)   | 0.48<br>(0.30)    | -0.10**<br>(0.04)  |
| Inflation Rate   | -3.43***<br>(0.95) | -3.10*<br>(1.65)  | 2.29<br>(1.70)    | 0.03<br>(0.56)     |
| M2 Growth Rate   | 2.40*<br>(1.41)    | 4.51**<br>(2.21)  | -2.46<br>(1.89)   | -0.33<br>(0.80)    |
| SOE x Trend  | -0.01<br>(0.02)    | 0.04<br>(0.08)    | -0.10**<br>(0.04) | 0.00<br>(0.01)     |
| GDP Ratio x Trend                                      | 0.01<br>(0.00)     | -0.04**<br>(0.02) | 0.01<br>(0.02)    | 0.00<br>(0.00)     |
| Deposits x Trend                                       | 0.05***<br>(0.01)  | 0.03<br>(0.02)    | -0.03<br>(0.02)   | 0.01***<br>(0.00)  |
| Inflation x Trend                                      | 0.10<br>(0.08)     | 0.63<br>(0.38)    | 0.01*<br>(0.12)   | 0.01<br>(0.06)     |
| M2 Growth x Trend                                      | -0.35**<br>(0.17)  | -0.51<br>(0.32)   | 0.41<br>(0.23)    | 0.10<br>(0.10)     |
| Trend  | 0.00<br>(0.03)     | 0.08<br>(0.06)    | -0.07*<br>(0.04)  | -0.06***<br>(0.02) |
| Constant   | 1.03***<br>(0.31)  | -0.57<br>(0.90)   | 1.09<br>(0.77)    | 1.07***<br>(0.18)  |
| R-Squared  | 0.440              | 0.350             | 0.302             | 0.741              |
| Number of Obs.   | 337                | 338               | 338               | 327                |
| Joint Significance of Time Trend Interactions (F-Test) | 7.42***            | 4.04***           | 3.49***           | 2.80**             |

Notes: Robust standard errors are in parentheses, and

\*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% critical levels, respectively

**Table 8: Estimation adding the NPL Ratio**

Dependent Variable = loan/deposit ratio for each bank

Estimation Method = panel with fixed effects

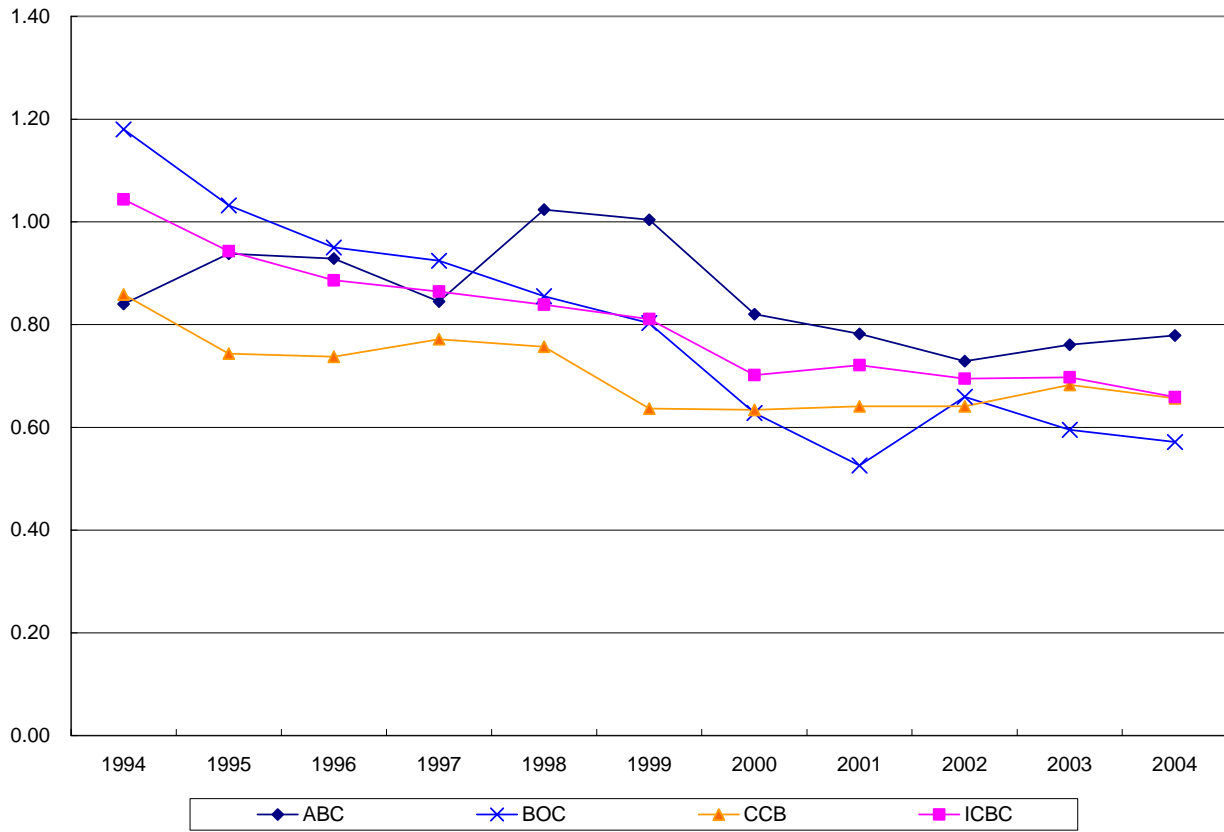
Sample Period = 2000-2004

|                | ABC               | BOC                |                    | CCB               |                   | ICBC            |                   |
|----------------|-------------------|--------------------|--------------------|-------------------|-------------------|-----------------|-------------------|
|                | No Trend          | With Trend         | No Trend           | With Trend        | No Trend          | With Trend      | No Trend          |
| SOE Share      | 0.27<br>(0.23)    | 6.14<br>(4.03)     | 6.05<br>(4.03)     | 0.27<br>(0.20)    | 0.28<br>(0.19)    | -0.11<br>(0.24) | -0.08<br>(0.23)   |
| GDP Ratio      | 0.35*<br>(0.18)   | 0.20<br>(0.53)     | 0.25<br>(0.54)     | 0.38***<br>(0.14) | 0.38***<br>(0.13) | 0.06<br>(0.14)  | 0.06<br>(0.14)    |
| Deposits       | 0.08<br>(0.06)    | -0.36***<br>(0.13) | -0.35***<br>(0.13) | -0.03<br>(0.04)   | -0.04<br>(0.04)   | -0.04<br>(0.03) | -0.04<br>(0.03)   |
| NPL Ratio      | 1.38***<br>(0.39) | -2.41**<br>(1.05)  | -3.90***<br>(1.30) | -0.41<br>(0.34)   | 0.13<br>(0.19)    | -4.04<br>(2.95) | 0.41**<br>(0.20)  |
| Inflation Rate | 2.03<br>(1.59)    | -8.84***<br>(2.74) | -7.91***<br>(2.67) | 0.48<br>(0.70)    | 0.45<br>(0.71)    | 0.88*<br>(0.53) | 0.41<br>(0.41)    |
| M2 Growth Rate | 1.12*<br>(0.65)   | -2.75<br>(2.33)    | -0.52<br>(1.90)    | 0.83**<br>(0.33)  | 0.55*<br>(0.32)   | -0.53<br>(0.79) | 0.60*<br>(0.31)   |
| Trend          |                   | 0.12<br>(0.09)     |                    | -0.03*<br>(0.02)  |                   | -0.17<br>(0.11) |                   |
| Constant       | -0.47<br>(0.41)   | -1.69<br>(2.22)    | -0.75<br>(1.87)    | 0.28<br>(0.30)    | -0.00<br>(0.22)   | 3.43*<br>(1.93) | 0.58***<br>(0.20) |
| R-Squared      | 0.219             | 0.278              | 0.271              | 0.192             | 0.171             | 0.144           | 0.129             |
| Number of Obs. | 124               | 155                | 155                | 155               | 155               | 150             | 150               |

Notes: Regression with trend could not be performed for ABC owing to singularity problems associated with high correlation between the NPL ratio and the time trend, robust standard errors are in parentheses, and

\*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% critical levels, respectively

**Figure 1: Loan to Deposit Ratios for the Big Four State Banks**



Note:

Foreign currency loans and deposits are included from 2000 with the \$US amounts converted into RMB using the 8.28 fixed exchange rate that applied through July 2005.

Source: *Almanac of China's Finance and Banking*, Beijing, China, 1995-2005.