

# LEGISLATIVE IMPACT ON LENDING: CREDIT RISK MANAGEMENT IN CHINA

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# Legislative Impact on Lending: Credit Risk Management in China

## Abstract

In 1995 the Chinese government enacted the *Act on Commercial Banks (1995)* to enforce and regulate commercial banking activities. The government envisaged that the Act, together with other bank reforms, would improve risk management practice among commercial banks, and hence the banks would reduce and ultimately stop policy (local government directed) lending to state-owned enterprises (SOEs). This article examines the lending behavior of a government-controlled commercial bank before and after the passage of the Act. Based upon a framework in which the lending rate, maturity, and collateral status are written into the loan contract at the same time, we find that the bank tightened control of the credit risk of borrowers after the passage of the Act. We also find that SOEs are charged a rate of interest higher than that charged to private firms by six basis points after controlling for other factors.

**Key words:** Credit risk; Banking regulation; China

## 1. Introduction

Governments regulate credit markets with a variety of goals in mind. This is based on the principle that good regulation and supervision can improve bank performance and that the improved performance will in turn accelerate economic and financial development. Banking regulators in China share these general objectives. However, from 1986 to the early 1990s, there existed a weak legal system for banking regulation and supervision in China (Liu, 2000). Most banks were controlled by local governments through administrative means and hardly regarded as commercial entities. Instead they were treated by local government, metaphorically as ‘automatic teller machines (ATMs)’ from which they withdrew money that they directed to state owned enterprises (SOEs). However, many of the SOEs were unprofitable or inefficient.

As a result, policy (local government directed lending) lending accounted for between 20 and 60 per cent of the assets of four ‘state-specialized’ banks (Lou 1993). Consequently, a vast number of non-performing loans (NPLs thereafter) accumulated:

*“...past due loans, doubtful loans, and bad debt constituted 12, 8, and two per cent, respectively, of the combined value of the loan portfolios of the four largest state-owned banks at year-end 1995”*

(Lardy 1998, 119).

The large proportion of NPLs seriously affected the profitability of banks, such that the return on assets of banks decreased from 1.4 per cent in 1985 to 0.3 per cent by 1994 (Lardy 1998).

Further, there is an issue of moral hazard problem within state banks. That is, due to the nature of state ownership, state banks have few incentives to practice risk management. Both monitoring and screening are seldom used to reduce risks in lending.

Having recognized the problems of state banks, the central government addressed the issue in the early 1990s by enacting the *Act on Commercial Banks* (1995). Following this Act, the nature of state banks was changed substantially. They were no longer policy banks or state-specialized banks, but instead became state-owned commercial banks. The two types of banks differ in their responsibility for the bank’s profitability. State-specialized banks had been established to supplement the work of government in providing funds to SOEs. It did not matter whether loans were commercially desirable because the government was responsible for any losses. In contrast, commercial banks set up criteria to screen borrowers. The Act signaled that commercial banks would be responsible for their profits and losses after 1996. To make this move credible, the central government implemented a series of reforms around 1995. The overarching objective was to motivate the banks to mitigate moral hazard through good credit risk management.

Skeptics countered that despite the intentions of the central government, the change in the banks might not necessarily be effective, citing three main issues. The first factor was the intervention of local governments in bank lending decisions. Many state banks were required to lend to SOEs to support the local economy. However, SOEs suffered from many problems (Qian 2000). If such local government-directed lending persisted after the *Act on Commercial Banks*, the Act would be deemed ineffective, impacting the bank's profitability. The second factor is the moral hazard problem within state banks, which arise due to the state banks' incentive to shrink from optimal monitoring. The third factor is the information asymmetry between lenders and borrowers, which exists for all other countries.

In this article, we assess the impact of the *Act on Commercial Banks* on the lending behavior of state banks. Employing a unique database from a state-owned bank in China, we attempt to determine whether or not the quality of the lending decisions of the bank improved after 1995 when the *Act on Commercial Banks* was enacted. It is hypothesized that banks strengthened their credit risk control after 1995.

We believe that this is a neglected aspect of Chinese bank lending behavior, as there are only a few studies of the performance of state banks in China. Cull and Xu (2000, 2003) studied banking reform before 1995, finding that bank employees' assessment of SOEs' credit risks was better than the assessment by bureaucrats and there is a positive relationship between bank finance and borrowers' profitability. However, the relationships are weakened after 1990 because banks imposed soft budget constraints on SOEs. In this article, we provide new evidence on recent developments in bank lending. We use 2,459 commercial loans from a branch of a government-owned bank. We split the sample into two periods, 1990-1995 and 1995- 2004, and divide borrowers into two groups, SOEs and private firms. Using a simultaneous framework in which the lending rate, maturity, and collateral status are written

into the loan contract, we compare the determinants of the interest rate spread in the two periods. Three main findings are presented. First, after 1995, the state bank undertook more rigid screening of its borrowers after 1995. Second, we find that the SOEs are charged an interest rate higher than that of private companies by six basis points. Third, we find that shortening maturity and asking for collateral are used together in the state bank to reduce the risk arise from information asymmetry. Overall, the results show the change in government bank-lending strategies and the positive effects that the enactments of the Act have had on Chinese commercial banks.

To the best of our knowledge, this is the first empirical research that reports comprehensive evidence on the pricing strategy of a government owned commercial bank in China. The results of this study provide useful statistics for policy makers and investors to evaluate the performance of government banks over the past 14 years. The study also tests a number of hypotheses in the financial intermediation theory within the context of China. Lastly, unlike most papers on bank lending that view loan contract terms independently, we allow for interdependence between loan price and non-price terms in determination of loan contract.

Section two briefly outlines banking reform in China. Section three presents a brief review of relevant research and present theoretical predications. Section four describes the sample and data. Section five discusses the methodology. Section six presents the empirical results and section seven offers up our conclusions.

## **2. A Short History of Chinese Banking Reforms**

The Chinese economic reform process officially began in December 1978 at the Third Plenum of the Eleventh Central Committee of the Communist Party of China. Banking reform was necessarily part of the economic reform, and comprised three stages. The first ran from 1978 to

1986. In the initial stage of the reform, the government implemented a new policy that required banks to take over financing functions from the government, which had granted funds to SOEs without interest rate charges. This was an important step towards a market economy because funding was now financed through market-based bank lending. It was expected that the banks would monitor the use of funds and screen good borrowers from bad ones. Gradually, banks expanded their business and dominated the deposit and lending market. However, the development of banking regulations did not match the growth of banks. The People's Bank of China (People's Bank hereafter) was still unable to efficiently manage monetary policy, bank supervision, and other financial activities. Therefore, the first stage of the reform was to reposition the People's Bank to make it viable in an emerging market economy (for example, the Bank handed over the deposit and lending business to newly established state-owned specialized banks).

The second stage took place between 1986 and 1994. In 1986, the *Provisional Rules Governing Banks* were issued. They listed the nature, responsibilities, and business boundaries of the People's Bank, state-owned specialized banks, and other financial intermediaries. The *Rules* were officially acknowledged that the banking system had changed from being a one-tier system (the People's Bank only) to a two-tier system (the People's Bank and specialized banks and other financial intermediaries). New financial institutions were permitted entry to the banking market, and most of them were set up as joint stock banks the shareholders of which were the Ministry of Finance, central government controlled conglomerates, or local governments.

The third stage began in 1995 and continues today. China is pushing ahead with reforms in banking as it aims to transform former stated-owned specialized banks and newly established banks into commercial banks. To help commercial banks to grant commercially-oriented loans,

China established three new ‘policy’ banks from 1993-1994 to take over the policy lending loans from the state-owned specialized banks. In 1995, the legal basis of the banking regulation system was established by implementing the *Act of the People’s Republic of China on Commercial Banks* (1995) and the *Act of the People’s Republic of China on the People’s Bank of China* (1995), along with a number of additional administrative rules and regulations. The key aims of the legislation were to enhance the awareness of credit risk in the lending business among banks (paralleling similar move by the Bank for International Settlements – Basel Committee on Banking Supervision, 1999) and to make commercial banks accountable for profitability. The *Act on Commercial Banks* requires banks to operate prudential banking operations.

To improve risk management within banks, in 1998 China adopted a five-tier international classification system that ties risk to loan quality on an ongoing basis (World Bank, 2002). The new system replaced the old credit control system, which had underestimated the credit risk because it could only recognize default risk after a loan had defaulted.

Besides risk management in banks, an important factor that can improve a bank’s risk evaluation of borrowers is related to the Credit Register and Check System (CRSC hereafter), which was introduced in 1997 by the People’s Bank. This database collects and provides financial information and past loan records of borrowers to banks. To begin, every borrower applies for a loan card from the People’s Bank. Each loan card has a unique loan card number. Using this loan card number in the CRSC, banks have the right to check the past loan records and update the current loan performance of each borrower. Key information provided includes the interest rate, loan size, maturity, financial information, unpaid interest, and history of litigation. As the CRSC applies to all enterprises in the country, the information that it collects

is disclosed to all banks, but the CRSC cannot disclose the name of a bank that has given the loan.

### 3. Theoretical prediction

As reviewed in the previous sections, the policy lending problem is mostly solved by setting up three policy lending banks. The moral hazard problem within state banks is to be solved by having *Act on Commercial Banks*. There is still left a third element of information asymmetry between borrowers and lenders. Below we explain how different means can be taken in the state bank to reduce the risk arise from information asymmetry in the context of China.

Collateral status is an important feature to reduce risk arises from adverse selection and moral hazard problem. Both adverse selection and moral hazard model argues that the use of collateral can minimize the agency costs, but they provide different predictions of what type of borrowers are more likely to provide collateral. The adverse selection model (Bester, 1985, and Besanko and Thakor, 1987) argues that banks have less information about risk, thus banks would ask borrowers to post collateral to signal the quality. These models predict that better-quality borrowers would more likely to provide collateral and get lower rate. On the other hand, the moral hazard model states that, after obtaining a loan, borrowers have incentives for asset-substitution when firms take risky debt. These incentives are stronger for low-quality borrowers. Accordingly, banks can ask the borrowers to commit to lower asset substitution by providing collateral. These models (Holmstrom and Tirole, 1997 and Boot et al. 1991) predict that low-quality borrowers are more likely to provide collateral and charged higher rate. It is not clear which problem is more serious in China so we let the empirical result speak.

Similar prediction can be applied to maturity as it is often used by the bank to reduce risk. Furthermore, the agency cost can be minimized by two mechanisms: (i) shortening maturity



and asking for collateral together and (ii) either shortening maturity or asking for collateral. The first mechanism is often viewed that collateral and maturity are complementary to each other. If this is true, we expect to have negative relationship between the two. The second mechanism is viewed that collateral and maturity are substitute, and are expected to have positive relationship. In China, the institutional and legal development are not well developed and the history of borrowers are short, we expect the information asymmetry is more serious than other developed countries, and predict that the bank would use both collateral and maturity to minimize the risk. Thus we expect to see a negative relation between collateral and maturity.

Relationship lending is also widely studied in the banking literature. The impact of the bank-borrower relationship is captured in relationship length. Conditional on its past experience with the borrower, the lender now expects loans to be less risky. This should reduce the lending rate of the loan over time. However, on the minus side, a credible long-term relationship may leave the borrower and bank locked in to one another, so the borrower may exploit the bank by paying lower interest rates or the bank may exploit the borrower and by charging them higher interest rates (Sharpe 1990, Rajan 1992). Therefore, relationship lending has both upside and downside risk. Which of these is dominant depends on the nature of both the borrowers and the bank. Peterson and Rajan (1994) study the impact of relationship lending on the availability and cost of funds to the borrower. They find that close ties between a firm and its creditor are valuable and that this close relationship increases the availability of financing to the borrower, but not the cost of financing. We are not certain which effect the relationship lending has in China.

Boot and Thakor (1994) consider the bank-borrower relationship using a model of multi-period loan contracts in which the lending rate and collateral are determining factors. They argue that long-term contracting under a durable relationship enables the bank to effectively

charge lending rates for borrowers through time by reducing the use of collateral. Therefore, banks require collateral from new borrowers and do not require collateral from established borrowers. Their study suggests a negative relationship between the length of a bank-borrower relationship and collateral status. We expect to find this negative relationship in context of China.

Diamond (1991) examines how borrowers choose a maturity structure and how their choice depends on their credit rating. The research assumes that a firm is subject to liquidation risk, which is defined as the risk that a firm is unable to pay back its debt and thus will be liquidated by lenders. He argues that good borrowers prefer a short-term debt contract because they can get better lending rates for refinancing when good news arrives. Bad borrowers prefer a long-term debt contract because the liquidation risk is lower compared to the liquidation risk under a short-term debt contract. However, borrowers with very poor rating can borrow only short-term debt because they are rationed out of the long-term debt market. Thus, we expect that borrowers in China have such preferences and expect to find non-monotonic relation between a firm's credit rating and its debt maturity.

#### **4. Data and sample selection**

The data we use is based on records of 2,459 commercial loans (after excluding some unusual loans) drawn down between 1990 to 2004 from a branch of a government-owned nationwide commercial bank (Bank A) with over 30 per cent state shareholding (the largest in the bank). These are current available best databases that have complete data series. No missing values for any observation and any variable. It is all computer-stored, and has been corrected (if there is any mistake) by the internal examiners. Data stored in this database are for internal use, and should not have fake data. They are not allowed to revise the programming. This government-

controlled joint stock bank had more than 2,000 branches and sub-branches and more than 50,000 employees across China by the end of 2004. It is one of truly national and general-purpose banks, granting loans across industries to small-, medium-, and large-sized firms. The branch that we examine is located in the middle region of China. It has 25 sub-branches under its control. We believe this sample fairly reflects the general picture of the loan business in China given that the reforms in banks and SOEs in the middle region are modest compared to those in the coastal region. There were 654 borrowers, who, on average, had had more than three loan transactions with the bank. For each loan, we collected information on the contract terms and borrower characteristics. We split the sample into two periods, 1990-1995 and 1995-2004, to examine the impact of the *Act on Commercial Banks* on the lending behavior of a government-controlled commercial bank, and divide borrowers into two groups, SOEs and private firms.

One important fact in the loan business in China is that the interest rate is censored (centrally controlled). The People's Bank sets the basic interest (prime) rate and allows commercial banks to determine the lending rate within a stipulated band around the prime rate. The upper and lower limits vary from time to time, and the band has a tendency to widen. The first time that this band was set within the sample period was 1990. However, at that time, censoring was not binding until 1995. On October 23, 1997, the People's Bank set the bank rate at  $\pm 10$  per cent of the basic interest rate for short-term loans (one-year loans). The latest revision of the band in this sample period was on June 10, 1999, set at -10 percent and +50 per cent of the basic interest rate for both short-term and long-term loans.

Crony lending could be a factor affecting bank lending. However, it is very difficult to identify which loans are crony loans. We observed that there are a few loans that were lend out and then returned within one month time, and the average amount is twice than the average

loan size. It seems that the bank has unusual relationship with those borrowers, which may be crony lending. In the analysis of this paper, we delete those unusual loans (15 observations).

The credit profile we used specified: the characteristics of the borrower (firm size, relationship length with the bank, SOE or not, industry sector); the characteristics of the credit (interest rate spread, amount of loan, maturity, collateral, and guarantees (acceptance bill)); and the *ex ante* performance of the loan (credit rating). Full variable definitions are given at the appendix.

Table one show the basic data on the lending terms in the sample, broken down into three sets of characteristics: ownership, collateral, and firm size. There are 2,459 loans granted with a mean of RMB6,970,078 (US\$870,000) per loan on average, but loan size varies between RMB22,400 (US\$2800) and RMB300,000,000 (US\$37,500,000)<sup>2</sup>. This wide range of variation is due to the long sample period and the fast growth of Chinese enterprises. The average interest rate spread on a loan in our sample is 0.688. The spread varies considerably, from -4.98 to 5.76 per cent. Despite the large variation, the spread of 95 per cent of loans falls within the band stipulated by the People's Bank.

[TABLE ONE ABOUT HERE]

The maturity of a loan is another important factor in the debt contract. We include it in regression analysis as a proxy for the risk that is associated with the time until the loan is repaid. Most loans in the branch are short term because the average maturity is 9.6 months.

The relationship characteristics control the information and experience effects. We include the natural logarithm of (one plus) the duration of the relationship in our analysis. A

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<sup>2</sup> The exchange rates of the renminbi against the U.S. dollar from 1990 to 2004 are available from the author.

relationship starts from the first time that a firm obtained a loan from the bank. The average duration of the relationship is 1.33 years with the maximum of 7 years.

We also include the bank's own ex ante credit rating on the loan to control the risk. It has a mean of 3.295 on a rating scale where one is the best rating and six is the worst rating. The score is estimated on the basis of a number of factors such as the financial health, industry outlook, past loan performance, and growth prospect of the firm. All these factors are associated with default risk and represent a firm's aggregate risk factor.

Panel B shows that SOEs borrow at a larger volume and have a lower interest rate spread and longer maturity term than do private firms. The favorable terms are supported by their better credit rating and longer relationship with the bank. Panel C shows that collateral loans are granted at a larger volume and higher interest spread. These loans have a poorer credit rating than have noncollateral loans. This result is consistent with the regulations that are set by the People's Bank and the findings of Berger and Udell (1990) that collateral is most frequently associated with riskier borrowers and riskier loans. Panel D compares the loan characteristics for different borrowers. Small firms borrow at low volume, higher interest rates, and for shorter periods. This is probably because their credit rating is poor and their relationship length with the bank is shorter. The situation is reversed for large borrowers. In general, as small firms are more likely to be a greater risk than are large borrowers, the loan terms are less favorable to small firms than to large firms.

In summary, table one gives a general picture of the loan characteristics. We find that favorable loan terms are granted when borrowers have a good credit rating and longer relationship with the bank. Firm size and collateral status are associated with the risk (credit rating) as well.

Table two describes the debt contract terms, borrower characteristics, and the bank's industry portfolio for SOEs and private firms for the two sub-sample periods.

[TABLE TWO ABOUT HERE]

Panel A in table two shows that the volume of the loan expands to a size six times larger than it was in the first sample period, which suggests the strong financial needs of borrowers. The interest rate spread declines from 2.5 to 2.6 per cent to 0.4 to 0.6 per cent over the sample period, which may largely result from the increased competition among domestic banks. This decline is more severe for SOEs than for private firms. The maturity of the loan is lengthier, especially for private firms. In general, the average maturity is less than one year, which suggests that most of the loans are short term and used as working capital. With regard to credit rating, we find that the average credit rating of SOEs (3.026) is better than that of private firms (3.489). Finally, the relationship length is longer for borrowers in the second sample period than in the first, and it is longer for SOEs than for private firms.

Panel B shows the collateral status and firm characteristics for the two periods and two types of enterprises, respectively. Since 1995, 70 per cent of private borrowers have provided collateral or guarantees to the bank, while 50 per cent of SOEs have done so. The borrower's size is not equally distributed. Most SOEs are medium sized, while most private firms are small sized.

Panel C shows the industry distribution of granted loans. For the first sample period, we find that for SOEs the loans are mainly granted to the manufacturing, commercial, and foreign trade industries, and there is not one loan given to any private firms in foreign trade before 1995. This is largely due to the regulation of the foreign trade business. Moreover, it might have been too risky at that time for a private firm, located in the middle region of China, to do international trade in the early years of the economic reform. During the period from 1995-

2004, we find that the industry distribution is more diversified for the two types of firms. The bank grants more loans in the commercial sector and fewer loans in the manufacturing sector for private borrowers. The loans in the private commercial sector account for 42.7 per cent of the loans that are granted to private firms compared to 29.1 per cent in the manufacturing sector. The bank also grants fewer loans in the manufacturing sector and more loans in the foreign trade sector to SOEs.

## 5. Methodology and results

Our paper follows the studies of Diamond (1991), Boot and Thakor (1994), and Rajan (1992) and tests their predictions in the simultaneous equation framework that is proposed in Dennis et al. (2000). To reflect the joint consideration of the contract terms, they model the choice of maturity and collateral status first, and then model the lending rate and commitment fee, which are determined by the choice of maturity and collateral status. We follow their methodology, but consider only the first three contract terms and ignore commitment fee because the bank in our sample does not have a commitment fee in its loan pricing. The model takes the following form:

$$\text{Maturity} = \gamma_1 \text{Collateral} + \beta'_1 X_1 + e_1, \quad \text{Equation (1)}$$

$$\text{Collateral} = \gamma_2 \text{Maturity} + \beta'_2 X_2 + e_2, \quad \text{Equation (2)}$$

$$\text{Interest rate spread} = \gamma_3 \text{Collateral} + \gamma_4 \text{Maturity} + \beta'_3 X_3 + e_3, \quad \text{Equation (3)}$$

where *Collateral* is a discrete [1,0] variable, and interest rate spread is the difference between the loan rate and prime rate;  $\gamma_i$  are the coefficients of the interdependence effects between the contract terms;  $X_k$  ( $k = 1$  to  $3$ ) are the vectors of the other explanatory variables with  $\beta_k$

representing the effect of the contract terms on those three debt features; and  $e_K$  are the residuals.

Following Diamond (1991), we include firm size, credit rating, and the square of credit rating as explanatory variables in equation (1) to capture the non-monotonic relationship between credit rating and the maturity of a loan. In equation (2) we include firm size, credit rating, and relationship length as explanatory variables to test Boot and Thakor's (1994) finding that there is a negative relationship between loan collateral and relationship length.

A difficulty in estimating these simultaneous equations is that the dependent variables include a mix of discrete choice (collateral), continuous (maturity), and censored (interest rate) variables. Our approach is to apply a two-stage estimation procedure for simultaneous equation models with limited dependent variables. In the first stage, we use maximum likelihood method to estimate a reduced form model for each of the endogenous variables. These may be written as

$$\text{Maturity} = \Pi_1 X + \varepsilon_1, \quad \text{Equation (4)}$$

$$\text{Collateral} = \Pi_2 X + \varepsilon_2, \quad \text{Equation (5)}$$

$$\text{Interest rate spread} = \Pi_3 X + \varepsilon_3, \quad \text{Equation (6)}$$

Where  $X$  is the set of all exogenous variables in the  $X_k$  vectors, and  $\varepsilon_k$  are the reduced form residuals. Then, in the second stage the structural parameters are estimated by substituting the reduced form fitted values for the endogenous variables using the least squares methods.



## 5.1 Bank Lending Rates Before and After 1995

Table three presents the regression estimation of equations (1), (2), and (3). We split the sample into two periods (1990-1995 and 1997-2004) for analysis because the data on credit ratings begin in 1997. The regression results in columns three and six show the determinants of the interest rate spreads during the two periods, respectively. There are two distinct features that appear in column six but not in column three. One is that the coefficient on *State\*credit\_rating* is significant at 0.046. This coefficient suggests that the interest rate spread increases by 4.6 basis points for state loans if the credit rating changes one point. The credit ratings for private firms are not significant possibly due to the credit rationing effect, that is, bad private borrowers might have been rationed out of the credit market.

[TABLE THREE ABOUT HERE]

Our results suggest that the bank has strengthened credit risk control for SOEs, and here are several possible factors that could drive the results. First, the government intervention is reduced after 1998. In 1998, the People's Bank replaced its 30 provincial branches with nine cross-province regional branches with an aim to reduce the influence of local governments on bank lending activities. The bank officials are replaced by new staff and have little connection with the local government. Second, SOEs are more risky than private firms due to the massive reforms applied to SOEs in late 1990's. The biggest uncertainty associated with SOEs reform is that local government may not bail out SOEs if they were not performing well. These two factors are not applicable to private firms and that could be a reason that the bank would charge slightly higher interest rates for SOEs that have low credit ratings.

Another interesting feature in column six but not in column three is that SOEs pay slightly higher interest rates than do private borrowers by 6.8 basis points from 1997 to 2004. This

result is different from the conventional view that SOEs receive soft loans from state banks. To reconcile the problem, we need to note that the descriptive statistic in table two do show that SOEs are charged lower interest rate on average. However, the descriptive statistic is simply comparing the interest rate differences while the simultaneous regression analysis is based on multiple factors after controlling for endogeneity, interest rate censoring, etc. To enhance the credibility of the results, we interviewed the bank officials, they are not surprising by the result but gave an explanation that the state firms cared less about the borrowing cost, while private firms cared more about the cost of debt, which enable the Bank to charge higher lending rates and take advantage of SOEs. To validate this argument, we split the sample into listed firms versus unlisted firms. Within the listed firm sample, the state borrowers have access to the stock market; we expect that the bank does not have the bargaining power to charge high interest rates. Consistent with this conjecture, we find that the coefficient on *State* is not significant. We also conduct the same analysis for the unlisted firm sample, and the results were similar to the main results in table three.<sup>3</sup>

To make a follow-up investigation, we also report the interest rate charged to SOEs and private firms year by year in panel A of table four. The t statistic is reported after 1994 as there is not enough observation for t statistic before 1994. The differences in interest rate are significant for only three years, suggesting that most of time the SOEs do not necessarily obtain favorable prices. SOEs pay lower interest rate in 1999 and 2004, but they also receive less amount of loan by USD257,000 and USD536,585 on average per each loan. The only puzzling year is 2000, where SOEs receive low lending rate and large amount of loans at similar credit

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<sup>3</sup> The results are not reported here and are available from the author upon request.

rating. The observation in that year is 145, which is not a lot. Thus, the simple statistics do not support the conventional view after the initiation of *Act on Commercial Banks*.

Another way to study whether SOEs receive soft loan is to examine the sample of eliminated customers. Every year, the bank eliminates certain customers, which, by definition, the bank would not give loans to them in the future. Panel B of Table four reports the number of customers being eliminated per year. We find that the number peaks in year 1997, and then goes down. In general, the bank does not eliminate too many or too little SOEs when compared to private borrowers. Thus the sample shows that there is no particular bias in terms of ownership in eliminating poor borrowers.

In column three of Table three, the coefficient on *State* is not significant. It suggests that loan rates were not an important element in the debt contract before the Act.

We continue our comparison for other control factors in columns three and six in table three. In column six, large firms pay 36.9 basis points lower than do small firms and medium firms pay 18.9 basis points lower than do smaller firms. These findings are consistent with those in the literature, that is, large firms pay much lower interest rates than do medium or small firms. This size effect is not found in column three for the first sample period (1990-1995), which indicates the increasing awareness of risks among bank officials and their recognition of firm size as a risk factor.

In columns three and six of table three, the coefficient on fitted collateral is significant at 0.906 and 0.115, respectively. The result is consistent with that of the study of Berger and Udell (1999), that is, riskier borrowers are more likely to pledge collateral. Therefore, they are charged higher lending rates.

In the first sample period, column three shows that borrowers with a longer relationship length are charged lower interest rates than are borrowers with a shorter relation length by

125.6 basis points. This shows that a longer bank-borrower relationship leads to better lending rates for borrowers. However, we do not find evidence of this in the second sample period (in column six), probably due to the strong interest rate censoring that started in 1997 which left the bank limited room to favor long-term customers in terms of the lending rate.

In column three of table three, the coefficient of maturity is significantly negative at the one per cent level: one increase in maturity from, for example, one year to two years, reduces the loan rate by 142.4 basis points. When we tabulate the loan rate versus maturity, we see a clearly downward sloping yield curve, especially for loans with less than one year maturity. The negative effect of maturity on the loan rate is consistent with the result in the study of Degryse and Ongena (2005). They find that the negative relation holds for loans with a maturity shorter than five years, but when loans have a maturity longer than seven years, the increase in the duration increases the lending rate. Thus, the yield curve can be humped with the maturity. Ninety per cent of the 168 bank loans from 1990-1995 have maturities of less than one year. This explains the negative coefficient of maturity in regression.

The coefficients of the contract feature interdependence terms,  $\gamma_i$ , are also of considerable interest. In columns one, two, four and five in table three there is a negative bi-relationship between the collateral status of a loan and the maturity of a loan in both periods, and this relationship is weaker in the period from 1990-1995. This relationship supports our prediction that shortening maturity and asking for collateral are complementary to each other in Chinese banks to reduce information asymmetry.

We also find strong evidence in table three that there is interdependence between lending rate and other contract terms. However, the evidence occurs in the period from 1997-2004, which suggests that the loan pricing mechanism has become more rational. We find a non-

monotonic relation between maturity and credit rating in column four, that is, borrowers with good credit ratings have short-term debt, those with intermediate ratings have long-term debt, and those with poor ratings can only have short-term debt, which is consistent with the result of Diamond (1991). We find a negative relationship between the length of a bank-borrower relationship and secured status in column five, which is consistent with the findings of Boot and Thakor (1994).

In general, the results from table three suggest that the bank tightened control of the credit risk of borrowers after the passage of the Act on Commercial Banks in 1995.

## **6.2 Subsample analysis of credit rating**

We now examine whether or not the credit rating that a bank assigns correctly reflects the financial status of a firm. Panel A of Table five provides the summary statistics of credit rating for each year since 1997. It shows a clear trend that over time, the average rating decreases (implying that the average quality of borrower improves) from 4.8 in 1997 to 2.2 in 2004. To explore whether or not credit rating reflects the financial health of borrowers.

We use Altman's Z score as a proxy for the financial status of the borrower (Altman, 2002). It is a balance-sheet method of determining a company's financial health. We used a subsample of listed companies where we were able to obtain financial statements for the listed firms. There are 17 borrowers with 132 observations from 1997-2004. The Z score is calculated following Altman (2002):

$$Z = 1.2WC\_TA + 1.4RE\_TA + 3.3EBIT\_TA + 0.6MV\_BV + 0.99S\_TA$$

where WC\_TA: working capital/total assets, RE\_TA: retained earnings/total assets, EBIT\_TA: earnings before interest and taxes/total assets, MV\_BV: market value of the equity/book value of total liabilities, S\_TA: sales/total assets, and Z: overall index.

The higher Altman's Z score is, the better the financial health of the borrower. The descriptive statistics and Spearman correlation coefficients for the key variables are reported in panels B and C of table five. In panel B, the credit rating has a mean of 1.65 within a range of one to two. Due to the low variation of *Credit rating*, we use the Spearman rank correlation coefficient to examine the relation between credit rating and Altman's Z score, and with each element of Altman's Z score. The correlation results are presented in panel C. We find that the higher the level of working capital, retained earning, and EBIT are, the better the credit rating of the borrower. The leverage and sales do not have significant effects on credit rating, which may be because most loans have a short-term maturity. Because each loan is granted for 10 months on average, it is not surprising that the bank is more concerned with liquidity and profitability measures than with leverage and sales, which are more useful in long-term loan risk evaluation.

To supplement our analysis, we use censored-normal regression that fits a model of the interest rate spread on Altman's Z score and other independent variables. The censored-normal regression considers a case in which the dependent variable interest rate spreads are censored differently in each year. The results (not reported here for space concern) show that Altman's Z score has a significant negative impact on the interest rate. For a one unit increase in Altman's Z score, the bank decreases the rate by 11.4 basis points for that borrower. *Credit\_rating* still shows a significant impact on the interest rate, which suggests that credit rating captures factors other than financial information.

Taken together, the findings show that financial ratios, particularly liquidity and profitability measures, are related to credit rating, and that the overall financial status of borrowers is correctly priced by the bank.

### **6.3 Non-Performing Loan Performance after the Act on Commercial Banks**

In the above analysis, we find that the bank tightened its risk control of borrowers after the enactment of the *Act on Commercial Banks* in 1995. If the bank has correctly measured the risks, then we can expect a decrease in the number of non-performing loans, which is a key measure of the quality of a bank's assets. Table six reports the ratio of annual nonperforming loans (NPL ratio) to total credit from 1994-2005. The NPL ratio of the bank was reduced from 65 per cent in 1995 to 3.8 per cent in 2005, which means that 65 per cent of the loans turned out to be bad loans in 1995 whereas only 3.8 per cent of the loans turned out to be bad loans in 2005. The trend of a reduced NPL ratio is also found in many commercial banks. By the end of 2006, the NPL ratio in four big state commercial banks was 9.22 per cent and the NPL ratio in the remaining 12 commercial banks was 2.81 per cent.<sup>4</sup> Our finding that the bank strengthened credit risk control supports the decrease in the NPL ratios that are found in many commercial banks. [TABLE SIX ABOUT HERE]

### **6.4 Comparison with other banks and other economies.**

After bank loans are classified as non-performing loans, banks usually would sell NPLs to one of the four asset management corporations (AMC) which focus on the recovery of NPLs. Based on the various publications from China Banking Regulatory Commission; we report the recovery rates from the earliest available date in Table eight. On average, the recovery rate is stable at 24 per cent for asset recovery and 20 per cent for cash recovery from 2004 to 2006.

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<sup>4</sup> The four big state commercial banks are the Industrial and Commercial Bank of China, the Bank of China, China Construction Bank, and the Agricultural Bank of China. The remaining 12 commercial banks are the Bank of Communications Co., Ltd., Shenzhen Development Bank Co., Ltd., Guangdong Development Bank, China Everbright Bank Co., Ltd., Hua Xia Bank Co., Ltd., China Minsheng Banking Corporation Ltd., China Merchants Bank Co., Ltd., Shanghai Pudong Development Bank Co., Ltd., China International Trust and Investment Industrial Bank (CITIC), Industrial Bank Co., Ltd., Evergrowing Bank Co., Ltd., and China Zheshang Bank.

The bank has lowest NPL ratio among all the state-owned commercial banks. This should highly correlated with its tight controls on credit risk.

[TABLE SEVEN ABOUT HERE]

In terms of its efficiency of the overall state bank, Allen et al (2005) compares China with other economies on finance efficiency. China's measure is below all sub-sample of LLSV countries (1997, 1998, 2000). This suggests that China's financial system is under-developed relative to most other countries.

### **6.5 Robustness of the Results**

A criticism that we anticipate concerns the representativeness of the bank's data. An empirical study based on one bank's data may not speak for the changing lending behavior of banks in China. To address this issue, we employed a database from another government-owned joint commercial bank (Bank B) with more than 30 per cent state ownership. Bank B is located in the same area as Bank A. It has nine sub-branches under its jurisdiction. The database we used is from 1999 to 2004. We conducted a similar regression analysis for Bank B. In general, the results show that Bank B carefully screens each borrower. We find that firm size, relation length, and past loan status are important factors in pricing.<sup>5</sup>

## **7. Conclusion**

This empirically analyses the lending behavior of a Chinese government bank before and after the enactment of the *Act on Commercial Banks*, 1995. We have three important findings. First, we find that the bank tightened risk control in granting loans after the passage of the Act on

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<sup>5</sup> The results are not reported here for space reasons. They are available from the author upon request.



Commercial Banks in 1995. To be more specific, the credit rating of the firm, the size of the borrowing firm, the collateral status of a loan, and the ownership of borrowers are all important determining factors in the interest rate. Second, we find that the bank charges SOEs a rate of interest higher than that charged to private firms by 6.8 basis points. Third, we find negative interrelationships between loan maturity and the collateral status of a loan which suggest that shortening maturity and asking for collateral are complementary to each other in reducing information asymmetry between borrowers and lenders.

The findings of this paper are drawn based on the results that obtained from an analysis of data from a provincial branch of a government-controlled commercial bank. Although the data are limited to one commercial bank, our findings should also apply to other government controlled commercial banks in China, because, if the *Act on Commercial Banks* is effective, we would expect that the ratio of nonperforming loans (NPLs) to total credit should decrease for all commercial banks. The evidence shows that the NPL ratio of this bank was reduced, from 65 per cent in 1995 to 3.8 per cent in 2005. This reduction is consistent with that of other nationwide banks, that is, the NPL ratio in four big state commercial banks was reduced to 9.22 per cent, and the NPL ratio in the remaining 12 commercial banks was reduced to 2.81 per cent.<sup>6</sup>

One weakness of this paper is the unavailability of credit ratings and financial data before 1995. Due to the slow development of risk management in the banking industry in China, banks did not perform systematic credit assessment of borrowers in the early 1990s. The unavailability of this data, from another perspective, supports our hypothesis that the state

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<sup>6</sup> The data source is from Wall Street Journal, January 19, 2007. The big four state commercial banks are Industrial & Commercial Bank of China, Bank of China, China Construction Bank, and Agricultural Bank of China. The remaining 12 commercial banks are Bank of Communications Co., Shenzhen Development Bank Co., Guangdong Development Bank, China Everbright Bank Co., Hua Xia Bank Co., China Minsheng Banking Ltd., China Merchants Bank Co., Shanghai Pudong Development Bank Ltd., CITIC Bank, Industrial Bank Co., Evergrowing Bank Co., China Zheshang Bank.

banks only started to control credit risk after the enactment of the Act on Commercial Banks in 1995.

To the best of our knowledge, this is the first empirical research that reports comprehensive evidence of the recent progress of bank lending performance by evaluating the impact of the Act on Commercial Banks. This investigation is timely, as there is ongoing banking reform in China, and it is important because it also provides some insights into a government banking system in transition. The findings of this paper also contribute toward the understanding of the importance of institutional development (i.e., an improved economic and legal environment) in financial markets. Finally, the recent credit risk management failures in the US sub-prime market suggest strongly that a focus on bank lending performance is not solely in the purview of developing nations, but remains a vital issue worldwide.

Appendix A: Variable Definitions

<b>Variable</b>	<b>Description</b>
<b>R_diff</b>	<b>interest rate spread (in percentage form) between the interest rate that is charged on the loan and the prime rates of comparable maturity</b>
<b>Loan size</b>	<b>natural logarithm of the amount of each loan</b>
<b>Amount of loan</b>	<b>The amount of each loan in RMB</b>
<b>Maturity_year</b>	<b>length of repayment of the loan in years</b>
<b>Relation_length</b>	<b>natural logarithm of (one plus) length of relationship with the current borrower</b>
<b>Collateral_loan</b>	<b>1 if the loan is secured via collateral or guaranteed, 0 otherwise</b>
<b>Small firm</b>	<b>1 if the borrower is a small firm, 0 otherwise</b>
<b>Medium firm</b>	<b>1 if the borrower is a medium firm, 0 otherwise</b>
<b>Large firm</b>	<b>1 if the borrower is a large firm, 0 otherwise</b>
<b>State</b>	<b>1 if the borrower is a SOE, 0 otherwise</b>
<b>Private</b>	<b>1 if the borrower is not a SOE, 0 otherwise</b>
<b>Credit_rating</b>	<b>risk profile score for each firm that is made by a bank officer. It ranges from 1 (best) to 6 (worst)</b>
<b>Industry dummies</b>	<b>six industry affiliations—manufacturing, commerce, construction, foreign_trade, real_estate, and nonclassifiable establishments</b>
<b>Acceptance bill</b>	<b>if the borrower purchased the banker's acceptance bill<sup>7</sup> from the bank, 0 otherwise</b>
<b>WC_TA</b>	<b>working capital/total assets</b>
<b>RE_TA</b>	<b>retained earnings/total assets</b>
<b>EBIT_TA</b>	<b>earnings before interest and taxes/total assets</b>
<b>MV_BV</b>	<b>market value of the equity/book value of total liabilities</b>
<b>S_TA</b>	<b>sales/total assets</b>
<b>Z</b>	<b>Altman Z score</b>
<b>BVE_TL</b>	<b>book value of equity/total liability</b>

<sup>7</sup> When a bank issues a banker's acceptance bill to the purchaser of the bill, the bank has an obligation to make payment to the bearer of the bill at the maturity day. After the payment by the bank to the borrower, the purchaser repays the funds to the bank within 6 months. Hence, the issuance of a banker's acceptance bill is equivalent to the granting of a short-term loan to the purchaser. The procedure for checking and evaluating the risks for issuing a banker's acceptance bill to a purchaser is the same as for granting a loan.

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Table 1: Descriptive data

This data set comprises 2459 bank loans from 1990 to 2004. Panel A presents the basic data on lending terms in the whole sample. Panel B present the subsample data classified according to ownership. Panel C present the subsample data classified according to collateral status. Panel D presents the subsample data classified according to firm size.

Panel A		Whole Sample				
Variables	N	Mean	Std. Dev.	Min.	Max.	
Amount of loan(RMB)	2459	6,970,078	13,500,000	22,400	300,000,000	
Loan size	2459	14.720	1.500	10.017	19.519	
R_diff(%)	2459	0.688	1.118	-4.980	5.760	
Maturity	2459	0.795	0.506	0.077	7.003	
Credit_rating	2262	3.295	1.518	1.000	6.000	
Relation_length	2459	0.653	0.602	0.000	2.140	

  

Panel B		SOEs		Private firms	
Variables	N	Mean	N	Mean	Difference
Amount of loan	1660	7,093,843	799	6,712,945	388,898
Loan size	1660	14.799	799	14.557	0.242**
R_diff	1660	0.615	799	0.840	-0.225**
Maturity	1660	0.812	799	0.761	0.051**
Credit_rating	1536	3.136	726	3.632	-0.496**
Relation_length	1660	0.715	799	0.526	0.188**

  

Panel C		Collateral_loan		Noncollateral_loan	
Variables	N	Mean	N	Mean	Difference
Amount of loan	1461	8,214,867	998	5,147,797	3,067,071**
Loan size	1461	14.877	998	14.491	0.386**
R_diff	1461	0.786	998	0.545	0.241**
Maturity	1461	0.805	998	0.781	0.024
Credit_rating	1338	3.373	924	3.183	0.190*
Relation_length	1461	0.655	998	0.652	0.003

  

Panel D		Small firm		Medium firm		Large firm	
Variables	N	Mean	N	Mean	N	Mean	
Amount of loan	754	3,305,662	1150	5,407,841	555	15,200,000	
Loan size	754	14.088	1150	14.621	555	15.783	
R_diff	754	1.139	1150	0.581	555	0.298	
Maturity	754	0.763	1150	0.797	555	0.838	
Credit_rating	703	3.954	1071	3.120	488	2.730	
Relation_length	754	0.504	1150	0.649	555	0.865	

Note: \* Significant at the 5% level; \*\* significant at the 1% level.

Table 2: Individual loan terms and industry distribution across the two sample periods

Variables	1990-1995					1995-2004				
	SOEs		Private firms		Difference	SOEs		Private firms		Difference
Panel A	N	Mean	N	Mean		N	Mean	N	Mean	
Amount of loan	99	1,650,960	69	1,117,246	533,713	1561	7,439,035	730	7,241,853	197,182
Loan size	99	13.505	69	13.063	0.442*	1561	14.881	730	14.698	0.183**
R_diff	99	2.577	69	2.640	-0.063	1561	0.491	730	0.670	-0.179**
Maturity	99	0.760	69	0.499	0.261**	1561	0.815	730	0.785	0.030
Credit_rating	86	-	69	-	-	1450	3.026	657	3.489	-0.391**
Relation_length	99	0.114	69	0.173	-0.059	1561	0.753	730	0.560	0.193**
Panel B	N	Percentage	N	Percentage		N	Percentage	N	Percentage	
Collateral_loan	99	63.6	69	52.2	11.4	1561	53.8	730	71.4	-17.5**
Small firm	99	46.5	69	76.8	-30.3**	1561	21.8	730	43.1	-21.7**
Medium firm	99	49.5	69	23.2	26.3**	1561	48.8	730	44	4.8*
Large firm	99	4	69	0	-4*	1561	29.3	730	12.9	16.6**
Panel C	N	Percentage	N	Percentage		N	Percentage	N	Percentage	
Commerce	99	31.3	69	37.7	6.4	1561	29.1	730	42.7	-13.6**
Construction	99	1	69	2	-1	1561	6.5	730	3.9	2.4**
Foreign trade	99	15.1	69	0	15.1**	1561	25.8	730	2.6	23.1**
Manufacturing	99	50.5	69	53.6	-3.1	1561	25.4	730	28.6	-3.2
Nonclassifiable Establishment	99	2	69	1.44	0.56	1561	8.8	730	11.7	-2.9*
Real Estate	99	0	69	4	-4	1561	1.47	730	13.3	-11.8**

Note: \* Significant at the 5% level; \*\* significant at the 1% level.



Table 3: Interest rate regressions

This table estimates the factors that affect the maturity, collateral status, and interest rate simultaneously. *Relation\_length*, *Maturity*, and *Credit\_rating* are centered by subtraction from the mean to avoid the multicollinearity problem. This rescaling has no effect on the correlation properties of the rescaled variable. The absolute value of the t-statistic is in parentheses .

	Panel A			Panel B		
	1990-1995			1997-2004		
	Maturity	Collateral Loan	R_diff	Maturity	Collateral Loan	R_diff
	(1)	(2)	(3)	(4)	(5)	(6)
Fitted maturity		-1.324 (-0.04)	-1.424** (-5.47)		-1.823** (-20.68)	-0.156 (-1.22)
Fitted collateral	-0.858** (-4.71)		0.906** (2.98)	-0.110** (-2.46)		0.115** (4.16)
State	0.754** (4.89)	1.517 (0.03)	0.117 (0.37)	0.039 (0.52)	0.043 (0.29)	0.068** (2.57)
Medium firm	-0.552** (-3.06)	-1.07 (-0.01)	-0.395 (-1.26)	0.138 (1.15)	0.322 (1.14)	-0.189** (-4.69)
Large firm	0.127 (0.33)	0.608** (21.61)	0.159 (0.17)	0.243* (2.22)	0.501* (1.99)	-0.369** (-6.79)
Relation_length		0.216 (0.01)	-1.256** (-2.33)		-0.03* (-2.3)	0.033 (1.35)
Credit_rating				0.016 (1.58)	0.027 (1.51)	-0.009 (-0.63)
Credit_rating <sup>2</sup>				-0.004** (-2.9)	-0.03* (-2.3)	
State*credit rating						0.046** (2.84)
Acceptance bill						-0.091 (-1.42)
Commerce			0.402 (1.21)			0.066** (2.23)
Construction			1.112 (1.09)			0.059 (1.06)
Foreign trade			0.502 (0.89)			-0.031 (-0.77)
Nonclassifiable estab.			-2.632** (-2.61)			-0.002 (-0.04)
Real_estate			-1.986 (-1.89)			0.038 (0.7)
Constant	0.930** (6.67)	0.661 (0.02)	3.018** (6.23)	0.670** (18.69)	1.121** (16.57)	0.481** (7.05)
Year Dummies			Yes			Yes
Observations	168	168	168	1972	1972	1972
AIC		1099			5615	
Log likelihood		-516.54			-2767	
Schwarz Criterion		1202			5845	

Note: \* Significant at the 5% level; \*\* significant at the 1% level.

Table 4: Yearly statistics for individual loan

Panel A Yearly statistics for individual loan for the entire sample

	Amount of loan			R_diff			Credit_rating		
	SOEs	Private firms	diff	SOEs	Private firms	diff	SOEs	Private firms	diff
1990	5,110,000	480,000	4,630,000	0.216	2.390	-2.174	-	-	-
1991	1,296,364	90,000	1,206,364	1.430	2.016	-0.586	-	-	-
1992	1,264,000	690,000	574,000	2.998	0.738	2.260	-	-	-
1993	1,973,529	1,015,455	958,074	2.986	1.631	1.355	-	-	-
1994	1,343,857	1,265,185	78,672	2.597	3.239	-0.641	-	-	-
1995	2,330,571	1,306,053	1,024,518	3.617	3.385	0.232	-	-	-
1996	3,391,250	1,355,255	2,035,995*	1.547	1.427	0.120	-	-	-
1997	1,894,794	2,649,346	-754,552	0.709	0.795	-0.085	4.826	4.870	-0.043
1998	3,287,500	1,995,682	1,291,818	0.469	0.309	0.159	4.121	4.364	-0.242
1999	4,620,315	2,512,609	2,107,706 **	0.742	0.961	-0.219*	3.132	3.710	-0.578**
2000	8,760,138	5,318,038	3,442,100	0.631	0.844	-0.213**	3.144	3.184	-0.040
2001	8,640,087	8,406,182	233,905	0.481	0.479	0.002	2.737	2.903	-0.166
2002	6,750,325	8,923,946	-2,173,621	0.373	0.374	-0.001	2.784	2.701	0.082
2003	7,971,622	11,200,000	-3,228,378	0.183	0.176	0.007	2.603	2.475	0.128
2004	12,700,000	17,100,000	-4,400,000	0.221	0.324	-0.103*	2.174	2.410	-0.235

Panel B Yearly observations for eliminated customers

	observations	
	SOEs	Private firms
1990	2	5
1991	10	2
1992	13	6
1993	14	11
1994	29	25
1995	31	28
1996	32	35
1997	55	56
1998	11	8
1999	4	2
2000	5	2
2001	5	3
2002	1	1
2003	0	0
2004	2	0

Table 5: Analysis of credit rating and Altman's Z score

Panel A: Summary statistics of *Credit\_rating*. It ranges from 1 (best) to 6 (worst).

Year	Obs.	Credit rating	Std. Dev.
1997	184	4.848	0.511
1998	110	4.218	1.207
1999	190	3.342	1.389
2000	215	3.158	1.473
2001	312	2.792	1.374
2002	349	2.768	1.348
2003	392	2.577	1.355
2004	233	2.236	1.021

Panel B: Subsample that comprises 132 bank loans to listed firms from 1997 to 2004. It provides descriptive statistics for credit rating, Altman's Z score, and each element of Altman's Z score.

Variable	N	Mean	Minimum	Maximum	Std. Dev.
Credit_rating	123	1.642	1.000	2.000	0.481
Z Score	132	2.260	-1.310	7.853	1.322
WC_TA	132	0.094	-0.637	0.669	0.198
RE_TA	132	0.068	-0.481	0.230	0.086
EBIT_TA	132	0.045	-0.108	0.151	0.046
BVE_TL	132	1.470	0.185	6.072	1.046
MV OF EQUITY_TL	132	2.361	0.515	11.196	1.858
SALES_ASSET	132	0.488	0.000	1.286	0.258

Panel C: Spearman correlation coefficients.

	Credit rating	R_DIFF	ZSCORE	WC_TA	RE_TA	EBIT_TA	BVE_TL	MVEQUITY	SALES_ASSET
Credit rating	1.000								
R_DIFF	.244**	1.000							
ZSCORE	-.142	-.080	1.000						
WC_TA	-.328**	-.325**	.441**	1.000					
RE_TA	-.337**	-.060	.247**	-.047	1.000				
EBIT_TA	-.375**	.066	.407**	-.215*	.678**	1.000			
BVE_TL	.159	-.109	.580**	.452**	-.079	-.194*	1.000		
MVEQUITY	.164	.014	.776**	.394**	.001	.002	.823**	1.000	
SALES_ASSET	-.119	.047	.447**	-.234**	.292**	.618**	-.074	.066	1.000

\* Correlation is significant at the 0.05 level (2-tailed). \*\* Correlation is significant at the 0.01 level (2-tailed).

Table 6: Nonperforming loan performance before and after the Act

The NPL ratio is calculated as the annual nonperforming loans divided by the annual total amount of credit.

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Year	NPL ratios (per cent)
1994	65
1995	65
1996	63
1997	52
1998	45
1999	41
2000	38
2001	35
2002	43
2003	28
2004	11
2005	3.80

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Source: The data source is the Wall Street Journal, January 19, 2007.

Table 7: Recovery rate of NPLs

This table presents the recovery rates from the four asset management corporations. *Accumulated Disposal* refers to the accumulated amount of cash and non-cash assets recovered as well as loss incurred by the end of the reporting period. *Disposal Ratio* is calculated as accumulated disposal divided by total NPAs purchased. *Asset Recovery Ratio* is calculated as total assets recovered divided by accumulated disposal. *Cash Recovery Ratio* is defined as cash recovered divided by accumulated disposal.

The Four Asset Management Corporations	2004 (Q4)	2005 (Q4)	2006 (Q1)
Accumulated Disposal in RMB 100 mil	6750.6	8397.5	8663.4
(Cash Recovered in RMB 100 mil)	1370.0	1766.0	1805.6
Disposal Ratio	53.96%	66.74%	68.61%
Asset Recovery Ratio	25.48%	24.58%	24.20%
Cash Recovery Ratio	20.29%	21.03%	20.84%
<b>China Huarong Asset Management Corporation</b>			
Accumulated Disposal in RMB 100 mil	2095.4	2433.8	2468.0
(Cash Recovered in RMB 100 mil)	413.4	543.9	546.6
Disposal Ratio	59.77%	69.17%	70.11%
Asset Recovery Ratio	25.29%	26.92%	26.50%
Cash Recovery Ratio	19.73%	22.35%	22.15%
<b>China Great Wall Asset Management Corporation</b>			
Accumulated Disposal in RMB 100 mil	2099.1	2633.9	2707.8
(Cash Recovered in RMB 100 mil)	215.7	273.5	278.3
Disposal Ratio	61.91%	77.88%	80.11%
Asset Recovery Ratio	14.43%	12.90%	12.70%
Cash Recovery Ratio	10.27%	10.39%	10.28%
<b>China Orient Asset Management Corporation</b>			
Accumulated Disposal in RMB 100 mil	1045.5	1317.6	1419.9
(Cash Recovered in RMB 100 mil)	232.9	320.1	328.1
Disposal Ratio	41.42%	52.08%	56.13%
Asset Recovery Ratio	29.50%	28.73%	27.16%
Cash Recovery Ratio	22.27%	24.30%	23.11%
<b>China Cinda Asset Management Corporation</b>			
Accumulated Disposal in RMB 100 mil	1510.6	2012.1	2067.7
(Cash Recovered in RMB 100 mil)	508.1	628.4	652.6
Disposal Ratio	48.90%	63.82%	64.69%
Asset Recovery Ratio	38.29%	34.30%	34.46%
Cash Recovery Ratio	33.64%	31.23%	31.56%