Anti-corruption and Bank Lending

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ABSTRACT

We study how anti-corruption measures affect banks' lending decisions to state-owned enterprises (SOEs) and non-state-owned enterprises (non-SOEs). We develop a model where an SOE and a non-SOE both seek borrowings from a bank who obtains a positive private benefit due to corruption if it lends to the SOE. We use micro-level lending data from one of the largest state-owned banks in China and the Anti-corruption Campaign enacted by President Xi as a natural experiment to identify the causal effect of anti-corruption measures on bank lending to SOEs and non-SOEs. We find that SOEs received much more favorable borrowing terms than non-SOEs before the Anti-corruption Campaign, but this difference shrunk greatly since the Campaign was enacted, with non-SOEs receiving borrowing contracts with larger credit amounts, lower interest rates and longer durations.

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1 Introduction

The state-owned enterprises in developing countries have often been criticized for dominating the credit market and obtaining distorted loan contracts, as their loan contracts are always with a larger credit line, a lower interest rate and a longer duration. There are various reasons behind the scene, including market-oriented reasons as well as corruption-driven reasons. In this paper, we study how the bank's decision would be alternated by the private benefit offered by the state-owned enterprises through the loan contract, and how a cut on the private benefit would affect the bank's decision.

We construct a two-period model with the bank and two types of borrowers: state-owned enterprise (SOE), and non-state-owned enterprise (Non-SOE). The basic assumptions come from Merton (1974) and Holmstrom and Tirole (1997). Both type of borrowers are seeking funds from the bank to finance their projects. In the first period, the bank may offer a loan contract to a borrower and specify the corresponding credit amount and interest rate. In the second period, firms will repay the principle and the interest according to the contract. The firm may default, and the probability depends on the quality of the firm. The local government will offer subsidy to loans for SOE borrowers in general and bail out SOE borrowers if they are on the edge of bankruptcy. We denote this as the private benefit for the bank to lend to SOE, which is different from the standard economic profit. We find that the SOE borrowers will get loan contracts with lower interest rate and larger credit, and they are less likely to default. When the private benefit drops, the gap on interest rate and credit will shrink. Moreover, the default rate on SOE loans will increase.

The theoretical prediction above lead to our main hypotheses, and data from one of the five leading state owned banks in China is used to test the results. China's banking sector has been historically dominated by five leading state owned banks, and they have been criticized a lot for their close connection to state owned enterprises as well as local governments. Some of their loan contracts are even considered as policy loans instead of commercial loans, and reports on

related corruption are commonly seen on the new reports. In October 2012, Chairman Xi took office and started the Anti-corruption Campaign. It effectively decreased the private benefit of any economic activities and was not limited to the banking sector. We use this event as a natural shock on private benefit to examine our prediction. It is exogenous to both the bank and the borrowers, since it came from the highest level.

We exploit loan level data from one of the five biggest national state-owned bank that provides information on credit amount, interest rate, duration, basic firm characteristics and loan outcomes. We are focusing on three dimensions of loan contracts, including the credit amount, the interest rate and the duration. We test how the loan contract are affected by the firm characteristics, specifically the ownership of the firm. Then we examine how the Anti-corruption Campaign intersects with the borrower's ownership, and how the loan contracts will be affected correspondingly. Our sample covers loans from 2012 to 2016, from branches located in more than 300 cities. We treat 2012 as the before Anti-corruption period, and 2013 and later as the post Anti-corruption period. Our key measurement on firm characteristics consists of the firm size, whether it is listed, its internal rating by the bank, its deposit, its industry sector, its physical local and its local economic development. The bank controls risk by taking collateral proportional to the credit line or demanding minimum balance on its deposit account. Therefore, our information is sufficient to determine the loan contract.

In the first part of our empirical analysis, we test how the firm characteristics will affect the loan contract. The bank will offer more credit to SOE borrowers with lower interest rate and longer duration, which is consistent with our theoretical prediction. The borrowers with larger size, more deposit from a better developed district are also preferred by the bank and will get contracts of higher credit line, lower interest rate and longer duration. We use the number of employees and capital amount to measure the firm size, both of which intensify the borrower's ability to repay. Higher deposit balance means higher cash flow for repayment and also acts as collateral. The local economy condition reveals the potential economic risk or opportunity

for the borrower. The internal rating implies how risky the project is, and the rating grows with the risk. Consequently, the project with larger rating will end up with less credit, a higher interest rate and a shorter duration.

In the second part of our empirical analysis, we discuss the effect of the intersection between the borrower's ownership and the Anti-corruption Campaign. We apply a difference-in-difference test to investigate how the contracts from borrowers of different ownership would alternate after the Anti-corruption Campaign. We start with the basic test without any firm controls. The SOE firms on average obtains contract with larger credit amount, lower interest rate and longer duration. After the Anti-corruption Movement started, the SOE firms' advantage diminished, as their contracts are with relatively smaller credit amount, lower interest rate and longer duration. On the other hand, the Non-SOE borrowers' condition are improved, with larger credit amount, lower interest rate and longer duration. The inequality between two types of ownership are effectively shrinking. The result is statistically significant and consistent with our theoretical model. We repeat the test with firm controls. The coefficients remain almost the same and are still statistically significant. The coefficients on the firms controls also have the same sign as the first part of our empirical tests.

Our main contribution is to use the Anti-corruption Campaign as a natural experiment on the private benefit, and it successfully connects our theory model to the empirical test. The connection between political corruption and credit market have been heavily discussed in literature. Corruption damages the economy in general, as claimed by Qian, Strahan, and Yang (2015). However, our study is focusing on effects on credit market, or more specifically loan contracts. Shleifer and Vishny (1994) first provided theory foundation for our model and pointed out that subsidies to SOE and bribes from managers to politicians would emerge naturally. Afterward, more empirical evidence has been provided in the literature. Faccio (2006) claimed that corporate political connections are relatively widespread, and commonly accompanied by corruption. Moreover, Faccio, Masulis, and McConnell (2006) find out that

politically connected firms are preferred because lenders will receive private benefit from such firms , and the government will bail out such loans. This empirical evidence supports the assumption and setup in our theory model. Carvalho (2014) enhances the result with the fact that politicians use lending by state-owned banks to influence the real economic behavior of firms, and they can obtain private benefit from changes in firms' decisions. Qi, Roth, and Wald (2010) and Djankov, Hart, Mcliesh, and Shleifer (2008) specified how the loan contract would be affected by corruption directly or indirectly.

Our second contribution is to find the most suitable data set to analyze the interaction between ownership and corruption. We are not the first paper to use loan level data in China to study the domestic credit market, but our data set is the most suitable and unique to address our question. First, as the classical Merton (1974) defined, we use three main variable to measure loan contracts, its credit amount, interest rate and duration, and our data set is from 2012 to 2016. Qian, Strahan, and Yang (2015) and Chang, Liao, Yu, and Zheng (2014) also use loan level data to discuss various dimensions of China's credit market. However, their data sets are dated back before 2007. At that time, the interest rates are not liberalized and are closely regulated by the central bank. Moreover, four of the five largest state-owned banks launched their IPO around 2007, their operation and regulation requirement changed dramatically afterward. Second, our data set is the most representative one to examine how ownership and corruption would interact and affect the credit market as we use all loans issued by one of the largest state-owned banks. Gao, Ru, and Tang (2016) used the data from China Banking Regulatory Commission (CRBC) with loans of over 50 million RMB, while over 80% of our sample and over 90% of our Non-SOE loans are below 50 million. The Non-SOE borrowers are relatively smaller, and under-represented within the over 50 million loan sample. Jiménez, Ongena, Peydró, and Saurina (2014) used all loan level data across Spain without trimming by size, location or industry. However, ownership of the borrowers are not considered either in their data set or tests.

Our paper also connects to the literature on resource mis-allocation in the credit market. The actually damage of corruption is to allocate credit to firms with lower productivity, and consequently hurt the macroeconomy. Gertler and Gilchrist (1994) first talked about how the credit market has imperfect allocation to borrowers through firm size, which is similar to our concern in credit allocation between SOE and Non-SOE borrowers. Rajan and Zingales (2003) pointed out that political institutions can affect financial development, macroeconomic stability, and more specifically, validity of debt contracts. This issue is commonly seen in both developing and developed countries. Faccio and Lang (2002) used Western European corporations to show that the ownership will affect its business and operation, while Sapienza (2004) used Italian data to prove state-owned banks mostly favor large firms and state-owned enterprises. Johnson and Mitton (2003), Dinc (2005), Khwaja and Mian (2005) and Petersen and Rajan (1994) all use data from emerging market to confirm that politically connected firms received financial support and favorable loan contracts from the government or state-owned banks. There are also papers using Chinese data to prove that SOE firms have easy access to credit regardless to productivity and profitability, such as Allen, Qian, and Qian (2005), Song, Storesletten, and Zilibotti (2011), and Cull and Xu (2005).

The rest of the paper is organized as follows. In Section 2, we describe China's monetary policy, the overview of the banking industry and the nationwide Anti-corruption Campaign. In Section 3, we introduce a theory model to illustrate how the ownership would affect the credit amount and interest rate on a loan contract, and also how the private benefit is connecting to the loan contracts of borrowers in different ownership. In Section 4, we provide the basic information and summary statistics of the data. In Section 5, we present the test to connect the loan contracts with firm characteristics. In Section 6, we apply a difference-in-difference model to examine how the Anti-corruption Campaign intersects with the borrower's ownership to affect the corresponding loan contracts. The robustness test are provided in Section 7 and we conclude in Section 8.

2 China's Banking Sector and Anti-corruption Campaign

2.1 China's Monetary Policy

For the validity of our study, it is important to first understand the tools used by the People's Bank of China (PBC) in order to achieve its monetary policy goals. On one hand, a steady monetary policy allows us to fully exploit the variation associated with the anti-graft policy shock. On the other hand, institutional regulations imposed by the PBC on banks have changed substantially over the past two decades, which affected banks' lending decision directly. Hence the timings of these changes are crucial to our choice of dependent variables. Our data set spans from 2012 to 2016. Below we briefly familiarize the audience to the monetary policy in China and regulatory changes during the relevant period.

The main tools being used by the PBC include the loan/deposit rate and the reserve requirement ratio. As Chen, Higgins, Waggoner, and Zha (2016) pointed out, the interbank market interest rate is not the main policy target of the central bank in China, distinct from most developed economies. People's Bank of China announces the base loan/ deposit rate, and alternates them to respond to various economic shocks. The base rate system specifies the interest rates for loans and deposits of different durations. There were five categories of the interest rate according to durations: 6 months or under, 6 months to 1 year, 1 year to 3 years, 3 years to 5 years, 5 years or over. The system later was simplified to 3 groups: 1 year and under, 1 year to 5 years and 5 years and over in December 2014.

The monetary policy in China follows a stable expansionary trend during the period of study. From 2012 to 2016, the reserve requirement drops 8 time with a total of 4%, whereas the loan rate dropped 8 times by around 2%. The co-movement of the base rate and the reserve requirement rate can be observed frequently in the longer time series, which suggested a strong signal to the market as expansionary policies.

Market rate had long been state-guided until recently. Historically, the PBC required com-

mercial banks to choose market rate within a 30% band around the guided interest rates. Since October 2004, both the ceiling of loan rates and the floor of deposit rates were no longer regulated and the loan rates are bounded below by 90% of the base loan rate. The lower bound of loan rate dropped to 80% of corresponding base rate since June 2012 and again to 70% one month later. The rates were fully liberalized in November 2013.

In addition, the PBC has adopted several nontraditional ways to enact monetary policy with the goal of prudential-neutral monetary policy since 2016. For example, short-term liquidity operations (SLO), medium-term liquidity facility (MLF), and standing liquidity facility (SLF) were implemented in 2016 to serve as supplements to the traditional methods, as well as to provide liquidity. Another innovation is to introduce a macro-prudential assessment (MPA) to regulate national banks more heavily in various dimensions. However, their effects are not as direct as the standard monetary tools.

2.2 Overview of China's Banking Sector

In this section, we present some facts on the overall banking sector. Commercial banks have been the primary external funding source for enterprises in China. Brown and Dinc (2011), Allen, Qian, and Qian (2005) and Qian, Strahan, and Yang (2015) also mentioned this feature. Allen, Qian, Zhang, Zhao, et al. (2012) argued that it is a shared feature of financial systems in developing markets. Previous works have suggested that it is due to informational advantage over individual investors(see Dang, Gorton, Holmström, and Ordonez (2017), De Fiore and Uhlig (2011) and Chang, Liao, Yu, and Zheng (2014)).

According to the annual report by the China Banking Regulatory Commission (CBRC), there are 4399 banking institutions by the end of 2016, including five major state-owned national banks, 12 joint-stock national banks, and over 4000 regional banking institutions. The largest five state-owned national commercial banks are always referred as The Big Five. Our sample comes from one of the Big Five state-owned national commercial banks.

Though being monitored closely by both the China Banking Regulatory Commission (CBRC) and the State-owned Assets Supervision and Administration Commission of the State Council (SASAC), key statistics movements of the Big Five generally reflected the movement of the overall banking sector due to their dominant market share and a steady expansion over the past decade. Below we provide evidence from three dimensions: asset and liability, loan and deposit, as well as default rate. Norden and Weber (2010) argued that these are important aspects for banks' introspection when assessing borrower's risk.

2.2.1 Asset and Liability

Both total asset and total liability of banking institutions in China increased tremendously from 2007 to 2016, during which the largest five state-owned national commercial banks enjoyed a steady growth and small regional banks contributed more to the rapid growth rate. The total asset managed grew from 45.9 trillion RMB to 232.3 trillion RMB from 2007 to 2016, and the total liability grew from 43.5 billion RMB to 214.8 billion with an average annual growth rate of 17.6%. The Big Five had an asset growth from 25.4 billion RMB to 86.6 billion RMB and a liability growth from 23.9 billion RMB to 79.9 billion RMB. Small regional banks obtained their license between 2004 and 2008 and expanded aggressively since, primarily because they faced less regulatory pressure and had more freedom adopting market-oriented strategy. As a result, the share of Big Five decreased from 54% in 2007 to 37% in 2016, with an annual growth rate of 13%. However, the Big Five still benefited from some major comparative advantages over smaller banks.

Our sample was under a stabilized economy instead of a overheated one. The expansion reached its peak 2009, which was the consequence of the Four Trillion Investment Plan announced by Prime Minister Wen Jiabao. Then it slowed down after 2012, and the overall growth rate of the banking sector stabilized at around 15%, whereas the growth rate for the Big Five declined to around 10%.

2.2.2 Loan and Deposit

The growth of loan outstanding and deposit shared a similar trend as the growth of asset and liability. The average growth rate for both the loan and deposit is 16%, with an average rate of over 25% between Nov 2008 and May 2010 during the Four Trillion Plan. After 2012, the average growth rate slowed down to below 14%. Another peak of deposit growth occurred in 2015, which was a consequence of credit easing from the government after the collapse of the stock market in June 2015. The loan size increased less than the deposit due to a tighter control on risk and total credit size by the regulators. On one hand, PBC and CBRC started to require all banking institutions to report loan-deposit ratio on which both regulatory institutions imposed upper bounds along with credit constraints. On the other hand, regulators established different standards on loan-deposit ratio based on industry sectors, ownership and size of the banks. The transition of resource allocation over industries and market competition of the banking sector both accounted for the change in average loan-deposit ratio.

The Big Five had a smaller and more smooth loan-deposit rate growth from the publicly available data. The ratio of the Big Five is smaller than the one of all national banks, which is smaller than the national level of all banking institutions. As major state-owned national commercial banks closely supervised by the CBRC and SASAC, the Big Five had to adopt a relatively conservative strategy on their loan and deposit decisions.

2.2.3 Default Rate

One can see two episodes of substantial decline in the overall default rate from 2004 to present. The first episode was from 2004Q1 to 2005Q2 where the default rate dropped by 8%, and it dropped again by 4% in 2007Q3. The default rate is well-managed under 2% after 2008. The Non-Performing Loan Rate (NPL) is stable between 1% and 2% after 2008 as well. The sharp decline in default rate is consistent with the fall in loan-deposit ratio, reflecting the regulators' effort to unload toxic assets from their balance sheet.

The trend of NPL of the Big Five is consistent with the overall trend, since they have dominant market shares and face regulations from both CBRC and SASAC. The dramatic decline in both episodes were primarily due to the event of Big Fives' IPO filing. Four of them launched IPO in both Hong Kong Stock Exchange and Shanghai Stock Exchange by the end of 2007, and the last one with a smaller size finished the process in 2010. By virtue of being public traded leading banking institutions, they were facing close inspection from regulators and investors which urged effective controls on risk and removed assets with higher default rate. The PBC helped establish four major state-owned asset management corporations, and enforced major national banks to sell their NPLs to the state-owned management corporations on a regular base. It directly removed the NPLs from balance sheets of the Big Five. Additionally, the Big Five set higher standards and no longer renewed risky loans. Moreover, the removal was facilitated by a more modernized and diversified financial system. On one hand, NPLs can be securitized and sold to trust funds and mutual funds. On the other hand, higher risky projects can seek investment from financial institutions or platforms other than commercial banks like private equity or venture capital firm.

2.3 Anti-corruption Campaign under President Xi Jinping

The anti-corruption campaign was an unprecedented organized anti-graft effort. Unanticipated by the majority, it took place after President Xi Jinping officially took office in the conclusion of the 18th National Congress of the Communist Party of China in October 2012. In terms of both scale and level, it is the largest anti-graft campaign carried on by far in the history of People's Republic of China. As of 2016, at least one provincial-level official from each province faced investigation for corruption, and over 120 high-ranking officials were removed. Moreover, more than 100,000 people were charged of bribery, abuse of power, lobbying for promotion, and collusion with businessmen, including many government officials, military officers, and executives of state owned enterprises.

The anti-corruption campaign served as a natural experiment for the purpose of our study. Commercial loans, government contracts and transactions on state-owned asset, either in national level or local level, have been carefully investigated by the inspection teams since the campaign. Astonished by the prosecution of high-profile government officials and exposed to much more thorough inspections, the government officials, executives of state-owned enterprises and loan officers from state-owned national banks steered away from being personally involved in any business decision. As many previous works have documented that political corruption can result in resource misallocation (see Qian, Strahan, and Yang (2015), Qi, Roth, and Wald (2010), and Faccio, Masulis, and McConnell (2006)), this event effectively cut the private benefit received by the state-owned banks from connecting to commercial loans, hence altered state-owned banks' lending behavior.

3 The Baseline Model

We consider a two-period game with three types of risk-neutral agents: the bank, state-owned enterprises(SOE), non-state-owned firms (Non-SOE). Each type of enterprises have projects with a measure of one, and are seeking funds from the bank to finance their projects. In the first period, the bank may offer a loan contract to the enterprises on a project. In the next period, the enterprises will repay the principle and interest according the contract.

A project is characterized by its performance and the ownership of the enterprises, both of which are public information. We use $p_{s,i} \in [0,1]$ to denote the performance by project i from a state-owned enterprise, and $p_{n,i} \in [0,1]$ to denote the performance by project j from a non-state-owned enterprises. Each project needs 1 unit of investment, which could be financed by the bank. The project will yield return of R if it is flawless. The return from project $p_{s,i}$ will be $p_{s,i}R$, and from project $p_{n,i}$ will be $p_{n,i}R$. The return increases with the quality of the projects. We are separating the projects according to ownership of the firms, since the government will offer

direct or indirect financial support to the state-owned enterprise. Moreover, the key question addressed by this paper is how the ownership affect the contract of commercial loans.

The bank has two decisions to make: the interest rate on the contract, and the projects to offer the loan. The bank will offer separate contract to the state-owned enterprises and non-state-owned firms. Let r_s denote the interest rate charged to projects of state-owned enterprises, and r_n denote the interest rate charged to projects of Non-SOE firms. In the second period, the total payment by contract will be the one unit principle plus the interest payment. If the return is enough to pay for the contract, the bank will collect the contract payment from the project. If the return is less than requested, we call it a default project and the bank will liquidate the projects to take all the benefit. The interest rate is non-negative, so the bank could profit from a default project as far as its return is larger than one.

The second question remains as who will obtain the loan. All the firms are cashless. Therefore, everyone wants a loan since the liability is limited to the project itself. However, the bank is a risk-neutral agent looking for profit, and it is only willing to offer loans to projects with better performance. The bank sets the quality requirement for both types, and p_s is the cutoff for projects of state-owned enterprises, and p_n is the cutoff for projects from private firms. Any projects that pass the quality requirement will get the credit, and the loan applications will be rejected otherwise.

3.1 Assumptions and Preferences

The objective for the cashless state-owned enterprises or private firms are simple, and they will apply for as much loans as possible. Therefore, their actions are not the focus of this section. To simplify the question, we assume projects of both types will follow the uniform distribution $U[0, 1]$, with a measure of one.

The objective for the bank is to maximize its profit from the loans without breaking the regulation on its operation. Banks is regulated through two channels: one is on the total credit

available, and the other is on the default rate.

Assumption 1. *The total credit available to the bank is Q, or $1 - p_s + 1 - p_n \leq Q$.*

The central bank or the regulator will use various monetary tool to control credits available to the commercial banks. The most direct way is to change money supply through market operations such as buying and selling bonds. In China, one of the major monetary tool is setting the reserve deposit rate. Therefore, we have a corresponding assumption here to show that the total loans available are limited.

Assumption 2. *The default rate is bounded by D, or $\frac{\frac{1+r_s}{R} - p_s + \frac{1+r_n}{R} - p_n}{1-p_s+1-p_n} \leq D$. And, the limit on default rate is small, or $D << 1$.*

Most capital of the bank comes from the saving account within the bank, which is a liability of the bank. To meet such legal application, the bank has to generate sufficient cash flow, or the bank itself will default and file for bankruptcy. Therefore, the risk management department of the bank will watch the default rate closely. Moreover, regulators are concerned with systematic risk in general, and request the bank to manage its default risk at a reasonable level. There are also international regulations on capital requirements such as the Basel Accord, which specified capital requirements, leverage ratio and liquidity requirement. In our model, we use the default rate to measure such risk, and the limit is where the regulation lies. The ratio of Non-Performing Loan (NPL) is normally around or below 5%. For example, the annual report from China Banking Regulatory Commission showed that the Non-Performing Loan ratio was below 3% since 2008.

The final assumptions regard to the boundary of interest rates and quality controls. The bank is a market-oriented organization, so it would not intentionally lose money by setting a negative interest rate. It is unnecessary to set a interest rate beyond the maximum debt-paying ability, as the extra rate will not be honored by debtors or legislators. Default rate is also bounded by zero, as negative default rates have no economic meaning at all.

Assumption 3. *Boundary conditions:*

(1) The interest rate is non-negative and cannot exceed the maximum debt-paying ability, or $0 \leq r_s, r_n \leq R-1$.

(2) Default rates cannot be negative, or $\frac{\frac{1+r_s}{R}-p_s}{1-p_s}, \frac{\frac{1+r_n}{R}-p_n}{1-p_n} \geq 0$.

The three assumptions above summarize the main restriction on the bank's choice of interest rates and quality controls. The objective of the bank is to maximize its profit, and there are two kinds of profit in our model. One is the financial profit from projects directly, and the other is the extra benefits or losses corresponding to the ownership of the firms. The state-owned enterprises and the non-SOE firms are treated differently in our model, since the bank can get extra benefit from the government by issuing loans to state-owned enterprises. For example, when state-owned enterprises are on the edge of default, the government always steps in and intervenes with financial supports and restructuring proposals. On the other hand, the Non-SOE firm cannot get any of such benefits, and the bank may even generate loss for offering loans to them. The loss could be in the form of losing tax benefit or government deposit contracts. We use b to measure the government offered benefit or loss by ownership. The objective function for the bank is

$$\begin{aligned}\max_{p_s,p_n,r_s,r_n} \quad & b(1-p_s) + (r_s+b)\int_{\frac{1+r_s-b}{R}}^{1} dp_{s,i} + \int_{p_s}^{\frac{1+r_s-b}{R}} (Rp_{s,i}-1)dp_{s,i} \\ & + (r_n-b)\int_{\frac{1+r_n}{R}}^{1} dp_{n,j} + \int_{p_n}^{\frac{1+r_n}{R}} (Rp_{n,j}-1)dp_{n,j} \end{aligned} \tag{3.1}$$

The bank will get benefit b for each unit of loan offering to state own enterprises. To help the state own enterprises to survive from liquidation, the government will offer b to cover the loan payment at risk. If the loan to state-owned enterprises is not in liquidation, the government will offer another b reward on each unit to the bank. However, if it is an undefault project from a private firm, the bank will lost b from each unit of loan. In reality, b could be observed as direct transfers, tax benefits or government contracts.

3.2 The Optimal Contracts and Quality Standards

There are four variables in the objective function: p_s, p_n, r_s, r_n. The profit goes down with p_s, p_n, as far as the the projects can generate positive net benefit to the bank, but sum of p_s and p_n is bounded below by the total credit line. The profit goes up with r_s, r_n, but the default rate goes up with the interest rates as well. Consequently, the solution depends on projects of which ownership contribute more to the total profit, and what is the optimal allocation of credit and default rate.

Proposition 1. *The equilibrium of the game depends on value of Q.*

Case 1: When $Q \leq 1$, the equilibrium of the game is

1. If $b \leq DQR$, it is easier for state-owned enterprises to get loans as $p_s = 1 - \frac{Q}{2} - \frac{b}{2R}$ and $p_n = 1 - \frac{Q}{2} + \frac{b}{2R}$. state-owned enterprises are also facing a lower interest rate, as $r_s = R(1 + \frac{DQ}{2} - \frac{Q}{2}) - b - 1$ and $r_n = R(1 + \frac{DQ}{2} - \frac{Q}{2}) + b - 1$.

2. If $DQR < b \leq QR - DQR$, the quality cutoffs still depends on b, as $p_s = 1 - \frac{Q}{2} - \frac{b}{2R}$ and $p_n = 1 - \frac{Q}{2} + \frac{b}{2R}$. state-owned enterprises are facing a lower interest rate of $r_s = R(1 + DQ - Q)$, and private firms are facing the highest possible interest rate $R - 1$.

3. If $b > QR - DQR$, the quality cutoffs would be fixed, as $p_s = 1 - Q + QD$ and $p_n = 1 - QD$. Interest rates are also fixed as above at $r_s = R(1 + DQ - Q)$ and $R - 1$.

Case 2: When $Q > 1$, the equilibrium of the game is

1. If $b \leq DQR$, the equilibrium are the same as $Q \leq 1$. It is easier for state-owned enterprises to get loans as $p_s = 1 - \frac{Q}{2} - \frac{b}{2R}$ and $p_n = 1 - \frac{Q}{2} + \frac{b}{2R}$. state-owned enterprises are also facing a lower interest rate, as $r_s = R(1 + \frac{DQ}{2} - \frac{Q}{2}) - b - 1$ and $r_n = R(1 + \frac{DQ}{2} - \frac{Q}{2}) + b - 1$.

2. If $DQR < b \leq \frac{4}{3}(1 - \frac{Q}{2} - \frac{DQ}{4})$, the quality cutoffs still depends on b, as $p_s = 1 - \frac{Q}{2} + \frac{DQ}{4} - \frac{3b}{4R}$ and $p_n = 1 - \frac{Q}{2} - \frac{DQ}{4} + \frac{3b}{4R}$. state-owned enterprises are facing a lower interest rate of $r_s = R(1 + \frac{DQ}{4} - \frac{Q}{2} - \frac{3b}{4R})$, and private firms are facing the highest possible interest rate $r_n = R(1 - \frac{DQ}{4} - \frac{Q}{2} + \frac{3b}{4R})$.

3. If $b > \frac{4}{3}(1 - \frac{Q}{2} - \frac{DQ}{4})$, the state-owned enterprises will get any loan they want with $p_s = 0$ at

the lowest possible rate $r_s = 0$. *The rest of the credit goes to the private firms with* $p_n = 2 - Q$ *and* $r_n = R(2 + DQ - Q)$.

The solution depends on values of Q and value of b. When $b \leq DQR$, the equilibrium has the same functional form regardless to value of Q. The main reason is that the solution for the optimization problem is interior without hitting any boundary conditions from the assumptions. The cutoff for state-owned enterprises and their interest rate go down with private benefit b. When the private benefit is higher, projects with lower quality could get loans at a lower interest rate. All such loans are compensated by the government through private benefit, and the bank relies on the benefit more than their normal commercial return. As the total credit and average default rate are constraint, the private projects will get less credit with higher interest rate. Moreover, the default rate is lower for SOE, and the gap will grow with the private benefit.

When b goes up further, the equilibrium varies with value of Q. The solutions will be corner solution instead of interior solution, and which boundary is hit first depends on value of Q . When Q is small than half of the total credit, the restriction on the upper limit of the interest rate will be reached first. Therefore, the interest rate will be boundary solution, while the cutoffs on quality are still interior solutions. The private firms are charged the highest possible rate $R - 1$, and all of the loans to private firms are defaulted. Then, when b keeps growing, the equilibrium on interest rates and quality cutoffs are will corner solutions. All the loans to state-owned enterprises would not default, and all the loans to private firms will default. Consequently, as b grows, the default rate for SOE keeps dropping, the the default rate for Non-SOE keeps rising, and the gap keeps expanding. The interest rate to state-owned enterprises are nonnegative is guaranteed by $Q \leq 1$, and this is why equilibrium of the game depends on Q.

When $Q > 1$, Assumption 1 and Assumption 3 together can guarantee Assumption 2, and we can focus on boundaries on the cutoffs and the default rates. The assumption of non negative default rates on both types will be reached first with a growing b value. Consequently, all the

loans to state-owned enterprises will not default, and all loans to private firms will default, once b is big enough as $b > DQR$. When b is big enough, every project from state-owned enterprises will be financed at the minimum possible interest rate $r_s = 0$. Any credit left goes to the private firms, and only loans from private firms default.

We can summarize the relationship between private benefit and corresponding equilibrium as below. The higher the private benefit is, the more credit will be offered to state-owned enterprises or the less credit will be offered to private firms. Moreover, the gap between the credit to state-owned enterprises and to private firms will grow with private benefit. The higher the private benefit is, the lower the interest rate to state-owned enterprises is, and the higher the interest rate to private firm is. The gap between the interest rate to state-owned enterprises and to private firms also increases with private benefit.

3.3 Hypotheses Development

In the past thirty years, Chinese local government officials have been working very hard to accelerate their GDP growth rate, which is called GDP competition by economists. One way to fight the GDP competition is to encourage state-owned enterprises to invest more. To finance such investment, the state-owned banks are involved to offer commercial loans to state-owned enterprises. The local government promised to support the loans with valuable collateral or direct transfers. Moreover, the local government can offer various compensation to either the executives, the state-owned enterprises or the state-owned bank involved directly. It could be in the form of political favor, direct transfer, tax benefits or government contracts. However, none of such benefits are market oriented, and they are always connecting to corruptions or abuse of power.

In 2012, After Chairman Xi took office, Chinese government started Anti-corruption movement. Numerous local political leaders, executives from state-owned enterprises, and bank officials are charged for corruption or under table collusion. In order to minimize political risk

or legal trouble, local governments stop offering private benefit to either state-owned enterprises or state-owned banks. We use Anti-corruption movement as a natural experiment, and the main treatment is the drop of private benefit b in our theory model. Before Anti-corruption movement, loan applications from state-owned enterprises and private firms are treated differently, and the gaps on interest rate and credit between these two type are significant. Anticipating private benefits on project from state-owned enterprises being eliminated, we are expecting a major drop on the gap after Anti-corruption movement starts. We write our hypotheses on total credit and interest rate as following:

Hypothesis 1. Projects from state-owned enterprises obtain more credit than the ones from private firms, and the gap is shrinking after Anti-corruption movement starts.

The first hypothesis is on credit approved. In the theory model, we simplify the setup to focus on the effect of private benefit on ownership. Taking into account the characteristics of borrowers with different ownership, we can still derive hypotheses on the effect of Anti-corruption movement. According to our model, the cutoff on projects from state-owned enterprises is lower, or it is easier for those projects to get a loan. The advantage grows with private benefit, and would disappear after Anti-corruption movement starts. In the data set, we use credit approved to the firm as measure of credit allowance.

Hypothesis 2. Interest rates on projects from state-owned enterprises are lower than the ones on projects from private firms, and the gap is shrinking after Anti-corruption movement starts.

The second hypothesis is on interest rates. The state-owned enterprises are favored both on quantities and prices available to them. Anti-corruption movement would cause any unequal treatment to be removed gradually. As a result, gaps on interest rates will diminish considering the characteristics of borrowers.

4 Data

The data set we use is from one of the five largest state-owned national banks in China, with branches in more than 300 cities nationwide. By the end of 2016, their total loans represented 9% of the whole banking sector, while their deposit, asset and liability all represented 8% of the overall banking sector. Our sample period covers from 2012 to 2016. During this time, their loan deposit ratio stayed above the national level, at around 80%, as their credit quality and risk management were beyond the average. At the same time, their ratio of Non-Performing Loans (NPLs) rose all the way from 1% to 1.5%, whereas the national level also grew from 1% to 1.7%. By the end of 2016, 37% of the total asset and liability in the banking sector belonged to the Big Five, and thus they played a significant role in the banking industry. Among them, our sample bank is the most representative one in all dimensions.

4.1 Summary Statistics

We obtained a data set covering all the commercial loans to corporate borrowers between 2012 to 2016 from the sample bank. Then, we trimmed the data to keep the loans with no missing information on loan contracts and firm characteristics. The final sample data set comprises $817,334$ loans from this bank to corporate borrowers between 2012 and 2016. Chairman Xi officially took office in the conclusion of the 18th National Congress of the Communist Party of China in October 2012, and Anti-corruption Campaign has been expanding through the whole nation since 2013. Therefore, loans in 2012 are treated as the before shock observations, and loans after 2012 are the after shock observations.

The summary statistics of the loan contracts and borrowers' characteristics is reported in Table 1. For the loan contracts, we can observe the approval date, the approval amount, the interest rate spread, and the loan term. The interest rate spread is the difference between the contract interest and the base rate of corresponding duration. Additionally, some of the

firms' characteristics are available in the system as well, including firm ownership, the size of employment, the amount of registered capital, the balance of corresponding saving account, whether it is listed on stock market, its shareholding of the sample bank, its internal credit rating from the bank and its industry sector. We can also construct information on the physical address of the corresponding branch and of the borrower, which can be connect to physical distance as well as local economic development.

The median approved credit is 4.5 million RMB, median loan term is 18 months, and median interest rate spread is 0.72 percent. We noticed that the loan contracts are significantly different according to ownership and approval year. There are five categories of ownership in the original data set, which include state-owned Enterprises (SOE), Public Firms (Public), Private Firms (Private), firms with main investment from Hong Kong, Macau or Taiwan (HMT) and firms with foreign direct investment (Foreign). To simplify our discussion, we divide the ownership into two categories, the state-owned enterprises (SOE), and everyone else (Non-SOE). 10% of the loans goes to the SOE with 44% of the total credit and the rest 90% goes to Non-SOE with 56% of total credit. A typical loan to a SOE firm is much larger than to a Non-SOE counterpart. The median contract to a SOE firm is 30 million RMB with 0 interest rate spread and 18 month of duration. However, the median contract for Non-SOE is only 4 million of spread of 0.9 percent and duration of 15 months. Before the anti-corruption campaign started in 2013, median contracts for SOE is credit line of 30 million RMB of 18 months with interest rate spread of 0.28 percent, and for the Non-SOE is credit line of 4 million RMB of 15 months with interest rate spread of 1.26 percent. The SOE borrowers can obtain more credit at a lower price with longer duration. After the campaign started, the credit market was improved for both types, and the gap was shrunk. For SOE, their median credit line of 30 million RMB and duration of 18 month stay the same. However, the interest rate spread drops to 0 percent. The median contract for Non-SOE has been improved, with credit line remains as 4 million RMB. However, the median duration extends to 18 months, and the median interest rate spread drops

to 0.72 percent.

The summary statistics shows that SOEs could obtained more credit at a lower cost with longer terms. However, it is not sufficient to prove that they are favored according to their ownership. Other characteristics are differed between firms of different ownerships. We use the size of employment and registered capital amount to measure the size of the borrowing firms. The sizes of employment range from 1 to 1.36 million, with a median of 105. The median employment for SOE borrowers is 500, and for Non-SOE borrowers is 100. The SOE firms are larger with respect to the labor size. For SOE borrower, the median size of employment is 564 in 2012, and drops to 500 afterward. For Non-SOE borrowers, the median size of employment is 107 in 2012, and drops to 100 afterward. The median borrower is with a smaller employment size, which shows that the smaller firms are more likely to obtain credits. Similar trends can be observed on the borrowers' registered capital. The median of registered capital is 10 million. The median level for SOE borrowers is 294 million, and for Non-SOE borrowers is 10 million. The gap alternates a little after anti corruption movement started. For SOE borrower, the median size of registered capital is 311 million in 2012, and decreases to 280 afterward. For Non-SOE borrowers, the median size of registered capital remains the same all the way at 10 million. The SOE borrowers are relatively larger in scale comparing to their Non-SOE counterpart, which can partially explain their advantage in obtaining credits.

There are two more variables in the model to measure the risk of the loan. One is the internal credit rating of the loan, and the other is the balance of the borrower's saving account. The bank offers an integer between 0 and 17 as its internal credit rating for each loan with a median of 4, and the rating grows with the potential risk of the loan. The median credit rating for SOE borrowers is 3, and for Non-SOE borrowers is 4. The median rating for both the SOE firms and Non-SOE firms persists after the Anti-corruption. The Non-SOE is more risky than SOE, and the anti-corruption movement does not affect the fundamental much. The balance of the borrower's saving account can be used for repayment directly or as collateral of

the loan. Therefore, the balance could partially absorb the risk. The balance of the borrower's saving account range from 0 to 20.4 billion, with a median of $247,991$. The median balance for SOE borrowers is 7.51 million, and for Non-SOE borrowers is $170,364$. Comparing to the credit line, the Non-SOE put a smaller proportion of the credit on the saving account. For SOE borrower, the median size of balance is 6.96 million in 2012, and increases to 7.6 million afterward. For Non-SOE borrowers, the median size of balance is $96,905$ in 2012, and grows to $187,676$ afterward. The median balance for Non-SOE increases dramatically in proportion comparing to the SOE firms, which shows the Non-SOE firms are facing more strict liquidation requirement. However, the increase in median balance is a general observation, which shows the regulations is a global one, not limited to any ownership.

The data set also offers a dummy variable to denote whether the borrower is listed on the stock market. This fact matters for three reasons. First, it shows that the borrower can obtain credit from the equity market as an alternative. Second, the borrower can use its equity shares as collateral to the bank. Third, the borrowers financial conditions is transparent to the public and follows corresponding requirement by regulators. All three reasons help to reduce the risk of the loan, and this dummy can be interpreted as a positive sign to the bank. 3% of the borrowers are public listed companies. Before 2013, 12% of the SOE borrowers are public listed, comparing to 3% of the Non-SOE borrowers. After the anti corruption movement starts, 11% of the SOE borrowers are public listed, comparing to 2% of the Non-SOE borrowers.

The industry sectors and physical location of bank branches as well as borrowing firms are presented in the data set. We will be using both as controlled variables for the loans. Among all 19 industries, around 60% of the total credit goes to the manufacture, which shows the bank or the banking system prefer it to everyone else. They are capital intense and normally have stable cash flow, and consequently, the corresponding risk is smaller. The next industry is wholesale and retail, which represents 20% of the total credit. In Manufacture, Wholesale and Retail, and Finance, only 5% of the loans are offered to SOE, and Non-SOE dominates in

quantities. In Healthcare and social work as well as Public Administration, over 80% of the loans are offered to SOE projects, since SOE are dominating in these industries. The mean and median of loans are smallest in Informational Technology, Research and Technical Service, and Residents Services, repairs and other services, since businesses in these industries are in general smaller and with less valuable collateral. The mean and median loans are largest in Mining, Public Administration and Real Estate, as their projects are relatively larger. The median loan terms are shortest in Wholesale and Retail, Manufacture and Residents Services, repairs and other services, as they are mainly used for meeting needs of short term free cash flow. The median durations are longest for Education, Water resources, environment and public facilities and Real Estate, as projects in these projects are fundamentally longer. The median spreads are lowest in Public Administration, Utility and Mining, since they can generate very stable cashflow, and their assets have very high liquidated market value. The median spreads are highest in Residents services, repairs and other services, Agriculture and Accommodation and catering industry, which are consistent with their default risk. According to physical location, the branches in better developed region obtained more credit, since the total size of economy is larger and the future economic risk is smaller.

5 Empirical Analysis

There are two questions remained. First, whether the SOE firms are favored with respect to credit, borrowing cost and duration. Second, if inequality did exist, whether Anti-Corruption Movement deteriorated it or improved it. Our empirical test in this part will first show that how the Credit Amount, Spread and Durations are affected by the main firm characteristics. We use the dummy SOE to measure the firm's ownership. We use capital amount and employment size to identify the firm's size. Whether the firm is listed as a public company could affect the information quality as well as its other credit channel. The deposit can be modeled as collateral

or cash flow, and internal rating implies its risk rating to the bank. Additionally, we use the local GDP and whether the borrower is from a poorer city to control for the potential economic risk. Other than the main controls, we include three fixed effects, including the monthly effect, the industry effect and the location effect.

As a preliminary test of the relationship between the loan contract and the borrower's ownership, the baseline model is specified as below. The test on credit amount would be

$$\begin{aligned}\ln(\text{Credit Amount}_{i,t}) = \alpha + \beta_1 * \text{SOE}_{i,t} + \beta_2 * \ln(\text{Employees}_{i,t}) + \beta_3 * \ln(\text{Capital}_{i,t}) + \\ \beta_4 * \text{Listed Firm}_{i,t} + \beta_5 * \ln(\text{Deposit}_{i,t}) + \beta_6 * \text{Internal Rating}_{i,t} + \beta_7 * \text{Other Controls} + \\ \gamma_1 * \ln(\text{Local GDP}) + \gamma_2 * \text{Applied Month}_{i,t} + \gamma_3 * \text{Industry}_{i,t} + \gamma_4 * \text{Location}_{i,t} + \epsilon_{i,t}\end{aligned}$$

The test on interest rate spread would be

$$\begin{aligned}\text{Spread}_{i,t} = \alpha + \beta_1 * \text{SOE}_{i,t} + \beta_2 * \ln(\text{Employees}_{i,t}) + \beta_3 * \ln(\text{Capital}_{i,t}) + \\ \beta_4 * \text{Listed Firm}_{i,t} + \beta_5 * \ln(\text{Deposit}_{i,t}) + \beta_6 * ln(\text{Internal Rating}_{i,t}) + \beta_7 * \text{Other Controls} + \\ \gamma_1 * \ln(\text{Local GDP}) + \gamma_2 * \text{Applied Month}_{i,t} + \gamma_3 * \text{Industry}_{i,t} + \gamma_4 * \text{Location}_{i,t} + \epsilon_{i,t}\end{aligned}$$

The test on duration would be

$$\begin{aligned}\ln(\text{Duration}_{i,t}) = \alpha + \beta_1 * \text{SOE}_{i,t} + \beta_2 * \ln(\text{Employees}_{i,t}) + \beta_3 * \ln(\text{Capital}_{i,t}) + \\ \beta_4 * \text{Listed Firm}_{i,t} + \beta_5 * \ln(\text{Deposit}_{i,t}) + \beta_6 * \ln(\text{Internal Rating}_{i,t}) + \beta_7 * \text{Other Controls} + \\ \gamma_1 * \ln(\text{Local GDP}) + \gamma_2 * \text{Applied Month}_{i,t} + \gamma_3 * \text{Industry}_{i,t} + \gamma_4 * \text{Location}_{i,t} + \epsilon_{i,t}\end{aligned}$$

In the models above, index i denotes borrowers and index t denotes months. Our high frequency daily loan data did offer us the exact date of issuing credit. However, we only use it to calculate the interest rate spread, since all other information are available at monthly base or

even annual base. The structure is not a true panel, as many of the borrowers appeared only once and the firm characteristics might be significantly different across time. However, we do include month, province and industry fixed effects in all of the models, and we cluster standard errors by months. The physical location of the branches and the borrowers are included. However, as the bank may redistribute the credit to different branched within the same province, according to the credit line and industries. Therefore, we use the province instead of cities as the fixed effect.

5.1 Results

Column 1 of Table 2 reports the main results for credit amount, Column 2 of Table 2 reports the main results for interest rate spread, and Column 3 of Table 2 reports the main result for duration. Our theoretical model predicted that the SOE firms will obtain more credit at a lower cost. Therefore, the key variable that we will check is the dummy of ownership. The main controls are listed in the equations above, and the other alternative controls included the borrower's share holding of the bank, whether the borrower is from a city richer than the branch. The borrower's share holding of the bank is used to measure whether the borrower will be favored, and this is also regulated by the government. The other leads to lower local economic risk and higher development potential for the borrower.

The dummy variable that indicates whether the borrower is from a city richer than the branch plays an important role in determine the loan contract. A more intuitive dummy would be a dummy of whether the loan is approved to a local firm. However, an internal regulation requires that commercial loans of certain categories transferred to a specific branch within the same province, and the details of the contracts are determined by officials who issued the loan. Therefore, a dummy denoting local borrower is endogenously chosen by the bank. Instead, we use a dummy of whether the borrower is from a city richer than the branch. The geographic preference related to physical location or economic development could affect the loan official's

decision.

Column 1 of Table 2 reports OLS results for credit amount, using the approved loan amount recorded by the bank. For each model we include industry, months and province fixed effects, and control for borrower characteristics. To save space, we only report the coefficients on the main firm characteristics.

The results suggested that SOE firms on average will significantly get 40.6% more credit comparing to Non-SOE firms. This result implies that the SOE borrowers do have an significant advantage in credit allowance. If a borrower locates in a more developed city than the branch, then the borrower will get significantly 14.6% more credit. The physical location of the firm is connecting to the local economic development or risk. Therefore, the bank favors borrowers from a richer neighborhood.

We use two variables, the employment size and the capital amount, to estimate how the firm size affect the corresponding credit amount. The coefficients of both are significantly positive, which shows that the larger firms will get more credit approved. When the borrower's employees increases by 1%, the approved credit will increase by 0.27%. A one standard deviation rise in log(Employees) would lead to approximatedly a 0.42% rise in credit amount. This is a 0.26% of standard deviation of the left hand side variable log(Credit Amount). Similarly, when its capital amount increase by 1%, the approved credit will increase by 0.23%. A one standard deviation rise in log(Capital) would imply approximated a 0.53% rise in credit amount. This is a 0.33% of standard deviation of log(Credit Amount).

Other controls includes the dummy of whether the firm is public listed, the balance of Deposit account, its Internal Rating and the corresponding branch's local GDP. The public listed companies on average will get 9.3% more credit from the bank, which implied that the bank prefer public listed companies. This result is consistent with our prediction since the public listed companies can provide audited financial statement and their shares do have market value or collateral values. Therefore, the bank would prefer them. The coefficients of the balance

of Deposit account and the corresponding branch's local GDP are significantly positive. The balance of its deposit account can be used to evaluate the cash flow or frozen as collateral directly, and, consequently will positively affect the credit amount. The local GDP measures the overall economic risk and credit allowance of the branch, which could affect branches systematic risk. When the Deposit increases by 1%, the approved credit will increase by 0.02%. A one standard deviation rise in log(Deposit) would lead to approximately a 0.08% rise in credit amount. This is a 0.05% of standard deviation of the left hand side variable log(Credit Amount). Similarly, when the local GDP increase by 1%, the approved cresit will increase by 0.17%. A one standard deviation rise in log(Local GDP) would imply approximated a 0.08$ rise in credit amount. This is a 0.05% of standard deviation of log(Credit Amount). The coefficient of Internal Rating is significantly negative, as it is defined to grow to credit risk. When the Internal Rating increases by one unit, the credit amount will decrease by 1.6%.

Column 2 of Table 2 reports OLS results for interest rate spread, using the difference between the contract interest rate recorded by the bank and the base rate on commercial loan of corresponding duration provided by the PBOC. Similarly, for each model we include industry, months and province fixed effects, and control for borrower characteristics.

The results suggested that SOE firms on average will significantly facing a lower cost. The spread is 0.28 percent lower for the SOE firms. This result is consistent with result in Table II, and both imply that the SOE borrowers do have an significant advantage in borrowing contracts. If the borrower is located in a more developed city than the branch, then the borrower will get a spread 0.10 percent lower. The physical location of the firm is connecting to the local economic development or risk, and richer neighborhood means lower risk premium.

The employment size and the capital amount are used to estimate how the firm size affect the corresponding credit amount. The coefficients of both are significantly negative, which shows that the larger firms will face a lower risk premium. When the borrower's employees increases by 1%, the spread will drop by 0.08 base point. A one standard deviation rise in log(Employees)

would lead to approximately a 0.13 base point decrease in interest spread. This is a 0.13% of standard deviation of the left hand side variable Spread. Similarly, when its capital amount increase by 1%, the approved credit will drop by 0.08 base point. A one standard deviation rise in log(Capital) would imply approximated a 0.17 percent decrease in credit amount. This is a 0.18% of standard deviation of Spread.

Other controls includes the dummy of whether the firm is public listed, the balance of Deposit account, its Internal Rating and the corresponding branch's local GDP. The coefficient on the dummy of public listed companies is insignificant, as they on average do not have lower risk. The coefficients of the balance of Deposit account and the corresponding branch's local GDP are significantly negative. The balance of its deposit account can be used to evaluate the cash flow or frozen as collateral directly, which can be connected to lower risk and lower risk premium. The local GDP could affect branches systematic risk, and more developed region will have lower systematic risk. When the Deposit increases by 1%, the spread will decrease by 0.02 base point. A one standard deviation rise in log(Deposit) would lead to approximately a 0.09 base point drop in spread. This is a 0.09% of standard deviation of the spread. Similarly, when the local GDP increase by 1%, the spread will decrease by 0.02 base point. A one standard deviation rise in log(Local GDP) would imply approximated a 0.09% rise in credit amount. This is a 0.09% of standard deviation of spread. The coefficient of Internal Rating is significantly positive, as it is defined to measure the risk. When the Internal Rating increases by one unit, the spread will grow by 0.02 percent.

Column 3 of Table 2 reports OLS results for duration, which is the number of months on the loan contract. Still, for each model we include industry, months and province fixed effects, and control for borrower characteristics.

The results suggest that SOE firms on average will significantly have a longer duration. The duration is 16% longer for the SOE firms. This result is consistent with result in the previous two tables, and both imply that the SOE borrowers do have an significant advantage

in borrowing contracts. If the borrower is located in a more developed city than the branch, then the borrower will obtain a contract of 15% longer. The branch prefers to maintain a longer relationship with firms from richer neighborhood, as these could be contracts of lower risk and less information cost.

The employment size and the capital amount work in different directions in the duration estimates. The coefficient for employment is significantly negative, while the coefficient for capital is significantly positive. The borrowers would prefer lower credit line and higher credit amount, but not necessarily longer duration. The duration is better to be matched with cash flow requirement, as a longer duration always means larger credit spread as well. For the labor intense industry, they have more short term cash flow demand, which is consistent with the summary statistics on industry. When the borrower's employees increases by 1%, the duration will drop by 0.03%. A one standard deviation rise in log(Employees) would lead to approximately a 0.05% drop in duration. This is a 0.09% of standard deviation of the duration. The capital intense companies are mostly working in the industry with long-term projects, and correspondingly would ask for longer duration. When its capital amount increases by 1%, the duration will increase by 0.04%. A one standard deviation rise in log(Capital) would imply approximated a 0.08% increase in credit amount. This is a 0.15% of standard deviation of the duration.

Other controls include the dummy of whether the firm is public listed, the balance of Deposit account, its Internal Rating and the corresponding branch's local GDP. The coefficient on the dummy of public listed companies is significantly. The long-term corporate bonds have a very competitive rate, and, therefore, the public listed companies may not restrict themselves to commercial loans. The duration on the public listed firms are on average 12.2% shorter. The coefficients of the balance of Deposit account and the corresponding branch's local GDP are significantly positive. The balance of its deposit account are necessary for the bank to follow the cash flow, specifically in the long-term contracts. The local GDP links to branches systematic

risk, and higher local GDP means lower systematic risk. When the Deposit increases by 1%, the duration will grow by 0.003%. A one standard deviation rise in log(Deposit) would lead to approximately a 0.01% growth in duration. This is a 0.02% of standard deviation of the duration. Similarly, when the local GDP increase by 1%, the duration will increase by 0.02%. A one standard deviation rise in log(Local GDP) would imply approximated a 0.01% rise in duration. This is a 0.01% of standard deviation of duration. The coefficient of Internal Rating is significantly negative, as the bank tries to limit the risk to relatively shorter project. When the Internal Rating increases by one unit, the duration will drop by 0.002%.

In summary, the SOE borrower will get a more favored contract, which includes larger credit allowance, lower interest spread and longer duration. This is consistent with our theoretical prediction. Moreover, the borrower residing in a more developed city will also be favored by the bank, as their location signaling lower economic risk. When the firm's capital amount, its deposit balance or the branch's local GDP increases, the bank will also offer a more generous contract to the borrower. Moreover, the internal rating is directly connecting to the loan contract. The higher the rating is, the higher the credit risk is. Therefore, the borrower is less favored by the bank, and will end up with a contract of lower credit line, larger spread and shorter duration.

6 Anti-corruption Movement

There are three main hypotheses we discussed in our theoretical model. First, the SOE borrower could obtain more credit comparing to Non-SOE borrower, but the gap is shrinking after Anti-corruption starts. Second, interest rate spread is lower for SOE firms, and the gap is also shrinking after Anti-corruption movement. Third, the default rate is lower for SOE firms, and it will grow for SOE borrowers after the Anti-corruption movement while drop for Non-SOE borrowers after it. Additionally, we want to test whether such action could be justified by ex post results, which are the default rates of projects in the sample. Specifically, more resources are

allocated to the Non-SOE borrowers after the Anti-corruption movement, and how such action or the Anti-corruption movement will affect the default rate. As discussed earlier, the Anti-corruption movement started after Chairman Xi took office, and this change is an exogenous shock to all government officials and state-owned enterprises or our sample bank.

We keep all the controls from the basic test, and will focus on how Anti-corruption movement will interact with all those variables. Our key variable is ownership of the firm, and its interaction with the Anti-corruption indicator.

6.1 difference-in-difference Tests on Loan Contracts

We are using a difference-in-difference test to study how the ownership and the Anti-corruption Campaign would affect the loan contracts. The two key variables are the borrower's ownership and the Anti-corruption. There are two types of borrowers, the SOE borrowers and the non-SOE borrowers. And there is one event shock, which is the Anti-corruption Movement. We want to see how each group of borrowers are affected by the event shock. We begin with a very simple test with these two variables and their interaction only, regardless to any firm controls. The baseline model is as below.

$$\ln(\text{Credit Amount}_{i,t}) = \alpha + \beta_1 \text{SOE}_{i,t} + \beta_2 \text{Anti-corruption}_{i,t} + \beta_3 \text{SOE}_{i,t} * \text{Anti-corruption}_{i,t} + \epsilon_{i,t}$$

$$\text{Spread}_{i,t} = \alpha + \beta_1 \text{SOE}_{i,t} + \beta_2 \text{Anti-corruption}_{i,t} + \beta_3 \text{SOE}_{i,t} * \text{Anti-corruption}_{i,t} + \epsilon_{i,t}$$

$$\ln(\text{Duration}_{i,t}) = \alpha + \beta_1 \text{SOE}_{i,t} + \beta_2 \text{Anti-corruption}_{i,t} + \beta_3 \text{SOE}_{i,t} * \text{Anti-corruption}_{i,t} + \epsilon_{i,t}$$

As before, i denots borrowers and t denotes months. The coefficient β_1 indicates that how the

SOE borrowers are treated differently before the Anti-corruption movement. The coefficient β_2 measures how the borrowers from either type on average will be affected by the Anti-corruption movement. The coefficient β_3 explains how the SOE borrowers' contract will alternate after the Anti-corruption movement. We do not consider any firm characteristics here, but we still control fixed effects on approved month, industry and physical location of province.

The first column of Table 3 reports the main results for credit amount, the third column of Table 3 reports the main results for interest rate spread, and the fifth column of Table 3 reports the main result for duration. We define a dummy to denote the Anti-corruption movement, which is 1 since 2013. The results on the difference-in-difference tests provide intuitive estimates on how the Anti-corruption movement would affect loan contracts.

After the Anti-corruption movement, the loan contract on average will have 13% more credit, at 1.10 percent lower spread with 9.3% longer duration, all the numbers are significant at 1% level. The test implies that the borrowers are better off after the Anti-corruption movement. The SOE borrowers on average will still get a better contract, which means 174% more credit, at 1 percent lower interest rate spread with 29% longer duration, and each number is significant at 1% level. Therefore, the SOEs are on average favored in borrowing process. After the Anti-corruption movement, the credit gap between SOE and Non-SOE borrowers drops by 14.1%, and it is significant at 5% level. The gap on other aspects of loan contract also shrinks. On average, the spread shrinks 0.31 percent, and the loan term shrinks 8.8%. Both are significant at 1% level. The basic result on the difference-in-difference test is consistent with our assumptions.

6.2 Tests on Loan Contracts

We will test three models on loan contracts with firm characteristics. First, we use the borrower's ownership while controlling for borrower's characteristics and fixed effects, and we interact an Anti-corruption Movement indicator with the ownership. Second, we interact the Anti-corruption indicator with both the ownership and the dummy of the firm locating in a more

developed city. Third, we use all the firm characteristics to interact with the Anti-corruption indicator.

$$\ln(\text{Credit Amount}_{i,t}) = \alpha + \beta_1 \text{SOE}_{i,t} + \beta_2 \text{Anti-corruption}_{i,t} + \beta_3 \text{SOE}_{i,t} * \text{Anti-corruption}_{i,t} + \gamma \text{Firm Controls}_{i,t} + \text{Fixed Effects} + \epsilon_{i,t}$$

$$\text{Spread}_{i,t} = \alpha + \beta_1 \text{SOE}_{i,t} + \beta_2 \text{Anti-corruption}_{i,t} + \beta_3 \text{SOE}_{i,t} * \text{Anti-corruption}_{i,t} + \gamma \text{Firm Controls}_{i,t} + \text{Fixed Effects} + \epsilon_{i,t}$$

$$\ln(\text{Duration}_{i,t}) = \alpha + \beta_1 \text{SOE}_{i,t} + \beta_2 \text{Anti-corruption}_{i,t} + \beta_3 \text{SOE}_{i,t} * \text{Anti-corruption}_{i,t} + \gamma \text{Firm Controls}_{i,t} + \text{Fixed Effects} + \epsilon_{i,t}$$

Similarly, i denots borrowers and t denotes months. The structure is not a true panel, as many of the borrowers appeared only once. We still include month, province and industry fixed effects in all of the models. We cluster standard errors by months, as the firm characteristics may change across time. As the bank may redistribute the credit to different branched within the same province, according to the credit line and industries. Therefore, we use the province instead of cities as the fixed effect.

The second column of Table 3 reports the main results for credit amount, the fourth column of Table 3 reports the main results for interest rate spread, and the sixth column of Table 3 reports the main result for duration. We define a dummy to denote the Anti-corruption movement, which is 1 since 2013. The main difference between these three tests and the basic ones are the Anti-corruption dummy as well as the intersection between the Anti-corruption and the ownership dummy. Comparing the results to the previous section, the coefficients on

the firm controls are almost the same, with changes of less than 1%. The coefficients of the ownership dummy change a lot in all three models, and we will discuss them one by one.

The second column of Table 3 reports OLS results for spread. Before the Anti-corruption movement started, SOE will get 49% more credit. After the Anti-corruption campaign, SOE will get 39% more credit, which means the gap is 10% less. Moreover, after the Anti-corruption movement, the borrower can get 9% more credit on average. The result is consistent with our prediction, that the misallocation in credit allowance have diminished and everyone can benefit after the Anti-corruption movement.

The fourth column of Table 3 reports OLS results for credit amount. Before the Anti-corruption movement started, the spread on SOE loans is on average 0.53 percent lower. After the Anti-corruption movement started, the gap between two kinds of ownership drop to 0.23 percent. Moreover, after the Anti-corruption movement, the borrower can on average get credit at 1.04 percent cheaper. As our predicted in the theory model, the inequality in spread are smaller and everyone faces a lower cost.

The sixth column of Table 3 reports the OLS results for duration. Before the Anti-corruption movement started, the duration for SOE borrowers was on average 23% longer. After the Anti-corruption movement started, the SOE will get a duration 14% longer, which means the gap is 9% smaller. Moreover, after the Anti-corruption movement, all types of borrowers can have 6% extension on their duration. Our theory model does not specify the effects on duration. However, the loan contract is improved for the Non-SOE type and everyone in general, which is consistent with our expectation on the Anti-corruption movement.

7 Robustness Check

We will run two groups of robustness tests. The first group of tests reconsiders the controls that we use for loan contracts and firm characteristics. The second group of tests discusses the

effects on loan outcomes.

7.1 Daily Effect instead of Monthly Effect

In our primary test, we only control the approved month of the corresponding loan and the exact proved date is used for calculate the interest rate spread. We use the monthly control, since all other data are available on monthly base. However, it is possible that the loan official's decision depends on the day of a week as well as the week of a month. More specifically, the operation mechanism within the bank may differ from Monday to Friday. The regulator provides guidelines on credit amount, spread and other aspects on individual loan contracts or overall risk management. By the end of each month, the bank has to submit summary statistics to the regulator. To comply with the regulator's requirement, the bank may select the loans to manipulate the summary statistics. Consequently, the approved day of a week and the approved week of a month could affect the individual loan contract.

Table 4, Table 5 and Table 6 compare the results on credit amount, spread and loan term with or without controls on the approved day of a week and the approved week of month. The first two columns list the result from our primary tests and other two columns provide the result with controls on the exact date. We include two controls on the approved date, which are the approved day and the approved week of the month. The result implies that the coefficients on the main controls remain almost the same. The value of each coefficient remains almost the same and so is the significance.

7.2 Alternative Control on Spread

In our primary test, we use the same controls for all three variables. However, the duration may affect the interest rate spread, as both the regulator and the bank managed loan contracts according to their duration. The base rate increases with duration. However, the bank prefers to offer long-term credit to borrowers with high quality, and may offer a very low interest rate

to compete for such loan contracts. Therefore, we add duration to the controls of the interest rate spread.

Table 7 reports the OLS results on interest rate spread. The first two columns list the result from our primary tests and other two columns provide the result with controls on the natural log of duration. The coefficient of duration is negative at 1% significant level, which shows the long-term contracts are on average favored. For each loan contract, the cost on information and operation are almost fixed regardless to duration and credit line. As a result, the longer the loan term is and the lower the marginal cost is. Therefore, the bank can charge less interest payment to achieve their profit margin. The regression results on most of the variables are not changed by much after the duration is included. The coefficient on the dummy of public listed firms is the only variable that changes drastically. In the primary OLS, the coefficient is around -0.015, and not significant different from 0. After we add a control on duration, the coefficient is around -0.03, and significant different from 0 at 1% level. The result indicates that the public listed firms on average will obtain contracts with interest rate spread 1.5 base point lower. If we consider the duration, the gap almost doubles and grows to 3 base points.

7.3 Loan Outcomes

We will also estimate how the Anti-corruption movement will affect the loan outcomes. Our measure of Non-Performing Loan equals one for the loans that denoted by the bank, and zero otherwise. We report marginal effects from the Probit regression for this variable. The key variables of interest are the interaction effect between ownership and the Anti-corruption movement and the loan contracts. We test two models, which are listed as below. The first model is the difference-in-difference test without loan contract or firm characteristics, and the second

one includes the loan contract as well as the firm characteristics.

$$\begin{aligned}\text{Default}_{i,t} =&\beta_1 \text{SOE}_{i,t} + \beta_2 \text{Anti-corruption}_{i,t} + \beta_3 \text{SOE}_{i,t} * \text{Anti-corruption}_{i,t} + \\ &\text{Fixed Effects} + \epsilon_{i,t}\end{aligned}$$

$$\begin{aligned}\text{Default}_{i,t} =&\beta_1 \text{SOE}_{i,t} + \beta_2 \text{Anti-corruption}_{i,t} + \beta_3 \text{SOE}_{i,t} * \text{Anti-corruption}_{i,t} + \\ &\gamma \text{Firm Controls}_{i,t} + \text{Fixed Effects} + \epsilon_{i,t}\end{aligned}$$

$$\begin{aligned}\text{Default}_{i,t} =&\beta_1 \text{SOE}_{i,t} + \beta_2 \text{Anti-corruption}_{i,t} + \beta_3 \text{SOE}_{i,t} * \text{Anti-corruption}_{i,t} + \\ &\beta_4 \ln(\text{Credit Amount}_{i,t}) + \beta_5 \text{Spread}_{i,t} + \beta_6 \ln(\text{Duration}_{i,t}) + \\ &\gamma \text{Firm Controls}_{i,t} + \text{Fixed Effects} + \epsilon_{i,t}\end{aligned}$$

Column 1 of Table 8 reports the result from the basic difference-in-difference test on default rate, Column 2 of Table 8 reports the result with the firm characteristics, and Column 3 of Table 8 reports the result with both the loan contract and the firm characteristics. Similar as before, i indexes borrowers and t indexes months. The controls of loan contracts include the credit amount, the spread and the duration. We use the same firm controls as the primary test.

In the theory model, we showed that the SOE borrowers will have a smaller default rate, and the gap will decrease after the Anti-corruption movement. The overall default rate was fixed in our two-period theory model. In our sample, the loan term are much more than two-periods, and less government intervention will lead default to happen earlier. Consequently, the overall ratio on Non Performing Loan will increase after the Anti-corruption Movement starts.

We use the loan issued between 2012 and 2013 in the Probit tests instead of the 5 year loan contracts in our primary tests. There are two reasons for selecting the smaller sample. First, most of the default happens near the end of the duration. Loans issued between 2012 and

2013 have at least 3 years of history, which is long enough to observe the corresponding loan outcomes. Second, the Anti-corruption movement happened at the end of 2013, and this data set contains one year before the Anti-corruption movement and one year after the Anti-corruption movement, which is enough for the difference-in-difference test.

The basic test in Column 1 is the same as we predicted in our theory model and previous discussion. The SOE borrower is on average less likely to default. After the Anti-corruption Movement, the overall default rate is higher, and the gap between SOE and Non-SOE firms shrinks. The three coefficients are all statistically significant. On average, the SOE is 3% less likely to default, and it is significant at 1% level. After the Anti-corruption Movement, the overall default rate increase by 1%, which is also significant at 1% level.

In Column 2, the sign of the coefficients on the ownership and the Anti-corruption are the same as in Column I. The three coefficients are all statistically significant. For a given loan, with its contract and firm characteristics at the mean level, the SOE is 0.03% less likely to default, and the coefficient is significant at 10% level. After the Anti-corruption Movement, the default rate of a mean level loan goes up by 0.1%, and the coefficient is significant at 1% level.

In Column 3, the sign of the coefficients on the ownership and the Anti-corruption are the same as in Column I and Column II. The three coefficients are all statistically significant. For a loan, with its contract and firm characteristics at mean level, the SOE is 0.1% less likely to default, and the coefficient is significant at 1% level. After the Anti-corruption Movement, the default rate of a mean level loan increase by 0.1%, and the coefficient is significant at 1% level.

8 Conclusion

In this paper, we study how loan contracts are affected by the corresponding borrower's ownership, and how the Anti-corruption Campaign would intersect with the ownership effect. We begin with a two-period theory model containing two types of borrowers, the state-owned En-

terprises and Non-state-owned Enterprises. We introduce a private benefit for the bank when they issue credit to SOE borrowers. It illustrates how the government subsidize SOE firms. We find that the SOE borrowers will get loan contracts with lower interest rate and larger credit, and they are less likely to default. When the private benefit drops, the gap on interest rate and credit will shrink. Moreover, the default rate on SOE loans will increase. Next, we use the Anti-corruption Campaign in China as an exogenous shock to private benefit and apply it to domestic loan-level data from 2012 to 2016. The Anti-corruption Campaign started from the highest level, and was an exogenous shock to the whole country. The empirical test examines how a drop in private benefit would affect loan contracts, and how this event would intersect with the borrower's ownership. The result suggests that the inequality between two types of ownership are effectively shrinking. It is consistent with our theoretical model and statistically significant. In general, the SOE firms obtains contract with larger credit amount, lower interest rate and longer duration. After the Anti-corruption Movement started, the SOE firms' advantage diminished, as their contracts are with relatively smaller credit amount, lower interest rate and longer duration. On the other hand, the Non-SOE borrowers' condition are improved, with larger credit amount, lower interest rate and longer duration. The credit market for the non-state-owned enterprises has been improved greatly.

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Table 1: Summary Statistics

This table reports the summary statistics for the main variables used in the paper. Interest Rate Spread is the difference between the nominal interest rate and the base rate of corresponding duration in percentage. Duration is the number of month in the loan term. Borrower from A Richer City is a dummy variable that equals to one if the local GDP of the borrower is higher than the local GDP of the branch. SOE is a dummy variable that equals to one if the borrower is a state-owned Enterprise. Listed Firm is a dummy variable that equals to one if the borrower is listed in a stock exchange. Internal Rating is an integer by the bank to denote how risky the borrower is. ln(Credit Amount) is the log of Credit Amount in RMB issued to the borrower. ln(Duration) is the log of the duration in month. ln(Employees) is the log of the number of employees in the borrower's firm. ln(Capital) is the log of the borrower's capital amount in RMB. ln(Deposit) is the log of the borrower's deposit account balance in RMB. ln(Local GDP) is the log of the local GDP of the city where the borrower is located. Anticorrupion is a dummy variable what equals to one after the Anti-corruption Campaign started. The sample period is from 2012 to 2016.

	Mean	SD	Median	p25	p75
Interest Rate Spread	0.87	0.93	0.72	0.06	1.50
Duration	21.24	28.06	18.00	13.00	18.00
Borrower from A Richer City	0.01				
SOE	0.10				
Listed Firm	0.03				
Internal Rating	5.43	3.85	4.00	3.00	6.00
ln(Credit Amount)	15.32	1.61	15.32	14.51	16.12
ln(Duration)	2.82	0.54	2.89	2.56	2.89
ln(Employees)	4.81	1.55	4.65	3.69	5.74
ln(Capital)	16.43	2.26	16.12	14.91	17.73
ln(Deposit)	12.43	3.88	12.99	9.91	15.21
ln(Local GDP)	11.10	0.48	11.14	10.76	11.48
Anti-corruption	0.84				

Table 2: Baseline Regressions with Firm Characteristics

This table reports the results of the baseline panel regressions with firm characteristics. In column (1), the dependent variable is the log of the credit amount on the loan contract (ln(Credit Amount)). In column (2), the dependent variable is the interest rate spread between the nominal interest rate and the corresponding base rate (Interest Rate Spread). In column (3), the dependent variable is the log of duration in month (ln(Duration)). SOE is a dummy variable equal to one if the borrower is a state-owned Enterprise. Other control variables include whether the borrower is from a city richer than the bank branch (Borrower from A Richer City), the log of the borrower's employee size (ln(Emplyees)), whether the borrower is listed in an stock exchange (Listed Firm), the log of the borrower's capital amount (ln(Capital)), the log of the borrower's deposit account balance (Deposit), the borrower's internal rating by the bank (Internal Rating), and the local GDP in RMB where the borrower is located (ln(Local GDP)). Industry, province, and month fixed effects are included in all regressions. Standard errors are clustered at the month level. t-statistics are shown in parentheses, with *, **, *** denoting statistical significance at 10%, 5%, 1% respectively. The sample period is from 2012 to 2016.

	Dep Var: ln(Credit Amount)	Dep Var: Interest Rate Spread	Dep Var: ln(Duration)
	(1)	(2)	(3)
SOE	0.406***	-0.282***	0.160***
	(16.86)	(-17.82)	(19.09)
Borrower from A Richer City	0.146***	-0.100***	0.146***
	(4.38)	(-4.83)	(10.48)
ln(Employees)	0.274***	-0.081***	-0.031***
	(49.42)	(-15.71)	(-18.55)
Listed Firm	0.093***	-0.016	-0.122***
	(4.30)	(-1.56)	(-19.87)
ln(Capital)	0.233***	-0.075***	0.036***
	(70.03)	(-18.85)	(26.37)
ln(Deposit)	0.022***	-0.023***	0.003***
	(13.08)	(-15.36)	(7.87)
Internal Rating	-0.016***	0.018***	-0.002***
	(-6.53)	(7.87)	(-4.43)
ln(Local GDP)	0.175***	-0.092***	0.015***
	(13.94)	(-7.90)	(3.31)
Industry Fixed Effect	Yes	Yes	Yes
Province Fixed Effect	Yes	Yes	Yes
Month Fixed Effect	Yes	Yes	Yes

Table 3: difference-in-difference Tests of the Anti-corruption Campaign

This table reports the results of difference-in-difference tests of the Anti-corruption Campaign. In column (1) and column (2), the dependent variable is the log of the credit amount on the loan contract (ln(Credit Amount)). In column (3) and (4), the dependent variable is the interest rate spread between the nominal interest rate and the corresponding base rate (Interest Rate Spread). In column (5) and (6), the dependent variable is the log of duration in month (ln(Duration)). SOE is a dummy variable equal to one if the borrower is a state-owned Enterprise. Anti-corruption is a dummy variable equal to one if the loan contract is approved after the Anti-corruption Campaign started in 2013. Other control variables include whether the borrower is from a city richer than the bank branch (Borrower from A Richer City), the log of the borrower's employee size (ln(Emplyees)), whether the borrower is listed in an stock exchange (Listed Firm), the log of the borrower's capital amount (ln(Capital)), the log of the borrower's deposit account balance (Deposit), the borrower's internal rating by the bank (Internal Rating), and the local GDP in RMB where the borrower is located (ln(Local GDP)). Industry, province, and month fixed effects are included in all regressions. Standard errors are clustered at the month level. *t*-statistics are shown in parentheses, with *, **, *** denoting statistical significance at 10%, 5%, 1% respectively. The sample period is from 2012 to 2016.

	Dep Var: ln(Credit Amount)		Dep Var: Interest Rate Spread		Dep Var: ln(Duration)	
	(1)	(2)	(3)	(4)	(5)	(6)
Anti-corruption	0.133***	0.089***	-1.096***	-1.041***	0.093***	0.062***
	(12.59)	(7.07)	(-119.90)	(-110.91)	(22.79)	(15.43)
SOE	1.740***	0.491***	-0.996***	-0.525***	0.291***	0.230***
	(28.43)	(8.51)	(-25.05)	(-11.86)	(10.68)	(9.74)
Anti-corruption*SOE	-0.141**	-0.103*	0.306***	0.296***	-0.088***	-0.085***
	(-2.15)	(-1.72)	(4.91)	(5.00)	(-2.93)	(-3.16)
Borrower from A Richer City		0.145***		-0.098***		0.145***
		(4.35)		(-4.82)		(10.50)
ln(Employees)		0.274***		-0.081***		-0.031***
		(49.39)		(-15.84)		(-18.48)
Listed Firm		0.093***		-0.014		-0.123***
		(4.26)		(-1.37)		(-19.98)
ln(Capital)		0.233***		-0.075***		0.036***
		(70.05)		(-18.83)		(26.54)
ln(Deposit)		0.022***		-0.023***		0.003***
		(13.13)		(-15.21)		(7.81)
Internal Rating		-0.016***		0.018***		-0.002***
		(-6.53)		(7.88)		(-4.45)
ln(Local GDP)		0.175***		-0.092***		0.015***
		(13.94)		(-7.85)		(3.27)
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Province Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Month Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes

Table 4: difference-in-difference Test for ln(Credit Amount) with Fixed Effects on the Exact Approved Date

This table reports the results of the difference-in-difference test for credit amount with fixed effects on the exact approved date. In all the columns, the dependent variable is the log of the credit amount on the loan contract (ln(Credit Amount)). SOE is a dummy variable equal to one if the borrower is a state-owned Enterprise. Anti-corruption is a dummy variable equal to one if the loan contract is approved after the Anti-corruption Campaign started in 2013. Other control variables include whether the borrower is from a city richer than the bank branch (Borrower from A Richer City), the log of the borrower's employee size (ln(Emplyees)), whether the borrower is listed in an stock exchange (Listed Firm), the log of the borrower's capital amount (ln(Capital)), the log of the borrower's deposit account balance (Deposit), the borrower's internal rating by the bank (Internal Rating), and the local GDP in RMB where the borrower is located (ln(Local GDP)). Industry, province, and month fixed effects are included in all regressions. The first two columns do not consider the fixed effect of the exact approved date. Column (3) and column (4) consider the fixed effect of the exact approved date. Standard errors are clustered at the month level. t-statistics are shown in parentheses, with *, **, *** denoting statistical significance at 10%, 5%, 1% respectively. The sample period is from 2012 to 2016.

	Dep Var: ln(Credit Amount)			
	(1)	(2)	(3)	(4)
Anti-corruption		0.089***		0.085***
		(7.07)		(7.52)
SOE	0.406***	0.491***	0.160***	0.495***
	(16.86)	(8.51)	(19.09)	(8.81)
Anti-corruption*SOE		-0.103*		-0.109*
		(-1.72)		(-1.82)
Borrower from A Richer City	0.146***	0.145***	0.146***	0.146***
	(4.38)	(4.35)	(10.48)	(4.38)
ln(Employees)	0.274***	0.274***	-0.031***	0.273***
	(49.42)	(49.39)	(-18.55)	(51.90)
Listed Firm	0.093***	0.093***	-0.122***	0.094***
	(4.30)	(4.26)	(-19.87)	(4.32)
ln(Capital)	0.233***	0.233***	0.036***	0.234***
	(70.03)	(70.05)	(26.37)	(71.95)
ln(Deposit)	0.022***	0.022***	0.003***	0.022***
	(13.08)	(13.13)	(7.87)	(13.59)
Internal Rating	-0.016***	-0.016***	-0.002***	-0.015***
	(-6.53)	(-6.53)	(-4.43)	(-6.61)
ln(Local GDP)	0.175***	0.175***	0.015***	0.176***
	(13.94)	(13.94)	(3.31)	(14.76)
Industry Fixed Effect	Yes	Yes	Yes	Yes
Province Fixed Effect	Yes	Yes	Yes	Yes
Month Fixed Effect	Yes	Yes	Yes	Yes
Date Fixed Effect	No	No	Yes	Yes

Table 5: difference-in-difference Test for Interest Rate Spread with Fixed Effects on the Exact Approved Date

This table reports the results of the difference-in-difference test for interest rate spread with fixed effects on the exact approved date. In all the columns, the dependent variable is the interest rate spread between the nominal interest rate and the corresponding base rate (Interest Rate Spread). SOE is a dummy variable equal to one if the borrower is a state-owned Enterprise. Anti-corruption is a dummy variable equal to one if the loan contract is approved after the Anti-corruption Campaign started in 2013. Other control variables include whether the borrower is from a city richer than the bank branch (Borrower from A Richer City), the log of the borrower's employee size (ln(Emplyees)), whether the borrower is listed in an stock exchange (Listed Firm), the log of the borrower's capital amount (ln(Capital)), the log of the borrower's deposit account balance (Deposit), the borrower's internal rating by the bank (Internal Rating), and the local GDP in RMB where the borrower is located (ln(Local GDP)). Industry, province, and month fixed effects are included in all regressions. The first two columns do not consider the fixed effect of the exact approved date. Column (3) and column (4) consider the fixed effect of the exact approved date. Standard errors are clustered at the month level. t-statistics are shown in parentheses, with *, **, *** denoting statistical significance at 10%, 5%, 1% respectively. The sample period is from 2012 to 2016.

	Dep Var: Interest Rate Spread			
	(1)	(2)	(3)	(4)
Anti-corruption		-1.041***		-1.045***
		(-110.91)		(-105.35)
SOE	-0.282***	-0.525***	-0.282***	-0.525***
	(-17.82)	(-11.86)	(-18.21)	(-11.79)
Anti-corruption*SOE		0.296***		0.296***
		(5.00)		(4.98)
Borrower from A Richer City	-0.100***	-0.098***	-0.100***	-0.098***
	(-4.83)	(-4.82)	(-4.82)	(-4.82)
ln(Employees)	-0.081***	-0.081***	-0.081***	-0.081***
	(-15.71)	(-15.84)	(-15.88)	(-16.01)
Listed Firm	-0.016	-0.014	-0.016	-0.014
	(-1.56)	(-1.37)	(-1.55)	(-1.36)
ln(Capital)	-0.075***	-0.075***	-0.075***	-0.075***
	(-18.85)	(-18.83)	(-18.85)	(-18.82)
ln(Deposit)	-0.023***	-0.023***	-0.023***	-0.023***
	(-15.36)	(-15.21)	(-15.46)	(-15.32)
Internal Rating	0.018***	0.018***	0.018***	0.018***
	(7.87)	(7.88)	(7.95)	(7.97)
ln(Local GDP)	-0.092***	-0.092***	-0.093***	-0.092***
	(-7.90)	(-7.85)	(-7.93)	(-7.89)
Industry Fixed Effect	Yes	Yes	Yes	Yes
Province Fixed Effect	Yes	Yes	Yes	Yes
Month Fixed Effect	Yes	Yes	Yes	Yes
Date Fixed Effect	No	No	Yes	Yes

Table 6: difference-in-difference Test for ln(Duration) with Fixed Effects on the Exact Approved Date

This table reports the results of the difference-in-difference test for loan duration with fixed effects on the exact approved date. In all the columns, the dependent variable is the log of duration in months (ln(Duration)). SOE is a dummy variable equal to one if the borrower is a state-owned Enterprise. Anti-corruption is a dummy variable equal to one if the loan contract is approved after the Anti-corruption Campaign started in 2013. Other control variables include whether the borrower is from a city richer than the bank branch (Borrower from A Richer City), the log of the borrower's employee size (ln(Emplyees)), whether the borrower is listed in an stock exchange (Listed Firm), the log of the borrower's capital amount (ln(Capital)), the log of the borrower's deposit account balance (Deposit), the borrower's internal rating by the bank (Internal Rating), and the local GDP in RMB where the borrower is located (ln(Local GDP)). Industry, province, and month fixed effects are included in all regressions. The first two columns do not consider the fixed effect of the exact approved date. Standard errors are clustered at the month level. *t*-statistics are shown in parentheses, with *, **, *** denoting statistical significance at 10%, 5%, 1% respectively. The sample period is from 2012 to 2016.

	Dep Var: ln(Duration)			
	(1)	(2)	(3)	(4)
Anti-corruption		0.062***		0.069***
		(15.43)		(17.54)
SOE	0.160***	0.230***	0.161***	0.231***
	(19.09)	(9.74)	(20.00)	(9.90)
Anti-corruption*SOE		-0.085***		-0.085***
		(-3.16)		(-3.18)
Borrower from A Richer City	0.146***	0.145***	0.146***	0.146***
	(10.48)	(10.50)	(10.53)	(10.54)
ln(Employees)	-0.031***	-0.031***	-0.031***	-0.031***
	(-18.55)	(-18.48)	(-19.20)	(-19.13)
Listed Firm	-0.122***	-0.123***	-0.122***	-0.123***
	(-19.87)	(-19.98)	(-19.90)	(-20.01)
ln(Capital)	0.036***	0.036***	0.036***	0.036***
	(26.37)	(26.54)	(26.84)	(27.02)
ln(Deposit)	0.003***	0.003***	0.003***	0.003***
	(7.87)	(7.81)	(8.27)	(8.22)
Internal Rating	-0.002***	-0.002***	-0.002***	-0.002***
	(-4.43)	(-4.45)	(-4.55)	(-4.58)
ln(Local GDP)	0.015***	0.015***	0.016***	0.016***
	(3.31)	(3.27)	(3.55)	(3.52)
Industry Fixed Effect	Yes	Yes	Yes	Yes
Province Fixed Effect	Yes	Yes	Yes	Yes
Month Fixed Effect	Yes	Yes	Yes	Yes
Date Fixed Effect	No	No	Yes	Yes

Table 7: Robustness Test on Interest Rate Spread with a Control of ln(Duration)

This table reports the results of the robustness test on Interest Rate Spread with a control of ln(Duration). In all the columns, the dependent variable is the interest rate spread between the nominal interest rate and the corresponding base rate (Interest Rate Spread). SOE is a dummy variable equal to one if the borrower is a state-owned Enterprise. Anti-corruption is a dummy variable equal to one if the loan contract is approved after the Anti-corruption Campaign started in 2013. Other control variables include the log of duration in month (ln(Duration)), whether the borrower is from a city richer than the bank branch (Borrower from A Richer City), the log of the borrower's employee size (ln(Emplyees)), whether the borrower is listed in an stock exchange (Listed Firm), the log of the borrower's capital amount (ln(Capital)), the log of the borrower's deposit account balance (Deposit), the borrower's internal rating by the bank (Internal Rating), and the local GDP in RMB where the borrower is located (ln(Local GDP)). Industry, province, and month fixed effects are included in all regressions. Standard errors are clustered at the month level. t-statistics are shown in parentheses, with *, **, *** denoting statistical significance at 10%, 5%, 1% respectively. The sample period is from 2012 to 2016.

	Dep Var: Interest Rate Spread			
	(1)	(2)	(3)	(4)
Anti-corruption		-1.041***		-1.035***
		(-110.91)		(-104.82)
SOE	-0.282***	-0.525***	-0.265***	-0.501***
	(-17.82)	(-11.86)	(-17.43)	(-11.42)
Anti-corruption*SOE		0.296***		0.288***
		(5.00)		(4.93)
Borrower from A Richer City	-0.100***	-0.098***	-0.084***	-0.083***
	(-4.83)	(-4.82)	(-4.11)	(-4.10)
ln(Duration)			-0.106***	-0.105***
			(-6.39)	(-6.35)
ln(Employees)	-0.081***	-0.081***	-0.084***	-0.084***
	(-15.71)	(-15.84)	(-15.82)	(-15.92)
Listed Firm	-0.016	-0.014	-0.029***	-0.027***
	(-1.56)	(-1.37)	(-2.87)	(-2.65)
ln(Capital)	-0.075***	-0.075***	-0.071***	-0.071***
	(-18.85)	(-18.83)	(-19.99)	(-19.97)
ln(Deposit)	-0.023***	-0.023***	-0.022***	-0.022***
	(-15.36)	(-15.21)	(-15.72)	(-15.57)
Internal Rating	0.018***	0.018***	0.018***	0.018***
	(7.87)	(7.88)	(7.78)	(7.80)
ln(Local GDP)	-0.092***	-0.092***	-0.091***	-0.090***
	(-7.90)	(-7.85)	(-7.89)	(-7.84)
Industry Fixed Effect	Yes	Yes	Yes	Yes
Province Fixed Effect	Yes	Yes	Yes	Yes
Month Fixed Effect	Yes	Yes	Yes	Yes

Table 8: Loan Outcomes

This table reports the result of the difference-in-difference test for loan outcomes. In all the columns, the dependent variable is the dummy variable of Non Performing Loan. It equals to one if the borrower delayed their payment and is recorded by the bank. SOE is a dummy variable equal to one if the borrower is a State-owned Enterprise. Anti-corruption is a dummy variable equal to one if the loan contract is approved after the Anti-corruption Campaign started in 2013. Other control variables include the log of the credit amount on the loan contract (ln(Credit Amount)), the interest rate spread between the nominal interest rate and the corresponding base rate (Interest Rate Spread), the log of duration in month (ln(Duration)), whether the borrower is from a city richer than the bank branch (Borrower from A Richer City), the log of the borrower's employee size (ln(Emplyees)), whether the borrower is listed in an stock exchange (Listed Firm), the log of the borrower's capital amount (ln(Capital)), the log of the borrower's deposit account balance (Deposit), the borrower's internal rating by the bank (Internal Rating), and the local GDP in RMB where the borrower is located (ln(Local GDP)). Industry, province, and month fixed effects are included in all regressions. Standard errors are clustered at the month level. t-statistics are shown in parentheses, with *, **, *** denoting statistical significance at 10%, 5%, 1% respectively. The sample includes loan issued from 2012 to 2013, and the outcome record is from 2012 to 2016.

	Dep Var: Non Performing Loan		
	(1)	(2)	(3)
Anti-corruption	0.228***	0.244***	0.750***
	(26.70)	(14.48)	(20.78)
SOE	-0.595***	-0.243*	-0.417***
	(-7.63)	(-1.89)	(-3.15)
Anti-corruption*SOE	0.161*	0.286**	0.261*
	(1.79)	(2.10)	(1.91)
ln(Credit Amount)			0.120***
			(9.52)
Interest Rate Spread			-0.041***
			(-2.69)
ln(Duration)			0.041***
			(9.73)
Borrower from A Richer City		-0.268	0.060
		(-1.35)	(0.30)
ln(Employees)		0.104***	0.072***
		(4.66)	(5.08)
Listed Firm		0.163	0.156
		(1.63)	(1.38)
ln(Capital)		0.044***	0.046***
		(2.80)	(4.51)
ln(Deposit)		-0.069***	-0.069***
		(-21.25)	(-30.12)
Internal Rating		0.122***	0.173***
		(19.85)	(19.38)
ln(Local GDP)		-0.209***	-0.121***
		(-3.99)	(-3.07)
Industry Fixed Effect	Yes	Yes	Yes
Province Fixed Effect	Yes	Yes	Yes
Month Fixed Effect	Yes	Yes	Yes