Quality of information disclosure, property rights, and bank loans: A bank heterogeneity perspective

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ABSTRACT

Using the context of the financial reform and the development of the non-state sector in China in the past decade, we examine the roles that the quality of information disclosure and property rights play in the allocation of different types of bank credit. We find that foreign banks and policy banks exercise "financial discrimination," and that local commercial banks, large state-owned commercial banks, national joint-stock banks, local city commercial banks, and rural commercial banks not only exercise financial discrimination but also provide significant "financial support" to non-state-owned enterprises by providing more lending opportunities and larger loans. However, when enterprises commit information disclosure violations, the local commercial banks, national joint-stock banks, local city commercial banks, and rural commercial banks reverse their credit decisions and begin to exercise financial discrimination against non-state-owned enterprises. At the same time, large state-owned commercial banks continue to provide financial support to non-state-owned enterprises. We also find that the quality of the information disclosed by enterprises has a moderating effect rather than an intermediary effect on the relationship between property rights and bank loans. Overall, the results of this paper shine new light on the market-oriented reform of the banking industry, and provide new empirical evidence for the presence of financial discrimination in the supply of bank credit. Our findings also have practical implications for solving the financing difficulties of non-state-owned enterprises.
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1. Introduction

Because finance provides the basis for economic growth, the economic growth of transition economies is closely related to the availability of bank loans. In China, the majority of companies, including listed companies, obtain their medium and long-term debt financing from banks, and their external financing is mainly in the form of bank loans.[1] The allocation of bank credit has naturally aroused the attention of many scholars: (Allen et al., 2005; Sun et al., 2006; Fang, 2007; Yu and Pan, 2008; Lu et al., 2009; Liu and Chen, 2018). However, the empirical literature on the allocation of bank credit has produced mixed findings and explanations. From a credit supply perspective, some scholars believe that bank credit is mainly invested in state-owned enterprises, that is, bank loans are subject to ''financial discrimination'' (Lin and Li, 2004; Lu et al., 2009). Alternatively, from a credit demand perspective, some scholars have found that the lack of loans to non-state-owned enterprises is due to the worse information disclosure and smaller financing demand of non-state-owned enterprises rather than the banks' financial discrimination. Bai et al. (2005) propose that non-state-owned enterprises can alleviate their financing difficulties by improving the quality of the information they disclose. Moreover, Fang (2010) argues that the lack of loans to non-state-owned enterprises is due to their small demand for bank loans and preferences for stock market financing after listing.

We believe that excluding the financing needs of listed companies and including the property rights and information disclosure quality of listed companies in the same framework will help to provide an empirical solution to the credit allocation problem. We use the bank loan approval documents of listed companies to eliminate the financing needs of listed companies. The approval documents represent the listed companies' applications for bank loans, and thus indicate the demand for bank loans. The final approval of the applications is a unilateral decision of the bank, and is not determined by the relationship between the bank credit supply and the financing demands of the listed companies. In the case that state-owned and non-state-owned enterprises both have financing needs, the phenomenon of financial discrimination in the supply of bank credit is tested by observing the opportunities for obtaining bank loans and the differences in the scale of the new bank loans issued to the two types of enterprises.

The financial discrimination of the state-owned banks stems from their natural affiliation with state-owned enterprises. However, little is known about whether national joint-stock banks, local city commercial banks, and rural commercial banks also engage in financial discrimination. Because most of the studies on bank credit decision-making examine all types of banks, few studies have separately examined the large state-owned commercial banks and national joint-stock banks to determine the differences between the credit decisions of the different types of banks. In fact, in China, foreign banks, policy banks, large state-owned commercial banks, national joint-stock banks, local city commercial banks, and rural commercial banks have been competing with each other since 2006. Thus, it is imperative to separate the different types of banks.

Many studies assume that information asymmetry is the main reason for the bank credit mismatch. Although Sun et al. (2006) and Zhengfei (2008) examined the role of accounting information in bank credit decision-making, their investigation concentrated on the period before 2006 and focused on the institutional setting rather than the financial industry. In addition, Lu et al. (2009) found that under certain conditions (when monetary policy is tight), banks exercise financial discrimination in granting loans. Chen et al. (2015) found that financial development promoted the marketization of banks and weakened the level of financial discrimination. However, enterprises have difficulty managing macro-factors such as monetary policy and financial development, and although the non-state-owned sector is developing and expanding, non-state-owned enterprises may need to independently improve the quality of their information disclosure to avoid financing difficulties.

Therefore, taking all A-share listed companies from 2007 to 2016 as a sample, we investigate the roles that property rights and the quality of information disclosure play in the credit decision-making of different types

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[1] According to a monetary policy implementation report disclosed by the People's Bank of China, during the 2007–2012 period, the proportion of foreign currency loans, entrustment loans, trust loans, non-discounted bank drafts, corporate bonds, and equity financing in the real economy from the financial system was 65.82%, 7.01%, 6.44%, 7.86%, 9.46%, 3.42%, respectively. In the data collection for this paper, we found that the amount of bank loan finance issued to listed companies was much greater than the amount of equity financing. That is, in addition to IPO financing, the external financing of listed companies in China is still dominated by bank borrowing.

of banks after the market-oriented reform of the financial sector. Our research period covers the important reform and development of China's financial industry over the past 10 years. To reduce the noise of factors other than property rights and the quality of information disclosure, we treat state-owned enterprises and non-state enterprises with propensity score matching (PSM), which is different from the existing research. We find that foreign banks exhibit significant financial discrimination in their credit decisions and that policy banks exercise significant financial discrimination in granting loans to non-state-owned enterprises. Moreover, local commercial banks, large state-owned commercial banks, national joint-stock banks, local city commercial banks, and rural commercial banks do not only not financially discriminate against non-state-owned enterprises but also provide significant financial support to the enterprises. Overall, non-state-owned enterprises have more opportunities for obtaining bank loans. However, when these enterprises make information disclosure violations, the credit decisions of the national joint-stock banks, local city commercial banks, and rural commercial banks reverse, and the banks begin to engage in financial discrimination against the non-state-owned enterprises. At the same time, the large state-owned commercial banks continue to provide financial support to the non-state-owned enterprises.

Our paper makes three main contributions to the literature. First, we provide new empirical evidence of the financial discrimination in the supply of bank credit. By controlling the financing demand of enterprises and treating the PSM of state-owned and non-state-owned enterprises, this paper examines the relationship between property rights and bank loans. We find that the banks act heterogeneously, with only foreign banks and policy banks exercising financial discrimination. In addition to providing significant financial support, the local commercial banks, large state-owned commercial banks, national joint-stock banks, local city commercial banks, and rural commercial banks do not engage in financial discrimination. Overall, non-state-owned enterprises have more opportunities for obtaining bank loans. Second, we provide empirical evidence of how the different types of banks allocate their credit resources after the market-oriented reform of the financial industry. Although a large body of research has examined the subject of bank loans, little empirical evidence has been collected in relation to the development of the financial system over the past decade. Moreover, most studies regard banks as a whole, and it is not clear whether the credit decisions of different types of banks are different. Based on the background of the financial reform and the development of non-state-owned enterprises, this paper comprehensively examines the credit decisions of different types of banks and the different developmental paths of the different types of banks. Finally, the findings of this paper have practical significance in helping solve the financing difficulties of non-state-owned enterprises. Most of the studies on the financing of non-state-owned enterprises in China focus on the financial system, and analyze the necessity of reforming the financial system and developing private financial institutions (Bin and Manlu, 2002; Feng and Yang, 2004). Starting with the characteristics of non-state-owned enterprises, we find that the information disclosure violations of non-state-owned enterprises trigger the financial discrimination of the national joint-stock banks, local city commercial banks, and rural commercial banks. This indicates that the quality of the information disclosed by non-state-owned enterprises plays an important role in determining their access to bank credit resources. Specifically, non-state-owned enterprises tend to use their initiative to actively resolve the information asymmetry between banks and enterprises, which is conducive to easing their financing constraints.

The remainder of this paper is organized as follows. In section two, we present the institutional background, theoretical analysis, and research hypothesis. Section three introduces the research design. In section four, we provide the empirical results and analyses. The final section concludes the paper and discusses the policy implications of the findings.

2. Institutional background, theoretical analysis, and research assumptions

2.1. Reform of China's financial sector

The reform of China's financial industry began with the introduction of a "unified" system under the traditional planned economy. During the transition process, the banks underwent a number of long-term, phased changes. In 1979, the state began to change the financial allocation in the field of fixed asset investment and introduced a pilot project for bank loans (which was implemented nationwide in 1985), which opened the way

for the financial reform. In 1984, the People's Bank of China was designated as the Central Bank, and the Industrial and Commercial Bank of China, Agricultural Bank of China, Bank of China, and China Construction Bank were transformed into national professional banks, thereby forming a dual banking system under government control. In 1994, the China Development Bank, Import and Export Bank of China, and Agricultural Development Bank of China were established. Since then, the policy finance and commercial finance sectors have operated as separate systems, and the national specialized banks have become increasingly commercial. On July 1, 1995, the Commercial Bank Law was put into effect, and the national professional banks became independent legal entities that were responsible for their own profits and losses. As a result, the Industrial and Commercial Bank of China, Agricultural Bank of China, Bank of China, and China Construction Bank began taking formal steps towards becoming commercial banks. In 1996, with the emergence of joint-stock banks, a series of local commercial banks were established. At the same time, approval was given for foreign banks to participate in a pilot scheme in Shanghai. In November 1997, at the inaugural National Conference on Financial Work, it was proposed that steps should be taken to: "further deepen the financial reform, rectify the financial order, and prevent and defuse the accumulated risks in the banking sector. It will take about three years to establish a financial institution system, a financial market system, and a financial regulation and control system that are compatible with the development of the socialist market economy, so as to achieve a remarkable improvement in the level of management and management of the financial industry. Basically, the national financial order has improved markedly".[2]

In 2000, China joined the WTO, and began promoting the development of the banking industry, stating that it would "allow foreign banks to start RMB business with domestic enterprises within two years," adding that, "Within five years, foreign banks will be allowed to have full market access, and RMB retail businesses will be allowed to enjoy national treatment in designated areas." In February 2002, faced with the inevitable impact of foreign banks entering the domestic banking market, the Central Committee held the second National Financial Work Conference, during which it was proposed that "banks must be turned into modern financial enterprises." Overall, the financial reform focused on the comprehensive reform of the wholly state-owned commercial banks. The Committee announced that it was determined to promote the reform of the wholly state-owned commercial banks to reduce the financial risk in the banking sector, stating that "fully qualified solely state-owned commercial banks may be reorganized into state-controlled joint-stock commercial banks and may be listed if the conditions are ripe." The reform of the large-scale state-owned commercial banks opened the way for the subsequent "three steps" reforms that aimed "to reduce the bad assets and to implement an accounting system based on prudent principles and to implement the joint-stock system of listing.[3]" In 2003, the government introduced a new round of financial reforms, which focused on external decentralization and the introduction of economic incentives, to establish a modern enterprise system and regulate the corporate governance of property incentives. These reforms included the increased use of public listings to strengthen the external market constraints and social supervision, the reform of the banking regulatory system, and the establishment of the China Banking Regulatory Commission under the jurisdiction of the State Council in April of the same year. In October, a resolution of the third plenary session of the 16th CPC Central Committee further clarified that the state-owned commercial banks should oversee the transformation of the share-holding system to speed up the disposal of non-performing assets, increase capital, and create the conditions for listing on the market. On December 27, the Banking Regulatory Act was promulgated. At the end of 2006, China abolished the regional and customer restrictions on the management and operation of RMB and foreign exchange by foreign banks, and all of the non-prudential measures restricting the ownership, operation, and establishment of foreign banks. On April 23, 2007, HSBC, Citibank, and Standard Chartered Bank were among the first foreign corporate banks in China to provide comprehensive RMB business to Chinese residents. As a result, through the integration of government and private enterprises, China's banking sector gradually changed from a monopoly industry to commercial banking sector comprising institutions with legal personalities. These banking institutions were further commercialized through the reform of the stock market and the transformation of the urban and rural credit cooperatives. The foreign banks, policy

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[2] Source:Communist Party of China News Network.
[3] Excerpt from: Review of the main points of successive national financial work meetings.

banks, large state-owned commercial banks, national joint-stock banks, local city commercial banks, and rural commercial banks then gradually formed a pattern of competition. Under the pressure of customer competition, the state-owned banks were forced to address their governance problems, such as unclear property rights and a lack of incentive and restraint mechanisms, and all banks were encouraged to collect information on and identify high quality customers. As the bank competition intensified, the competition for major customers reduced the banks' profit margins, forcing them to lower the bar and focus instead on the credit needs and worthiness of non-state-owned enterprises.

An important feature of China's banking industry is that the concentrated state-owned bank sector occupies a dominant position in the market. Thus, market restructuring has become one of the main areas of banking reform in China (Liu, 2009). As an important part of the adjustment of the market structure, non-state-owned commercial banks, represented by joint-stock commercial banks and city commercial banks, are considered to be effective means of addressing the excessive concentration of the industry (Weixing and Cheng, 2012). In April 2009, the CBRC issued the Adjustment of Market Access Policy for Branches of Small and Medium-sized Commercial Banks (try out), which relaxed the restrictions on new branches of joint-stock banks and urban commercial banks. As a result of these measures, the market concentration of China's banking industry gradually decreased, and the overall market share of the five state-owned commercial banks, the Industrial and Commercial Bank of China, Agricultural Bank of China, Bank of China, China Construction Bank, and Bank of Communications of China, began to decline. At the same time, the overall market share of the non-state-owned commercial banks (including national joint-stock banks, city commercial banks, rural commercial banks, and foreign banks) began to rise. Although China has a fairly sound banking system, the total assets, deposits, and loans of the large state-owned banks account for more than half of the banking sector. As a result, the development of small and medium-sized banks with comparative advantages in serving small and medium-sized enterprises has lagged behind, which may be the direct cause of the financing difficulties of Chinese enterprises (Yifu et al., 2009). Therefore, further opening up of the banking industry, increased competition, and the development of the non-state-owned commercial banks should improve the financing difficulties of the non-state-owned enterprises in China.

In 1997, the People's Bank of China issued the Circular on Improving the Management of the Loan Size of State-owned Commercial Banks, which abolished the controls on the scale of loans provided by the state-owned commercial banks. In 2004, the lower limit of the bank deposit interest rate and the upper limit of the loan interest rate were liberalized, leading to interest rate marketization. In 2012, the central bank adjusted the floating range of the deposit and loan rates twice. In July 2013, the People's Bank of China officially announced the full liberalization of interest rate controls on loans from financial institutions. The deregulation of the deposit and loan interest rates of financial institutions was a milestone event that deepened the reform of the financial system, leading to a business model based on independent pricing and the principle of supply and demand. In addition to facilitating the optimal allocation of financial resources, the resulting differential pricing strategies and customer agreement on the price of credit have helped financial institutions to improve their financial service levels, play a better role in supporting the real economy, and support economic restructuring and upgrading.

2.2. The development of non-state-owned enterprises and the demise of financial discrimination

In reality, asymmetric information leads to adverse selection and moral hazard problems in the credit market. In an asymmetric information environment, banks, as outsiders of enterprises, cannot effectively monitor the use of their loans through ex post supervision, and thus effectively solve their moral hazard problems as lenders. Accordingly, mitigating the risk and the loss of adverse selection have become the focus of attention of banks. An important way for banks to overcome adverse selection is to select high quality customers. Thus, the customer screening mechanisms based on existing information determine the degree to which banks can overcome their adverse selection problems, and consequently control the flow of credit funds.

Due to China's unique institutional background, the property attributes of state-owned enterprises and non-state-owned enterprises are often regarded as a stable and signaling screening mechanism by banks. Studies have found significant differences in the access to bank credit between non-state-owned enterprises and

state-owned enterprises in China. Chinese banks provide most of their credit to relatively inefficient state-owned enterprises, while the more profitable private companies struggle to access bank loans (Brandt and Li, 2003; Allen et al., 2005). Gamaut et al. (2000) have shown that although non-state-owned enterprises contribute more than 70% of China's GDP, they account for less than 20% of the formal bank loans, with the remaining 80% going to state-owned enterprises. An important reason for this is that banks and other formal financial institutions (especially state-owned financial institutions) engage in obvious financial discrimination against non-state-owned enterprises (Brandt and Li, 2003). Due to the natural affinity between state-owned enterprises and state-owned banks, the state-owned enterprises receive more support from the government and thus have a relatively small operating risk (Yu and Pan, 2008; Sun et al., 2005). In the product and factor markets, state-owned enterprises receive more "preferential treatment," even when in financial difficulty, and can easily obtain government relief. The expectation of soft budget constraints and implicit government guarantees for state-owned enterprises means the banks are happy to provide credit and reduce their regulatory and liability incentives. In contrast, non-state-owned enterprises face more risks than state-owned enterprises because of the lack of an implicit government guarantee, financial subsidies, and preferential policies. Moreover, the operating history of non-state-owned enterprises is relatively short, the financial system of small and medium-sized enterprises is not transparent, the credibility of financial reporting is low, and the bank credit decision-making faces higher costs and risks (Lin and Li, 2004). Thus, banks naturally prefer state-owned enterprises.

However, this situation may improve with the development of the finance sector and the growth of non-state enterprises. Scholars have explored the impact of financial development on bank credit behavior, and suggested that financial development can be promoted by improving the information asymmetries between banks and borrowing firms and reducing the banks' information collection, supervision, and ex post default costs (La Porta et al., 2002; Jigao et al., 2012). Sun and Liu (2011) believe that the process of banking reform and regional marketization has successfully promoted the commercialization of the allocation of bank credit. Zhijun et al. (2011) proposed that with the further deepening of the commercial banking reforms and the orderly opening of the financial market, the management of credit resources by banks has become increasingly standardized and thus greater attention is being paid to the quality of the information disclosed in the credit decision-making process. Chen et al. (2015) have suggested that the reform of China's market economy has led to major changes in the market structure, operating mechanism, participant composition, competition level, and openness of China's financial system (including formal and informal finance), and that the level of financial development has continued to improve. Financial development not only brings about the diversification of social financing channels, but also improves the marketization of the financial system and weakens the financial discrimination that has long existed in the financial sector. Overall, financial development has led to banks becoming more market-oriented and following their credit terms and enterprise risk relations more closely, the private enterprise loan term structure gradually lengthening, and a reduction in the difference between state-owned and non-state-owned enterprises.

As a result of the recent financial development, non-state-owned enterprises have rapidly emerged as a dynamic economic force, and have gradually become the engine of economic growth and industrial transformation. According to the statistics of the All-China Federation of Industry and Commerce, private enterprises contributed 60% of GDP, 75% of technological innovation, 90% of new employment, and 80% of the tax revenue accounted in 2012. The state has also issued a series of important policies and measures to guide and standardize the provision of bank credit and support the development of the non-state-owned economy. For example, in early 2005, the State Council issued "Some opinions on encouraging and guiding the development of the non-public economy, such as individual and private sector," which specifically mentioned the need to increase the financial and tax support for the non-public sector of the economy. Article 31 of the "Opinions of the State Council on encouraging and guiding the healthy development of private investment" issued on May 13, 2010 also stipulates that "all types of financial institutions shall, on the basis of risk prevention, make innovative and flexible use of a variety of financial instruments, increase private investment financing support, strengthen private investment in financial services." Compared with developed countries, China's credit market has two remarkable characteristics. First, the banking industry is in the stage of oligo-

poly competition. Second, the loan market is still a seller's market, because the available bank credit exceeds the demand. As a result, the banks' credit decision-making tends to involve financial discrimination based on property rights. However, we should not assume that the enterprises are passive recipients of the external environment, and thus ignore the active moves that the enterprises take in the face of the external environment. Non-state-owned enterprises faced with credit rationing also have a strong motivation to obtain resources by catering to the needs of banks and actively strengthening the exchange of information with banks. Liu and Jiang (2015) found that from 2006 to 2013, 14.68% of the private listed companies held 2% or more of the shares of banks and were the top 10 shareholders. With the development of the non-state-owned economy, the information costs and risks for banks in obtaining non-state-owned enterprises have gradually reduced.

2.3. Quality of information disclosure and bank loans

Lu et al. (2009) have shown that private listed companies suffer from increased financial discrimination during periods of monetary austerity and that this form of financial discrimination damages the interests of the investors in private listed companies. Rao and Jiang (2013) examined the interaction between monetary policy and bank credit and commercial trust and found that during the periods of monetary policy tightening, non-state-owned enterprises were affected more by limited bank credit than state-owned enterprises. However, the non-state-owned enterprises used commercial credit as a substitute for bank credit financing to make up for the funding gap. Chen et al. (2013a, 2013b) analyzed the impact of industrial policies on bank credit decisions and found that state-owned enterprises received more loans from state-owned banks and that these loans were at the cost of squeezing out loans from non-state-owned enterprises. Chen et al. (2015) found that financial development weakens financial discrimination, gradually extends the borrowing term structure of private enterprises, and reduces the difference between private enterprises and state-owned enterprises.

Aside from the influence of these macro factors, non-state-owned enterprises can take the initiative in addressing the information asymmetry with their banks and actively overcome financial discrimination. According to information asymmetry theory, adverse selection and moral hazard problems arise when the information held by both parties in a transaction is asymmetric. The "bad money drives out good" effect caused by adverse selection results in capital flowing to the low-quality companies, and the function of optimizing the allocation of resources in the capital market is gradually weakened. The agency problems caused by moral hazards also increase the supervision costs of investors. Therefore, it is necessary to unblock the information channels to give full play to the function of optimizing the allocation of resources in the market. Although each bank's judgment criteria and decision-making processes for issuing loans are not known to the outside world, it is certain that a bank will use the financial statements of an enterprise to comprehensively analyze its financial situation and operating results. Overall, accounting information comprehensively reflects the financial situation and operations of enterprises, is an important source of information for banks to evaluate the solvency of enterprises, and helps to reduce the cost of supervision and execution of debt contracts.

Asymmetric information is the main cause of the credit mismatches in the bank credit market. Thus, enhancing the information transparency can reduce the financing constraints (Zhang and Lu, 2007) and corporate borrowing costs (Sengupta, 1998). Some classic studies have examined the usefulness of debt contracts in providing accounting information. Watts and Zimmerman (1986) found that many of the restrictive clauses in debt contracts are based on accounting information and are used to prevent shareholders or managers from encroaching on the creditors' interests by issuing liquidation dividends or investing in high-risk projects. Sun et al. (2006) examined the role of accounting information and the nature of ownership in the loan decisions of Chinese commercial banks. They found that accounting information had a significant impact on the corporate lending behavior of both state-owned and private enterprises, and that the accounting information had a greater impact on private enterprises than state-owned enterprises. Lu et al. (2008) examined the effect of earnings management on the usefulness of the accounting information in debt contracts, and found that enterprises used earnings management to whitewash their financial situation, which in turn affected the creditors' decisions on the debt financing costs. Hu et al. (2008) used corporate financial information to examine the supervisory role of banks as major lenders and found a significantly positive relationship between bank loan interest rates and the financial situation of borrowers. That is, the better the corporate performance, the

lower the interest rate on bank loans. Sun and Liu (2011) found that the scale of new loans provided by banks and the required rate of return were highly related to the historical financial performance of enterprises.

However, we still lack empirical evidence on whether the credit allocation of different types of banks is different. Sun et al. (2013) observed that the efficiency of the credit allocation of commercial banks improved after the reform of the joint-stock system in the banking sector, and the improved financial performance helped the enterprises to obtain more long-term loans. They also found that the credit screening and risk pricing of joint-stock commercial banks were stronger than those of other types of banks. However, their observation period is 2004–2011, during which time the interest rate controls of banks had not been completely liberalized, and their sample only contains a small proportion of city commercial, agricultural, and foreign banks. Therefore, given the institutional and financial reforms over the past 10 years, it is still necessary to analyze the differences in the allocation of credit by different types of banks by using more detailed bank loan application documents.

Sun et al. (2013) proposed that the efficiency of the credit allocation and pricing of different types of banks is one of the most important criteria for determining the achievements of the banking reforms. We propose that after nearly a decade of financial reform and the development of the non-state-owned enterprise sector, if banks allocate credit according to the quality of the information disclosed by enterprises, then this will reflect the marketization of the banks to some extent. In terms of the development of the banking industry, the banking reforms implemented in China, such as the stripping of non-performing loans, the reform of the shareholding system, the introduction of strategic investors, public listings, and the marketization of interest rates, have provided banks with low-cost financing tools that have enabled state-owned enterprises to develop into self-financing business entities. If the market-oriented reform of the banking industry has been effective, the loan contracts between banks and enterprises should tend to be optimal contracts (Sun and Liu, 2011). That is, the banks dynamically adjust the allocation of credit in accordance with the quality of the information disclosed by the enterprises. Enterprises that disclose good quality information can obtain more bank loans, whereas those with poor information disclosure cannot obtain bank loans. Therefore, by examining the allocation of credit by different types of banks and thus the quality of information the enterprises disclose, we should be able to reveal the effects of the market-oriented reform process on different types of banks.

In view of the above, we put forward the following hypothesis:

Hypothesis one: *With the improvement of the institutional environment, the difference in the levels of financial discrimination between state-owned and non-state-owned enterprises becomes less significant.*

Hypothesis two: *Following the market-oriented reform of the financial industry, the quality of the information disclosed by enterprises becomes an important basis for the credit decision-making of commercial banks in China.*

3. Research and design

3.1. Sample selection and data collection

We selected all of the A-share listed companies from 2007 to 2016 as the initial sample. Then, according to the needs of the study, we excluded the following observations from the sample: (1) financial companies and ST and PT companies; (2) companies with debt ratios greater than 100 and insolvent companies; and (3) all companies with missing data. We also excluded the outliers by winsorizing the continuous variables at the 1% and 99% levels. The relevant data come from the CSMAR database and Wind information.

The sample starts in 2007 because by the end of 2006, China's banking industry had been open to the outside world for five years and the banking industry had entered a new era. Most of the studies on banks in China regard the banking sector as a whole. Although a few studies have taken large state-owned commercial banks and national joint-stock banks as sub-samples, little attention has been paid to the differences between the credit decisions of different types of banks. In fact, in recent years, the foreign, local city commercial, and

rural commercial banking sectors have also shown strong development. China's banking reforms have introduced competition between the foreign banks, policy banks, large state-owned commercial banks, national joint-stock banks, local city commercial banks, agricultural banks, and other types of banks. Thus, it is imperative to include foreign banks, local city commercial banks, and agricultural firms in the analysis. According to the classification of the banks in China by the CBRC, and with reference to Chen et al. (2010), the classification of the banks examined in this paper is shown in Table 1.

Our sample includes 71 foreign banks with branches in China, 3 policy banks, and 6 large state-owned commercial banks. China Post Savings Bank is also included, along with 12 national joint-stock banks and 233 local city commercial banks, local rural commercial banks, agricultural union banks, and rural credit cooperatives (according to the characteristics of the system, village and town banks are not easily classified). Overall, the sample covers the vast majority of Chinese banks, and is thus highly representative.

1. Dependent variables

According to Yeàn (2005), the credit decisions of a bank mainly focus on whether to extend a loan, the size of the loan, and the credit term structure. Based on the bank loan application documents collected from the listed companies, we use the bank loan signing rates and new bank loan scales as indicators to investigate the credit decisions of banks. These two indicators reflect the financing needs of the enterprises. The data for the indexes of bank loans and the size of new bank loans were obtained manually.

2. Independent variables

(I) Nature of property rights

Following Shaojia et al. (2003), we take the nature of the ultimate controller as the standard for defining the property rights of listed companies, and divide the sample companies into state-owned enterprises and non-state-owned enterprises.

(II) Quality of information disclosure

The quality of the information disclosed by enterprises is determined based on the overt negative event of enterprise information disclosure violation. The quality of information disclosure is set as a virtual variable that accords enterprise information disclosure violations the value of 1, and 0 otherwise.

We individually checked the punishments of listed companies recorded in the "China listed companies illegal handling database" and the CSRC punishment notices. According to the provisions of the Supreme People's Court on hearing civil compensation cases related to the publication of false statements in the securities market issued in January 2003 (Article 17), and following Xin et al. (2013), in this paper, "delay disclosures," "false statements," and "material omissions" are considered to be "information disclosure violations." The actions of the CSRC, stock exchanges, and local securities regulatory bureaus are used as the standards for determining the punishment for violating the regulations. The punishments can be divided into four types: order rectification, notification and criticism, public condemnation, and warning or fine (confiscation of illegal income). If a company has several violations of the same level in the same year, only the first punishment is recorded.

In addition to information disclosure violations, the violations of listed companies can include the illegal purchase of stocks, unauthorized use of funds, occupation of listed company assets by large shareholders, manipulation of stock prices, fraudulent listing, and illegal guarantees. Because these violations may also affect the banks' credit decisions, we remove them to keep the sample clean. Therefore, our experimental sample comprises the occurrence of delayed disclosure, false statements, material omissions, and other information disclosure violations, and our control sample comprises the observations with no information disclosure violations. There are no "innocent" observations of illegal purchases of stocks, unauthorized changes in the use of funds, major shareholders' occupation of assets of listed companies, manipulation of stock prices, fraudulent listing, illegal guarantee, and other securities violations.

Table 1
Classification of different types of banks.

Foreign Banks	(71)		HSBC (China) Co., Ltd., Standard Chartered Bank, Citibank, etc.
Local banks	Policy banks (3)		China Development Bank, Agricultural Development Bank of China, Export-import Bank of China
	Local commercial banks	Large state-owned commercial Banks (6)	Industrial and Commercial Bank of China, Agricultural Bank of China, Bank of China, China Construction Bank, Bank of Communications, China Postal Savings Bank
		National Joint-stock Banks (12)	CITIC Bank, China Everbright Bank, Huaxia Bank, Guangfa Bank, Shenzhen Development Bank (Ping An bank), China Merchants Bank, Shanghai Pudong Development Bank, Industrial Bank, Minsheng Bank, Hengfeng Bank, Zhejiang Merchants Bank, Bohai Bank
		Local city commercial banks and rural commercial banks (2 3 3)	Beijing Bank and the other 110 local city comptoirs, Chongqing Rural Commercial Bank and the other 65 agricultural comptoirs, Anhui Qingyang Rural Cooperative Bank, and the other 31 agricultural companies, Xiamen Rural Credit Cooperation Association and the other 27 agricultural credit societies

We collected the bank loan approval documents of listed companies. After matching the observations of information disclosure violations, the experimental group comprised 332 company annual observations, and the control group comprised 12,856 company annual observations. The ratio of observed values between the experimental and control samples is about 1:39.

3. Control variables

Following Sun et al. (2006), Zhengfei (2008) and Xing (2018), we use the following control variables: (1) financing demand; (2) solvency; (3) tangible asset ratio; (4) company size; (5) profitability; (6) growth opportunity; (7) equity balance; (8) monetary policy; (9) economic cycle; (10) annual fictitious variable; and (11) industry virtual variable. The specific variable definitions are shown in Table 2.

3.2. Test model

In China, non-state-owned enterprises and state-owned enterprises differ in terms of scale and property rights. The size of an enterprise and its ability to obtain credit may be highly related. To control the influence of these kinds of factors, we first deal with state-owned enterprises and non-state-owned enterprises separately using PSM with the following matching variables: (1) financing demand; (2) solvency; (3) tangible asset ratio; (4) company size; (5) profitability; (6) growth opportunities; and (7) equity checks and balances. The matching method is the 1:4 nearest neighbor matching method.

After the PSM processing, we use model (1) to test hypothesis 1, add the quality of information disclosure and its intersection with property rights to model (1) to obtain model (2), and test hypothesis 2 using model (2).

$$
\begin{aligned}
Contractrate_{i,t}/Loan_{i,t} = {} & \beta_0 + \beta_1 State_{i,t} + \beta_2 Fcfi_{i,t} + \beta_3 Lev_{i,t} + \beta_4 \mathrm{Tan}\, g_{i,t} + \beta_5 Size_{i,t} + \beta_6 Roe_{i,t} \\
& + \beta_7 Tbq_{i,t} + \beta_8 Shrz_{i,t} + \beta_9 M2_{i,t} + \beta_{10} GDP_{i,t} + \beta_{11} Year_{i,t} + \beta_{12} Industry_{i,t} + \varepsilon
\end{aligned} \tag{1}
$$

$$
\begin{aligned}
Contractrate_{i,t}/Loan_{i,t} = {} & \mu_0 + \mu_1 Info_{i,t} * State_{i,t} + \mu_2 Info_{i,t} + \mu_3 State_{i,t} + \mu_4 Fcfi_{i,t} + \mu_5 Lev_{i,t} \\
& + \mu_6 \mathrm{Tan}\, g_{i,t} + \mu_7 Size_{i,t} + \mu_8 Roe_{i,t} + \mu_9 Tbq_{i,t} + \mu_{10} Shrz_{i,t} + \mu_{11} M2_{i,t} \\
& + \mu_{12} GDP_{i,t} + \mu_{13} Weiglx_{i,t} + \mu_{14} Chufly_{i,t} + \mu_{15} Chuffs_{i,t} + \mu_{16} Year_{i,t} \\
& + \mu_{17} Industry_{i,t} + \varepsilon
\end{aligned} \tag{2}
$$

The models indicate the signing rate of bank loans and the size of new bank loans, respectively. Considering the dependent variables and the characteristics of the data with left truncation (0 at truncation), the Tobit regression method is used to test the models. We also construct a model to further examine whether regulation has an intermediary effect in the relationship between property rights and bank loans. The first step of the intermediary effect model is to investigate the relationship between property rights and bank loans by directly applying model (1). The second step of the intermediary effect model is to investigate the relationship between property rights and the quality of information disclosure using model (3). The third step of the intermediary effect model is to investigate the relationship between property rights, the quality of information disclosure, and bank loans using model (4).

$$
\begin{aligned}
Info_{i,t} = {} & \alpha_0 + \alpha_1 State_{i,t-1} + \alpha_2 Fcfi_{i,t-1} + \alpha_3 Lev_{i,t-1} + \alpha_4 \mathrm{Tan}\, g_{i,t-1} + \alpha_5 Size_{i,t-1} + \alpha_6 Roe_{i,t-1} + \alpha_7 Shrz_{i,t-1} \\
& + \alpha_8 Audit_{i,t-1} + \alpha_9 Year_{i,t} + \alpha_{10} Industry_{i,t} + \varepsilon
\end{aligned} \tag{3}
$$

$$
\begin{aligned}
Contractrate_{i,t}/Loan_{i,t} = {} & \lambda_0 + \lambda_1 State_{i,t} + \lambda_2 Info_{i,t} + \lambda_3 Fcfi_{i,t} + \lambda_4 Lev_{i,t} + \lambda_5 \mathrm{Tan}\, g_{i,t} + \lambda_6 Size_{i,t} \\
& + \lambda_7 Roe_{i,t} + \lambda_8 Tbq_{i,t} + \lambda_9 Shrz_{i,t} + \lambda_{10} M2_{i,t} + \lambda_{11} GDP_{i,t} + \lambda_{12} Year_{i,t} \\
& + \lambda_{13} Industry_{i,t} + \varepsilon
\end{aligned} \tag{4}
$$

3.3. Definitions of the variables

Table 2

Table 2
Variable definitions.

Variable	Name	Definition and calculation
Dependent variable		
Signing rate of foreign bank loans	Wzcontractrate	Number of successful contracts with foreign banks/Number of applications for loans from foreign banks
The size of new loans from foreign banks	Wzloan	Total loans granted by foreign banks/Total assets at the end of the period
The signing rate of policy bank loans	Zccontractrate	Number of successful contracts with policy banks/Number of applications for loans from policy banks
The size of new loans from policy banks	Zcloan	Total loans granted by policy banks/Total assets at the end of the period
Loan signing rate of local commercial banks	Sycontractrate	Number of successful contracts with local commercial banks/Number of applications for loans from local commercial banks
New loan scale of local commercial banks	Syloan	Total loans granted by local commercial banks/Total assets at the end of the period
Loan signing rate of large state-owned commercial banks	Gysycontractrate	Number of successful contracts with large state-owned commercial banks/Number of applications for loans from large state-owned commercial banks
New loan scale of large state-owned commercial banks	Gysyloan	Total loans granted by large state-owned commercial banks/Total assets at the end of the period
National joint-Stock bank loan signing rate	Gfzcontractrate	Number of successful contracts with national joint-stock banks/Number of applications for loans from national joint-stock banks
New loan scale of national joint-stock bank	Gfzloan	Total loans granted by national joint-stock banks/Total assets at the end of the period
Loan signing rate of local city commercial banks and rural commercial banks	Dfncontractrate	Number of successful contracts with local city commercial banks and rural commercial banks/Number of applications for loans from local city commercial banks and rural commercial banks
New loan scale of local city commercial banks and rural commercial banks	Dfnloan	Total loans granted by local city commercial banks and rural commercial banks/Total assets at the end of the period
Independent variables		
Property right	State	According to the nature of the ultimate controller, non-state-owned enterprises take 1, otherwise 0
Quality of information disclosure	Info	Virtual variables, when an enterprise commits an information disclosure violation, the quality of information disclosure takes the value of 1, otherwise 0
Control Variables		
Financing	Fcfi	(Net operating cash flow-net investment cash flow)/end total assets
Debt paying ability	Lev	Total liabilities at end of period/total assets at end of period
Tangible assets	Tang	NET fixed assets at end/total assets at end of period
The company size	Size	Natural logarithm of total assets at the end of the period
Earn profit	Roe	End-of-tax profit/average owner's equity
Grow up	Tbq	End market value/book value
Equity checks and balances	Shrz	Z index, the ratio of the shareholding ratio of the largest shareholder and the second largest shareholder of a company
Audit	Audit	The standard unqualified opinion is 0, otherwise it is 1
Monetary policy	M2	The annual ending value of M2
Economic cycle	GDP	Real GDP growth rate
Violation type	Weiglx	Dummy variables, major omissions, false statements (fictitious profits, false disclosure), delayed disclosure, or improper general accounting treatment falling into three categories
Source of punishment	Chufly	The virtual variables include CSRC, Shanghai stock exchange, Shenzhen stock exchange, and local securities regulatory bureau, a total of three classes
Punishment	Chuffs	Virtual variable, warning, fine (with respect to illicit gains), denounced and criticized, and other (order rectification), a total of four classes
Year	Year	Virtual variables that take 1 when they belong to the year, otherwise 0
Industry	Industry	The dummy variables are divided into 21 industries according to the industry codes and classification of the CSRC in 2001.

4. Empirical results and analysis

4.1. Descriptive statistics

Table 3 reports the distribution of the information disclosure violations of the listed companies. Overall, the information disclosure violations of listed companies are increasing year by year. The local securities and exchange bureaus issued the most punishments, accounting for 49% of the total sample. With respect to the type of punishment, public condemnations and warnings, fines, and confiscation of illegal gains accounted for 12 percent of the total sample, whereas the remaining 88 percent were criticized and ordered to rectify. In terms of the type of violation, there is no significant difference in the proportions of the three violations in the total sample, namely delayed disclosures (improper accounting treatment), false statements, and material omissions.

Because more private enterprises are directly listed on the small and medium board and the growth enterprise board, we cover the sample of the small and medium board and the growth enterprise board. The results of the analysis of the company-annual sample structure are shown in Table 4. Table 4 shows that there are 6196 annual observations of state-owned enterprises and 7172 of non-state-owned enterprises. The probability of violation of information disclosure in both types of enterprises is 2.5%. State-owned enterprises are listed most frequently on the main board of the Shanghai stock market, and non-state-owned enterprises are listed most frequently on the small and medium boards. The largest number of violations of information disclosure is for non-state-owned enterprises listed on the Shenzhen main board, with an annual average of 3.5 percent, followed by state-owned enterprises listed on the small and medium board, with an annual average of 3.4 percent.

To further analyze the differences in the allocation of credit by the different types of banks, we analyze the bank loan application documents in detail. The results of the analysis are shown in Tables 5–8. According to Panel A of Table 5, enterprises apply for loans from national joint-stock banks, large state-owned commercial banks, local city commercial banks, rural commercial banks, foreign banks, and policy banks, with the first three categories belonging to local commercial banks. According to Table 7, state-owned enterprises apply for loans from large state-owned commercial banks, national joint-stock banks, local city commercial banks,

Table 3
Sample distribution of information disclosure violations of listed companies.

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
Source of punishment:											
CSRC	0	1	1	0	2	3	1	0	4	4	16
Shanghai stock exchange	1	0	0	1	0	2	5	5	24	19	57
Shenzhen stock exchange	3	3	6	2	4	13	17	10	16	22	96
Local securities regulatory bureau	0	0	1	2	4	20	40	29	30	37	163
Total	**4**	**4**	**8**	**5**	**10**	**38**	**63**	**44**	**74**	**82**	**332**
Punishment way:											
Warning, fine (illicit gains)	0	1	1	0	1	2	0	3	6	10	24
Denounced	2	1	0	2	1	2	2	1	1	3	15
Criticized	2	2	6	1	3	7	7	9	7	9	53
Others (order rectification)	0	0	1	2	5	27	54	31	60	60	240
Total	**4**	**4**	**8**	**5**	**10**	**38**	**63**	**44**	**74**	**82**	**332**
Violate compasses type:											
Major omissions	1	3	6	2	5	18	22	15	26	32	130
False statement (fictitious profit, false disclosure)	1	0	0	2	3	7	19	12	23	19	86
Delayed disclosure or improper general accounting treatment	2	1	2	1	2	13	22	17	25	31	116
Total	**4**	**4**	**8**	**5**	**10**	**38**	**63**	**44**	**74**	**82**	**332**

Note: Some of the bank loan approval documents of listed companies are missing, and the sample of information disclosure violations is small. This table shows the statistical results of the sample after data merging, so the sample size is not large. However, according to the listed company single bank loan data classification regression, the regression model retains numerous observed values.

Table 4
Corporate-annual sample structure analysis.

Property rights	Plate	Quality of information disclosure		Sample book	Information disclosure violation ratio
		Info = 0	Info = 1		
State = 0	Shenzhen	2195	44	2239	0.020
	Small and medium board	470	16	486	0.034
	The gem	70	0	70	0.000
	Shanghai	3309	92	3401	0.028
	Total	6044	152	6196	0.025
State = 1	Shenzhen	768	28	796	0.035
	Small and medium board	3087	82	3169	0.026
	The gem	1659	26	1685	0.015
	Shanghai	1478	44	1522	0.029
	Total	6992	180	7172	0.025

Note: The total sample comprises 9411 observations because some of the same companies make repeated violations in different years, and the property rights of a small number of samples cannot be determined. Because of these two factors, there is a slight difference between this sample and the total sample.

Table 5
Sample analysis of bank loan applications.

Panel A: Annual descriptive statistics of the bank loan application sample

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
Foreign banks	28	51	57	73	99	164	266	370	435	518	2061
Policy banks	22	42	37	36	56	115	166	204	200	237	1115
Local commercial banks	278	604	681	651	704	1175	1814	2086	2331	2434	12,758
Large state-owned commercial banks	186	368	414	387	413	673	1051	1277	1410	1419	7598
National joint-stock banks	128	309	357	360	397	670	1124	1315	1497	1668	7825
Local city commercial banks and rural commercial banks	37	91	139	147	184	298	461	639	794	909	3699

Panel B: Descriptive statistics of the bank loan application sample by industry

Industry code	A	B	C0	C1	C2	C3	C4	C5	C6	C7	C8
Foreign banks	30	57	83	55	7	61	202	122	183	323	119
Policy banks	86	35	60	14	8	25	91	108	125	202	51
Local commercial banks	252	375	379	270	38	257	1203	746	1062	2007	722
Large state-owned commercial banks	155	221	254	176	27	154	787	459	701	1214	427
National joint-stock banks	143	233	186	149	20	164	689	492	644	1262	393
Local city commercial banks and rural commercial banks	96	88	102	61	7	71	355	213	305	526	193
Industry code	D	E	F	G	H	I	J	K	L	M	Total
Foreign banks	36	37	36	177	131	0	161	60	19	77	1976
Policy banks	46	32	31	57	35	0	13	22	9	29	1079
Local commercial banks	340	318	251	1163	850	0	1036	421	177	405	12,272
Large state-owned commercial banks	211	181	197	561	522	0	521	221	75	244	7308
National joint-stock banks	189	208	111	821	568	0	602	250	108	266	7498
Local city commercial banks and rural commercial banks	62	84	27	427	302	0	320	143	57	116	3555

Note: Although the numbers of the Panel A and Panel B samples are slightly different because of the lack of industry codes, this does not affect the subsequent test conclusions. The financial and insurance sector (I) was eliminated, so the industry sample is 0.

Table 6
Comparison of different types of bank loans.

Bank loan	Variable	Obs	Mean	Std. Dev.	Min	Max
Bank loan signing rate	Wzcontractrate	2061	0.042	0.199	0	1.000
	Zccontractrate	1115	0.054	0.222	0	1.000
	Sycontractrate	12,758	0.067	0.240	0	1.000
	Gysycontractrate	7598	0.067	0.245	0	1.000
	Gfzcontractrate	7825	0.054	0.220	0	1.000
	Dfcncontractrate	3699	0.042	0.196	0	1.000
New bank loans	Wzloan	2061	0.001	0.019	0	0.782
	Zcloan	1115	0.012	0.240	0	7.895
	Syloan	12,758	0.004	0.027	0	0.793
	Gysyloan	7598	0.003	0.026	0	0.793
	Gfzloan	7825	0.002	0.019	0	0.556
	Dfcnloan	3699	0.001	0.011	0	0.440

rural commercial banks, foreign banks, and policy banks, whereas non-state-owned enterprises apply for loans from national joint-stock banks, large state-owned commercial banks, local city commercial banks, rural commercial banks, foreign banks, and policy banks. It can be seen that state-owned enterprises and non-state-owned enterprises prefer national joint-stock banks and large state-owned commercial banks.

According to Panel B of Table 5, the sectors that make the most applications for loans by industry are machinery, equipment, and instrumentation (C7), followed by petroleum, chemistry, and plastics (C4), and metals and non-metals (C6). The industries that make the least applications for loans are timber and furniture (C2) and the communications and culture industry (L).

Table 7
Property rights and the T Tests for different types of bank loans.

Variable	State-owned enterprises		Non-state-owned enterprises		
	G1(0)	Mean1	G2(1)	Mean2	Mean difference test
Wzcontractrate	877	0.0591	1102	0.0305	0.0286***
Zccontractrate	624	0.0688	459	0.0349	0.0339**
Sycontractrate	5735	0.0733	6573	0.0615	0.0119***
Gysycontractrate	3584	0.0747	3757	0.0607	0.0140**
Gfzcontractrate	3302	0.0627	4215	0.0483	0.0144***
Dfcncontractrate	1619	0.0387	1928	0.0441	−0.0055
Wzloan	877	0.0022	1102	0.0004	0.0018**
Zcloan	624	0.0199	459	0.0014	0.0185
Syloan	5735	0.0038	6573	0.004	−0.0002
Gysyloan	3584	0.0036	3757	0.0033	0.0003
Gfzloan	3302	0.0021	4215	0.0027	−0.0005
Dfcnloan	1619	0.0011	1928	0.0015	−0.0004

Note: The sample in Table 7 excludes observations in which the property rights cannot be determined and is therefore smaller than the sample in Table 6.

Table 8
Quality of information disclosure and T Tests of different types of bank loans.

Variable	Clean group		Information disclosure violation group		
	G1(0)	Mean1	G2(1)	Mean2	Mean difference test
Wzcontractrate	2010	0.0425	51	0.0196	0.0229
Zccontractrate	1089	0.0541	26	0.0385	0.0156
Sycontractrate	12,449	0.0669	309	0.0601	0.0068
Gysycontractrate	7440	0.0673	158	0.0422	0.0251
Gfzcontractrate	7635	0.0545	190	0.049	0.0055
Dfcncontractrate	3591	0.0401	108	0.1049	−0.0649***
Wzloan	2010	0.0012	51	0	0.0011
Zcloan	1089	0.0048	26	0.3036	−0.2988***
Syloan	12,449	0.0039	309	0.003	0.0009
Gysyloan	7440	0.0034	158	0.001	0.0024
Gfzloan	7635	0.0024	190	0.0017	0.0007
Dfcnloan	3591	0.0013	108	0.0041	−0.0028**

Table 6 shows that the largest state-owned commercial banks have the highest probability of successful loan applications, followed by joint-stock banks and policy banks in second place, and local city commercial banks, rural commercial banks, and foreign banks in third place. The largest new bank loans are from policy banks, followed by large state-owned commercial banks, national joint-stock banks, local commercial banks, and rural commercial banks and foreign banks, which are tied for fourth. Table 7 shows that the probability of a state-owned enterprise making a successful loan application is the highest for large state-owned commercial banks, followed by policy banks, national joint-stock banks, foreign banks, local city commercial banks, and rural commercial banks. The policy banks provide the largest new bank loans to state-owned enterprises, followed by large state-owned commercial banks, foreign banks, national joint-stock banks, local city commercial banks, and rural commercial banks. Non-state-owned enterprise banks have the highest probability of successful loan applications, followed by national joint-stock banks, local city commercial banks, rural commercial banks, policy banks, and foreign banks. The largest new bank loans to non-state-owned enterprises are provided by the large state-owned commercial banks, followed by the full joint-stock banks, local city commercial banks, agricultural banks, policy banks, and foreign banks. Thus, it can be seen that large state-owned commercial banks and policy banks are relatively "friendly" in offering loans to state-owned

enterprises, whereas the large state-owned commercial banks and all-joint-stock banks are relatively friendly in offering loans to non-state-owned enterprises.

According to our statistics, on average, state-owned enterprises submit 37 bank loan applications per year to all types of banks. Moreover, during the 10 year sample period, private enterprises mostly apply for loans from large state-owned banks. The above analysis also shows that in terms of their loan applications to different types of banks, the rankings for state-owned enterprises and non-state-owned enterprises are basically the same. Large state-owned commercial banks and all joint-stock banks are ranked first, followed by local city commercial banks, rural commercial banks, foreign banks, and policy banks. However, this ranking does not directly correspond with the probability of a successful bank loan application and the scale of new bank loans. Although state-owned and non-state-owned enterprises have basically the same ranking for loan applications to different types of banks, the probability of successful bank loan applications and the scale of new bank loans vary greatly among enterprises with different property rights (see Table 7). To a certain extent, this shows that rather than reflecting the independent choices of the enterprises, the findings are determined by the decisions of the banks based on property rights.

Table 7 shows that foreign banks and policy banks exercise financial discrimination, in that they provide more and larger loans to non-state-owned enterprises. Although local commercial banks, large state-owned commercial banks, and national joint-stock banks exercise significant financial discrimination in approving bank loans, there is no significant financial discrimination in the scale of new bank loans issued. Moreover, there is evidence suggesting these banks provide financial support to enterprises, but it is not statistically significant. Table 7 shows the differences in the allocation of credit among the different types of banks.

Table 8 shows the T test results for the bank loans that the different types of banks provide to enterprises with different levels of information disclosure quality. According to Table 8, most banks pay attention to the quality of the information disclosed by enterprises, except for policy banks and local city commercial and agricultural banks. Overall, the banks provide more and larger loans to the "innocent" firms that disclose better quality information, and fewer and smaller loans to the "illegal" firms that disclose poor quality information. Table 8 shows that the quality of information disclosure is an important factor in the credit decisions of most banks in China, and that the distribution of bank credit is market-oriented. The specific reasons why policy banks, local city commercial banks, and rural commercial banks give more loans to the poor quality of information disclosure violation sample will be examined in a future study.

Table 9 gives the descriptive statistics of the main variables. From Table 9, we can see that the non-state-owned enterprises account for 53 percent of the total sample, and that 2.5 percent of enterprises disclose poor quality information. The ratio of tangible assets to total company assets is 23.1, the ratio of assets to liabilities is 50 percent, and the average return on net assets is 4 percent.

Table 10 shows the Spearman correlation coefficients between bank loans and corporate characteristics. According to Table 10, there are significant correlations between bank loans and the characteristic variables of the companies, with the maximum correlation coefficient between the variables being 0.402, and the correlation between the variables being more reasonable.

Table 9
Descriptive statistics of the major variables.

Variable	Mean	N	sd	min	p25	p50	p75	max
State	0.53	13,188	0.499	0	0	1	1	1
Info	0.025	13,188	0.154	0	0	0	0	1
Fcfi	0.048	13,188	0.099	−0.232	−0.01	0.035	0.099	0.394
Tang	0.213	13,188	0.163	0.002	0.083	0.181	0.31	0.742
Size	22.105	13,188	1.18	18.891	21.254	21.976	22.821	25.916
Shrz	11.748	13,188	18.711	1.004	2.149	5.724	14.358	150.116
Tbq	2.609	13,188	1.834	0.899	1.431	2.04	3.111	13.159
Lev	0.5	13,188	0.206	0.043	0.345	0.5	0.652	1
Roe	0.04	13,188	0.085	−0.425	0.009	0.033	0.074	0.358
M2	971275.9	13,188	357358.1	364093.7	885,224	1,154,640	1,356,308	1,550,067
GDP	0.015	13,188	0.036	−0.13	0.015	0.023	0.03	0.037

Table 10
Spearman correlation coefficients.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1) Wzcontractrate	1															
(2) Wzloan	0.902***	1														
(3) Zccontractrate	0.596***	0.592***	1													
(4) Zcloan	0.669***	0.665***	0.950***	1												
(5) Sycontractrate	0.570***	0.507***	0.652***	0.582***	1											
(6) Syloan	0.530***	0.555***	0.597***	0.601***	0.948***	1										
(7) State	−0.067***	−0.066***	−0.080***	−0.088***	−0.023**	−0.021**	1									
(8) State*Info	−0.00400	−0.00100	−0.0290	−0.0270	−0.00900	−0.00500	0.101***	1								
(9) Info	−0.0190	−0.0140	−0.0130	−0.00900	0	0.00200	0.015***	0.746***	1							
(10) Fcfi	0.0160	0.0110	0.054*	0.055*	0.015*	0.00700	0.030***	−0.00400	−0.018***	1						
(11) Tang	0.051**	0.0300	0.0190	0.0370	0.0120	0.00900	−0.181***	−0.014***	0.00100	0.247***	1					
(12) Size	−0.00800	0.0250	0.111***	0.084***	0.053***	0.053***	−0.317***	−0.030***	−0.013***	0.090***	0.039***	1				
(13) Shrz	0.059***	0.066***	0.066**	0.068**	0.058***	0.051***	−0.275***	−0.038***	−0.023***	−0.061***	0.087***	0.108***	1			
(14) Tbq	−0.063***	−0.068***	−0.140***	−0.124***	−0.095***	−0.092***	0.286***	0.031***	0.010***	0.020***	−0.131***	−0.581***	−0.162***	1		
(15) Lev	0.086***	0.087***	0.067**	0.061**	0.095***	0.095***	−0.305***	0.007*	0.044***	−0.122***	0.085***	0.402***	0.170***	−0.415***	1	
(16) Roe	−0.0310	−0.0270	0.0220	0.00300	0.041***	0.034***	0.057***	−0.023***	−0.039***	0.347***	−0.108***	0.135***	−0.058***	0.115***	−0.088***	1

Note: *, *, and * represent significance at the 1%, 5%, and 10% level, respectively.

4.2. Property rights and different types of bank loans

Because the property rights of state-owned and non-state-owned enterprises differ, their company characteristics may also affect their bank loan applications. To make the results more "clean," we carried out PSM for state-owned enterprises and non-state-owned enterprises using the 1:4 nearest neighbor matching method. Fig. 1 intuitively shows that most of the samples are in the common value range (On support).

Table 11 reports the distribution of a pair of four-nearest neighbor matched samples. Out of a total of 13,188 observations, 29 are excluded from non-state-owned enterprises and 15 from state-owned enterprises, leaving 13,144 valid observations: 6963 for non-state-owned enterprises and 6181 for state-owned enterprises. After matching, the sample loss is reduced, with the absolute value of the standardized deviation of each variable being controlled within 10%. The T test results show that the difference between the groups is not significant (significance level of 5%), which meets the balance assumption of the PSM method.

Table 12 reports the T-test results for bank loans to state-owned and non-state-owned enterprises by the different types of banks after PSM treatment. According to Table 12, foreign banks and policy banks exercise significant financial discrimination in terms of bank loan opportunities and the scale of bank loans. Local commercial banks, especially large state-owned commercial banks and national joint-stock banks, show no significant financial discrimination. Moreover, the local city commercial banks and rural commercial banks not only exercise no financial discrimination, but also provide financial support in giving non-state-owned enterprises more bank loan opportunities and larger bank loans. The T-test results after the PSM treatment preliminarily support Hypothesis 1.

Then, based on model (1), after controlling the influence of other relevant factors, we test the existence of financial discrimination in different types of banks. The results are shown in Tables 13 and 14. As can be seen from Tables 13 and 14, financing demand, tangible asset ratio, firm size, profitability, growth opportunities, equity checks and balances, monetary policy, and economic cycle are all important factors influencing banks' credit decision-making. After controlling these factors, foreign banks show significant financial discrimination, and policy banks show significant financial discrimination in terms of loan scale. Local commercial banks, large state-owned commercial banks, national joint-stock banks, local city commercial banks, and
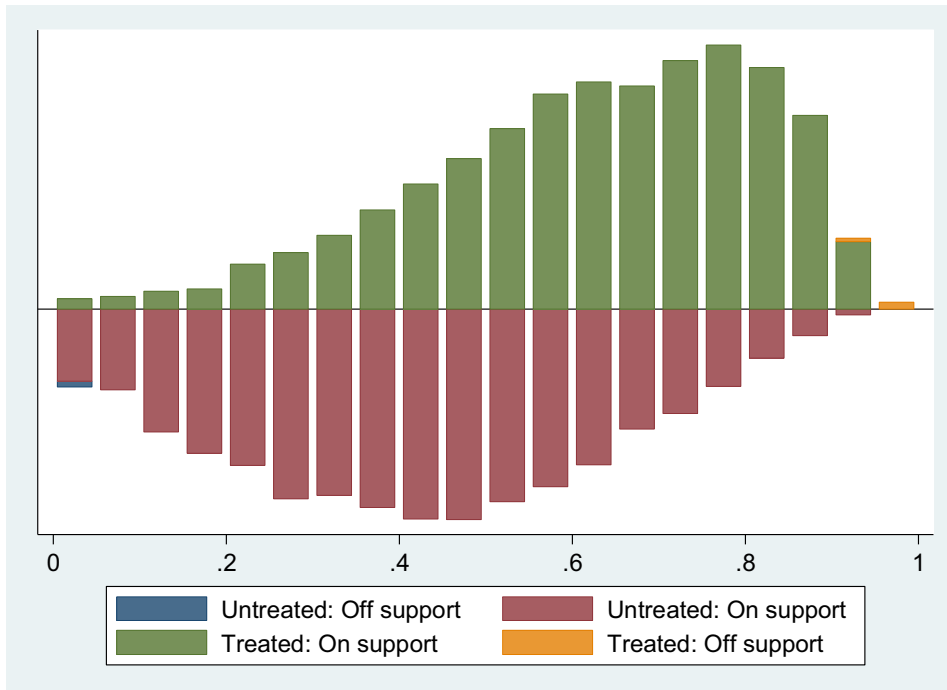

Fig. 1. Common value range diagram of the tendency scores.

Table 11
Nearest neighbor matching sample distribution.

Sample distribution	Unpaired sample	Paired samples	The total sample
State = 0	15	6181	6196
State = 1	29	6963	6992
The total sample	44	13,144	13,188

Table 12
T-test of bank loans to state-owned and non-state-owned enterprises by different types of banks (after PSM treatment).

Bank loans	State-owned		Non-state-owned		The mean test
	N	Means	N	Means	T test
Wzcontractrate	814	0.06	906	0.035	0.025**
Wzloan	814	0.002	906	0	0.002*
Zccontractrate	528	0.072	436	0.047	0.025*
Zcloan	528	0.022	436	0.004	0.018
Sycontractrate	5017	0.073	5278	0.068	0.005
Syloan	5017	0.005	5278	0.005	0
Gysycontractrate	3071	0.07	3120	0.069	0.002
Gysyloan	3071	0.005	3120	0.004	0.001
Gfzcontractrate	2978	0.063	3389	0.054	0.009
Gfzloan	2978	0.002	3389	0.003	−0.001
Dfcncontractrate	1425	0.036	1564	0.048	−0.013*
Dfcnloan	1425	0.001	1564	0.003	−0.002

Note: (1) this table is a statistical analysis of the treatment of PSM in state-owned and non-state-owned enterprises; (2) * and ** indicate significance at the 5% and 10% level, respectively.

rural commercial banks not only do not exercise financial discrimination, but also show financial support in giving non-state-owned enterprises more bank loan opportunities and larger bank loans. The test results are consistent with the expectations of Hypothesis 1.

The results show that foreign banks exercise significant financial discrimination against non-state-owned enterprises. State-owned enterprises have a longer operating history, have more assets that can be used for mortgages, and can easily provide more "hard" information to banks, whereas non-state-owned enterprises are still growing, have fewer assets that can be used for mortgages, and have a comparative disadvantage in providing hard information to banks. Moreover, the newly entered foreign banks have accumulated less "soft" information (such as entrepreneurs' management abilities) on local enterprises, and have to rely more on the hard information on enterprises to make credit decisions. Therefore, foreign banks give priority to state-owned enterprises with hard information advantages, which are regarded as high-quality customers, and exclude non-state-owned enterprises. Other studies verify this conclusion. Xin et al. (2003) and Zhendong et al. (2003) analyzed the phenomenon of "cherry picking" in foreign banks, and found that foreign banks target the host countries of multinational companies, local large companies, and wealthy families and individuals. Chen et al. (2007) found that 35% of the foreign banks interviewed believed that it was worth their best efforts trying to maintain large state-owned enterprises as customers.

The Spearman correlation coefficients in Table 10 show a negative correlation between foreign bank loans and enterprise size. In Table 13, the coefficient of enterprise size is significantly negative in the regression model of foreign bank loans, possibly because foreign banks place more emphasis on corporate mortgage assets than on corporate size when "picking cherries." In Table 13, the regression coefficient of the ratio of loan opportunities to tangible assets of foreign banks is significantly positive at the level of 0.01 (the regression coefficient is 1.689).

Although the policy banks provide more loan opportunities to non-state-owned enterprises, they exercise significant financial discrimination in terms of the scale of loans, which may be related to the function of policy banks, which mainly undertake policy credit business. Xiaochuan (2006) proposed that China's policy banks have made great achievements in supporting the national key construction programs, promoting the export of

Table 13
Property rights and loans from foreign banks, policy banks, and local commercial banks.

	(1) Wzcontractrate	(2) Wzloan	(3) Zccontractrate	(4) Zcloan	(5) Sycontractrate	(6) Syloan
State	−0.167**	−0.018***	0.010	−0.215***	0.283***	0.029***
	(−2.02)	(−2.91)	(0.14)	(−3.32)	(2.63)	(2.72)
Fcfi	3.379***	0.265***	−0.612*	−0.180	−0.019	−0.008
	(9.30)	(10.58)	(−1.78)	(−0.71)	(−0.05)	(−0.20)
Tang	1.689***	0.021	−1.084***	−0.621***	0.577	0.039
	(6.84)	(1.17)	(−4.70)	(−3.44)	(1.47)	(1.07)
Size	−0.254***	−0.010***	0.282***	0.135***	0.049	−0.000
	(−52.00)	(−30.23)	(68.04)	(37.88)	(0.84)	(−0.04)
Shrz	−0.012***	−0.000**	0.002	−0.000	0.002	0.000
	(−4.28)	(−2.16)	(0.65)	(−0.18)	(0.88)	(0.63)
Tbq	−0.182***	−0.004	−0.269***	−0.038	−0.014	0.002
	(−4.71)	(−1.60)	(−6.52)	(−1.18)	(−0.37)	(0.51)
Lev	1.751***	0.082***	0.192	0.850***	0.839***	0.104***
	(10.87)	(7.29)	(1.35)	(7.14)	(2.88)	(3.06)
Roe	−1.978***	−0.179***	−1.653***	−1.216***	0.833*	0.035
	(−11.43)	(−12.63)	(−5.08)	(−4.93)	(1.73)	(0.70)
M2	0.000***	0.000***	0.000***	0.000***	0.000	0.000
	(53.18)	(20.81)	(60.80)	(31.44)	(1.41)	(1.27)
GDP	−156.795***	−18.906***	334.616***	214.952***	106.681**	10.178*
	(−113.67)	(−215.20)	(343.62)	(296.64)	(2.04)	(1.87)
_cons	−12.269***	−0.734***	−23.935***	−15.104***	−7.536***	−0.661***
	(−111.77)	(−94.14)	(−250.09)	(−184.00)	(−3.39)	(−3.01)
Year	Yes	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes	Yes
N	1625	1625	898	898	9858	9858
PseudoR^2	0.144	0.306	0.189	0.207	0.067	0.155

Note: (1) *, **, and *** indicate significance at the 1%, 5%, and 10% level, respectively; (2) the robust t-values adjusted for heteroscedasticity are shown in parentheses.

products, and protecting and stabilizing the market. Because policy banks are more policy-oriented than the commercial banks, and state-owned enterprises are often more closely linked with national policies than non-state-owned enterprises, policy banks tend to give state-owned enterprises larger bank loans.

However, the state-owned enterprises supported by foreign banks and policy banks do not perform better than non-state-owned enterprises, because the bank loans of foreign banks and policy banks are negatively correlated with financial performance (Roe).

Table 14 shows that large state-owned commercial banks, national joint-stock banks, local city commercial banks, and rural commercial banks provide significant financial support to non-state-owned enterprises. The bank loans of national joint-stock banks, local city commercial banks, and agribusiness banks are positively correlated with financial performance (Roe), and are significantly positive in terms of the regression coefficient of the ratio of tangible assets to enterprises (Tang). These banks also place more emphasis on the mortgaged assets of the enterprises than on the size of the enterprises when making credit decisions.

4.3. The quality of information disclosure, the nature of property rights, and the different types of bank loans

Because foreign banks and policy banks exercise significant financial discrimination, and the sample of foreign banks and policy banks is relatively small, in this part we only examine the reaction of local commercial banks to the information disclosure violations by listed companies. The results are shown in Tables 15–18. For convenience, we present the property rights together with the test results for bank loans.

Table 15 shows that although the local commercial banks do not exercise financial discrimination, they do provide significant financial support. However, the local commercial banks provide significantly fewer bank loan opportunities and smaller bank loans to non-state-owned enterprises that commit information disclosure

Table 14
Property rights and loans from large state-owned commercial banks, national joint-stock banks, local city commercial banks, and rural commercial banks.

	(1) Gysycontractrate	(2) Gysyloan	(3) Gfzcontractrate	(4) Gfzloan	(5) Dfcncontractrate	(6) Dfcnloan
State	0.251*	0.022*	0.235***	0.019***	0.478***	0.024***
	(1.83)	(1.80)	(5.83)	(6.35)	(7.48)	(7.86)
Fcfi	0.917	0.068	−0.464***	−0.033***	0.006	−0.023**
	(1.58)	(1.31)	(−3.28)	(−3.38)	(0.03)	(−2.35)
Tang	0.801	0.050	0.408***	0.021**	0.810***	0.022**
	(1.60)	(1.15)	(3.06)	(2.16)	(3.47)	(2.03)
Size	0.042	−0.000	0.044***	−0.002***	−0.038***	−0.003***
	(0.60)	(−0.07)	(18.51)	(−9.20)	(−9.81)	(−16.01)
Shrz	0.004	0.000	0.000	−0.000	0.002	0.000
	(1.37)	(1.29)	(0.07)	(−0.80)	(1.31)	(0.61)
Tbq	−0.077	−0.004	0.020	0.006***	−0.017	0.001
	(−1.15)	(−0.59)	(1.36)	(5.88)	(−0.73)	(1.12)
Lev	0.458	0.057	1.034***	0.103***	1.447***	0.075***
	(1.08)	(1.47)	(13.16)	(18.08)	(11.53)	(12.44)
Roe	1.051	0.055	0.862***	0.017	1.256***	0.034***
	(1.45)	(0.76)	(4.90)	(1.47)	(5.98)	(3.67)
M2	0.000	0.000	0.000***	0.000***	0.000***	0.000***
	(0.59)	(0.58)	(48.70)	(41.35)	(65.80)	(85.83)
GDP	88.828	8.591	155.062***	10.161***	273.773***	16.531***
	(1.11)	(1.11)	(408.38)	(337.49)	(369.68)	(462.16)
_cons	−6.357**	−0.527*	−16.942***	−1.101***	−19.878***	−1.048***
	(−2.00)	(−1.79)	(−315.95)	(−278.17)	(−231.34)	(−253.01)
Year	Yes	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes	Yes
N	5946	5946	5993	5993	2861	2861
PseudoR^2	0.080	0.179	0.090	0.222	0.076	0.186

Note: (1) *, **, and *** indicate significance at the 1%, 5%, and 10% level, respectively; (2) the robust t-values adjusted for heteroscedasticity are shown in parentheses.

violations. Thus, the information disclosure violations of non-state-owned enterprises trigger the financial discrimination of local commercial banks. The test results in Table 15 are consistent with the expectations of Hypothesis 2.

Table 16 shows that although large state-owned commercial banks do not exercise financial discrimination, they do provide significant financial support. Moreover, large state-owned commercial banks do not financially discriminate against non-state-owned enterprises that commit information disclosure violations, and provide significantly more bank loan opportunities and larger bank loans to non-state-owned enterprises. The test results in Table 16 are contrary to Hypothesis 2, which may be due to listed companies being restricted from engaging in stock and bond refinancing due to securities market irregularities. (The securities market sanctions for Chinese listed companies are bound to refinancing. For example, when listed companies are publicly reprimanded by exchanges, the companies are banned from refinancing securities for the next 12 months.) Thus, bank borrowing provides a lifeline for these listed companies, and the large state-owned commercial banks provide the ultimate financing channel for listed companies that commit information disclosure violations.

Table 17 shows that although national joint-stock banks do not exercise financial discrimination, they do offer significant financial support. However, the national joint-stock banks provide non-state-owned enterprises that commit information disclosure violations few opportunities for bank loans, although there is no significant difference in the scale of bank loans. To a certain extent, the information disclosure of non-state-owned enterprises triggers the financial discrimination of the national joint-stock banks. The test results in Table 17 are consistent with the expectations of Hypothesis 2.

Table 15
Quality of information disclosure, property rights, and local commercial bank loans.

	(1) Gysycontractrate	(2) Gysycontractrate	(3) Gysyloan	(4) Gysyloan
State[*] Info		−0.669***		−0.047***
		(−7.40)		(−5.23)
Info		−7.374***		−1.429***
		(−68.64)		(−135.12)
State	0.283***	0.297***	0.029***	0.029***
	(2.63)	(9.83)	(2.72)	(10.23)
Fcfi	−0.019	−0.040	−0.008	−0.011
	(−0.05)	(−0.35)	(−0.20)	(−1.04)
Tang	0.577	0.555***	0.039	0.037***
	(1.47)	(5.71)	(1.07)	(4.05)
Size	0.049	0.050***	−0.000	−0.000
	(0.84)	(27.52)	(−0.04)	(−1.44)
Shrz	0.002	0.002***	0.000	0.000*
	(0.88)	(2.95)	(0.63)	(1.95)
Tbq	−0.014	−0.014	0.002	0.002*
	(−0.37)	(−1.25)	(0.51)	(1.82)
Lev	0.839***	0.834***	0.104***	0.102***
	(2.88)	(13.96)	(3.06)	(18.19)
Roe	0.833*	0.859***	0.035	0.038***
	(1.73)	(7.06)	(0.70)	(3.49)
M2	0.000	0.000***	0.000	0.000***
	(1.41)	(40.47)	(1.27)	(39.23)
GDP	106.681**	102.191***	10.178*	9.898***
	(2.04)	(402.30)	(1.87)	(376.87)
_cons	−7.536***	−7.383***	−0.661***	−0.649***
	(−3.39)	(−183.24)	(−3.01)	(−169.54)
Weiglx	Yes	Yes	Yes	Yes
Chufly	Yes	Yes	Yes	Yes
Chuffs	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
N	9858	9858	9858	9858
PseudoR[2]	0.067	0.070	0.155	0.160

Note: (1) *, **, and *** indicate significance at the 1%, 5%, and 10% level, respectively; (2) the robust t-values adjusted for heteroscedasticity are shown in parentheses.

From Table 18, we can see that although the local commercial banks and agribusiness firms do not exercise financial discrimination, they do offer significant financial support. However, local city commercial banks and rural commercial banks provide significantly fewer bank loan opportunities and smaller bank loans to non-state-owned enterprises that commit information disclosure violations. The information disclosure violations of non-state-owned enterprises trigger the financial discrimination of local city commercial banks and agricultural firms. Compared with large state-owned commercial banks and national joint-stock banks, local city commercial banks and rural commercial banks have the strongest response to the information disclosure violations of non-state-owned enterprises. The test results in Table 18 are consistent with the expectations of Hypothesis 2.

4.4. Extensibility test

To further examine the relationship between property rights and bank loans, and whether there are regulation or intermediary effects, we also construct a model of the intermediary effect. The test results of the mediation model are shown in Tables 19–22. The results show that the quality of enterprise information disclosure does not play an intermediary role in the relationship between property rights and bank loans.

Table 16
Quality of information disclosure, property rights, and loans from large state-owned commercial banks.

	(1) Sycontractrate	(2) Sycontractrate	(3) Syloan	(4) Syloan
State* Info		0.271*		0.006
		(1.71)		(0.42)
Info		−8.979***		−1.316***
		(−50.57)		(−82.98)
State	0.251*	0.255***	0.022*	0.022***
	(1.83)	(6.62)	(1.80)	(6.58)
Fcfi	0.917	0.910***	0.068	0.068***
	(1.58)	(5.64)	(1.31)	(4.69)
Tang	0.801	0.807***	0.050	0.050***
	(1.60)	(6.77)	(1.15)	(4.66)
Size	0.042	0.041***	−0.000	−0.001**
	(0.60)	(18.30)	(−0.07)	(−2.54)
Shrz	0.004	0.004***	0.000	0.000***
	(1.37)	(4.20)	(1.29)	(4.09)
Tbq	−0.077	−0.074***	−0.004	−0.004***
	(−1.15)	(−4.87)	(−0.59)	(−2.79)
Lev	0.458	0.477***	0.057	0.057***
	(1.08)	(6.28)	(1.47)	(8.59)
Roe	1.051	1.062***	0.055	0.056***
	(1.45)	(5.96)	(0.76)	(3.72)
M2	0.000	0.000***	0.000	0.000***
	(0.59)	(20.94)	(0.58)	(20.92)
GDP	88.828	86.987***	8.591	8.346***
	(1.11)	(256.42)	(1.11)	(257.37)
_cons	−6.357**	−6.290***	−0.527*	−0.518***
	(−2.00)	(−124.50)	(−1.79)	(−115.25)
Weiglx	Yes	Yes	Yes	Yes
Chufly	Yes	Yes	Yes	Yes
Chuffs	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
N	5946	5946	5946	5946
PseudoR²	0.080	0.084	0.179	0.185

Note: (1) *, **, and *** indicate significance at the 1%, 5%, and 10% level, respectively; (2) the robust t-values adjusted for heteroscedasticity are shown in parentheses.

Table 19 shows the test results for the relationship between property rights, information disclosure quality, and the loan intermediary effect for large state-owned commercial banks. The first step of Table 19 tests the relationship between property rights and bank loans. The coefficient of property rights (State) is significantly positive at the 10% level, which shows that large state-owned commercial banks provide financial support to non-state-owned enterprises. In step two, the property rights (Statet-1) and enterprise information disclosure quality (Info) are significantly positively correlated at the 5% level, indicating that under the same conditions, the non-state-owned enterprises disclose lower quality information. In step three, after adding the quality variable of enterprise information disclosure to the model of the relationship between property rights and bank loans, the coefficient of property rights is significantly positive, the coefficient of enterprise information disclosure quality is not significant, and compared with regressions (1) and (2), the coefficient of property rights in regressions (4) and (5) does not change, which indicates that the quality of enterprise information disclosure does not have an intermediary effect on the relationship between property rights and the loans of large state-owned commercial banks.

Table 20 shows the test results for the relationship between property rights, the quality of information disclosure, and the intermediary effect of loans for local city commercial banks and agricultural commercial banks. The first regression (1) tests the relationship between property rights and the probability of being

Table 17

Quality of information disclosure, nature of property rights, and loans from national joint-stock commercial banks.

	(1) Gfzcontractrate	(2) Gfzcontractrate	(3) Gfzloan	(4) Gfzloan
State[*] Info		−0.225		0.004
		(−1.56)		(0.41)
Info		−16.219***		−1.179***
		(−100.91)		(−101.53)
State	0.235***	0.231***	0.019***	0.018***
	(5.83)	(5.71)	(6.35)	(6.08)
Fcfi	−0.464***	−0.561***	−0.033***	−0.040***
	(−3.28)	(−3.91)	(−3.38)	(−4.05)
Tang	0.408***	0.417***	0.021**	0.021**
	(3.06)	(3.13)	(2.16)	(2.18)
Size	0.044***	0.043***	−0.002***	−0.002***
	(18.51)	(18.02)	(−9.20)	(−9.88)
Shrz	0.000	−0.000	−0.000	−0.000
	(0.07)	(−0.18)	(−0.80)	(−1.04)
Tbq	0.020	0.018	0.006***	0.006***
	(1.36)	(1.24)	(5.88)	(5.72)
Lev	1.034***	1.017***	0.103***	0.102***
	(13.16)	(12.94)	(18.08)	(17.89)
Roe	0.862***	0.910***	0.017	0.019
	(4.90)	(5.12)	(1.47)	(1.59)
M2	0.000***	0.000***	0.000***	0.000***
	(48.70)	(48.75)	(41.35)	(42.35)
GDP	155.062***	155.014***	10.161***	10.351***
	(408.38)	(409.57)	(337.49)	(344.05)
_cons	−16.942***	−16.590***	−1.101***	−1.106***
	(−315.95)	(−309.80)	(−278.17)	(−279.14)
Weiglx	Yes	Yes	Yes	Yes
Chufly	Yes	Yes	Yes	Yes
Chuffs	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
N	5993	5993	5993	5993
PseudoR^2	0.090	0.094	0.222	0.229

Note: (1) *, **, and *** indicate significance at the 1%, 5%, and 10% level, respectively; (2) the robust t-values adjusted for heteroscedasticity are shown in parentheses.

granted a loan from local city commercial banks and agricultural commercial banks. The regression coefficient is significantly positive, which indicates that the local city commercial banks and agricultural commercial banks provide financial support to non-state-owned enterprises. Regression (3) tests the relationship between property rights (State t-1) and the quality of information disclosure. The regression coefficient is significantly positive, which indicates that the quality of the information disclosed by non-state-owned enterprises is worse under the same conditions. In regression (4), the coefficient of property rights and information disclosure quality is significantly positive after the information disclosure quality variable is added to property rights and the loan signing rates of local city commercial banks and rural commercial banks. Moreover, the regression coefficient of property rights is reduced from 0.478 to 0.466, which indicates that the quality of information disclosure plays a partial intermediary role, and the value of the intermediary effect is 0.3629.[4] This is consistent with the conclusion of Table 18, that the local city commercial banks and agricultural banks have the strongest responses to enterprises that commit information disclosure violations.

[4] Calculation method: (Info-regression coefficient in regression(3))[*](Info-regression coefficient in regression(4))/[(state regression coefficient in regression(4)) + (Info regression coefficient in regression(3))[*](Info regression coefficient in regression(4)), IE 0.242[*]1.097/ (0.466 + 0.242[*]1.097) = 0.3629.

Table 18
Quality of information disclosure, nature of property rights, and loans from local city commercial banks and agricultural commercial banks.

	(1) Dfcncontractrate	(2) Dfcncontractrate	(3) Dfcnloan	(4) Dfcnloan
State* Info		−0.783***		−0.032***
		(−3.90)		(−3.28)
Info		−8.074***		−0.378***
		(−35.04)		(−33.70)
State	0.478***	0.486***	0.024***	0.024***
	(7.48)	(7.53)	(7.86)	(7.72)
Fcfi	0.006	−0.196	−0.023**	−0.035***
	(0.03)	(−0.87)	(−2.35)	(−3.50)
Tang	0.810***	0.640***	0.022**	0.014
	(3.47)	(2.72)	(2.03)	(1.24)
Size	−0.038***	−0.036***	−0.003***	−0.003***
	(−9.81)	(−9.47)	(−16.01)	(−15.91)
Shrz	0.002	0.002	0.000	0.000
	(1.31)	(1.06)	(0.61)	(0.30)
Tbq	−0.017	−0.025	0.001	0.001
	(−0.73)	(−1.05)	(1.12)	(0.84)
Lev	1.447***	1.240***	0.075***	0.065***
	(11.53)	(9.80)	(12.44)	(10.69)
Roe	1.256***	1.595***	0.034***	0.049***
	(5.98)	(7.01)	(3.67)	(4.88)
M2	0.000***	0.000***	0.000***	0.000***
	(65.80)	(50.09)	(85.83)	(69.65)
GDP	273.773***	222.837***	16.531***	14.073***
	(369.68)	(308.84)	(462.16)	(402.05)
_cons	−19.878***	−17.698***	−1.048***	−0.935***
	(−231.34)	(−205.51)	(−253.01)	(−224.29)
Weiglx	Yes	Yes	Yes	Yes
Chufly	Yes	Yes	Yes	Yes
Chuffs	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
N	2861	2861	2861	2861
PseudoR^2	0.076	0.099	0.186	0.253

Note: (1) *, **, and *** indicate significance at the 1%, 5%, and 10% level, respectively; (2) the robust t-values adjusted for heteroscedasticity are shown in parentheses.

Similar to the test results in Table 19, Tables 21 and 22 show the test results for the relationship between property rights, the loan intermediary effects of local commercial banks and national joint-stock banks, and the quality of information disclosure. The results show that the quality of information disclosure does not play an intermediary role in the relationship between property rights and bank loans.

4.5. Robustness test

Because the main reasons for the differences between state-owned enterprises and non-state-owned enterprises are profitability and the ratio of tangible assets, we changed the order of the matching variables. We entered the profitability, tangible assets ratio, firm size, Tobin Q, asset-liability ratio, financing demand, and equity balance variables in turn, and repeated the main test using the nearest neighbor method after 1:1 matching. There is no substantial difference between the results of the robustness test and the previous tests. To test the robustness of our conclusions, we conducted the following tests. First, to consider the composition of the credit contracts, we controlled the interaction between the two dependent variables. For example, when we tested the relationship between property rights and bank loan opportunities, we also included the

Table 19
Quality of property rights tested by information disclosure quality and the loan intermediary effect of large state-owned commercial banks.

Step one	(1) Gysycontractrate	(2) Gysyloan	Step two	(3) Info	Step three	(4) Gysycontractrate	(5) Gysyloan
State	0.251* (1.83)	0.022* (1.80)	State$_{t-1}$	0.242** (2.00)	State	0.251* (1.82)	0.022* (1.80)
Fcfi	0.917 (1.58)	0.068 (1.31)	Fcfi $_{t-1}$	−0.823 (−1.46)	Info	0.049 (0.17)	−0.004 (−0.16)
Tang	0.801 (1.60)	0.050 (1.15)	Tang $_{t-1}$	−0.403 (−1.12)	Fcfi	0.919 (1.59)	0.068 (1.31)
Size	0.042 (0.60)	−0.000 (−0.07)	Size $_{t-1}$	−0.086* (−1.75)	Tang	0.801 (1.60)	0.050 (1.15)
Shrz	0.004 (1.37)	0.000 (1.29)	Shrz $_{t-1}$	−0.000 (−0.08)	Size	0.042 (0.60)	−0.000 (−0.07)
Tbq	−0.077 (−1.15)	−0.004 (−0.59)	Lev $_{t-1}$	0.711*** (3.22)	Shrz	0.004 (1.37)	0.000 (1.29)
Lev	0.458 (1.08)	0.057 (1.47)	Roe $_{t-1}$	−0.865* (−1.76)	Tbq	−0.077 (−1.15)	−0.004 (−0.59)
Roe	1.051 (1.45)	0.055 (0.76)	Audit $_{t-1}$	1.086*** (5.38)	Lev	0.457 (1.07)	0.058 (1.48)
M2	0.000 (0.59)	0.000 (0.58)	_cons	−1.842 (−1.62)	Roe	1.055 (1.45)	0.054 (0.75)
GDP	88.828 (1.11)	8.591 (1.11)			M2	0.000 (0.58)	0.000 (0.59)
_cons	−6.357** (−2.00)	−0.527* (−1.79)			GDP	88.105 (1.09)	8.659 (1.11)
					_cons	−6.334** (−1.99)	−0.530* (−1.80)
Year	Yes	Yes	Year	Yes	Year	Yes	Yes
Industry	Yes	Yes	Industry	Yes	Industry	Yes	Yes
N	5946	5946	N	18,841	N	5946	5946
PseudoR^2	0.080	0.179	PseudoR^2	0.058	PseudoR^2	0.080	0.179

Note: (1) *, **, and *** indicate significance at the 1%, 5%, and 10% level, respectively; (2) the robust t-values adjusted for heteroscedasticity are shown in parentheses.

bank loan scale as the control variable. The test results are consistent with our earlier findings. Second, to consider the decision-making lags for different types of bank credit, we used quarterly data and repeated the above test. The test results are consistent with our earlier findings. Due to the space limitations, we do not show the results of the robustness test here.

5. Conclusions and policy implications

Using a sample of all A-share listed companies from 2007 to 2016, we investigate the roles that property rights and the quality of information disclosure play in the credit decisions of different types of banks after the market-oriented reform of the financial sector. After resolving the self-selection problem in relation to the financing demand of listed companies, we find that foreign banks exercise significant financial discrimination in granting loans and policy banks exercise significant financial discrimination in determining the scale of the bank loans provided to non-state-owned enterprises. However, the banks also provide a remarkable level of financial support to enterprises. Specifically, local commercial banks, large state-owned commercial banks, national joint-stock banks, local city commercial banks, and rural commercial banks, not only exercise no financial discrimination against non-state-owned enterprises, but also provide significant financial support in providing non-state-owned enterprises more bank loan opportunities and larger bank loans. However, for enterprises that commit information disclosure violations, the credit decisions of the national joint-stock banks and local city commercial and rural commercial banks reverse, and these banks begin to exercise financial discrimination against non-state-owned enterprises. Nevertheless, large state-owned commercial

Table 20
Quality of property rights tested by information disclosure quality and the loan intermediary effect for local city commercial banks and agricultural commercial banks.

Step one	(1) Dfcncontractrate	(2) Dfcnloan	Step two	(3) Info	Step three	(4) Dfcncontractrate	(5) Dfcnloan
State	0.478***	0.024***	State $_{t-1}$	0.242**	State	0.466***	0.024***
	(7.48)	(7.86)		(2.00)		(7.27)	(7.64)
Fcfi	0.006	−0.023**	Fcfi $_{t-1}$	−0.823	Info	1.097***	0.054***
	(0.03)	(−2.35)		(−1.46)		(20.43)	(21.18)
Tang	0.810***	0.022**	Tang $_{t-1}$	−0.403	Fcfi	−0.071	−0.027***
	(3.47)	(2.03)		(−1.12)		(−0.33)	(−2.77)
Size	−0.038***	−0.003***	Size $_{t-1}$	−0.086*	Tang	0.743***	0.019*
	(−9.81)	(−16.01)		(−1.75)		(3.16)	(1.71)
Shrz	0.002	0.000	Shrz $_{t-1}$	−0.000	Size	−0.025***	−0.002***
	(1.31)	(0.61)		(−0.08)		(−6.55)	(−12.59)
Tbq	−0.017	0.001	Lev $_{t-1}$	0.711***	Shrz	0.002	0.000
	(−0.73)	(1.12)		(3.22)		(1.44)	(0.74)
Lev	1.447***	0.075***	Roe $_{t-1}$	−0.865*	Tbq	−0.020	0.001
	(11.53)	(12.44)		(−1.76)		(−0.84)	(1.09)
Roe	1.256***	0.034***	Audit $_{t-1}$	1.086***	Lev	1.207***	0.063***
	(5.98)	(3.67)		(5.38)		(9.55)	(10.40)
M2	0.000***	0.000***	_cons	−1.842	Roe	1.433***	0.042***
	(65.80)	(85.83)		(−1.62)		(6.59)	(4.39)
GDP	273.773***	16.531***			M2	0.000***	0.000***
	(369.68)	(462.16)				(55.22)	(74.25)
_cons	−19.878***	−1.048***			GDP	242.526***	14.937***
	(−231.34)	(−253.01)				(330.29)	(419.43)
					_cons	−19.237***	−1.021***
						(−222.93)	(−244.62)
Year	Yes	Yes	Year	Yes	Year	Yes	Yes
Industry	Yes	Yes	Industry	Yes	Industry	Yes	Yes
N	2861	2861	N	18,841	N	2861	2861
PseudoR^2	0.076	0.186	PseudoR^2	0.058	PseudoR^2	0.084	0.210

Note: (1) *, **, and *** indicate significance at the 1%, 5%, and 10% level, respectively; (2) the robust t-values adjusted for heteroscedasticity are shown in parentheses.

Table 21
The nature of property rights tested by the quality of information disclosure and the intermediary effect of local commercial bank loans (Summary Table).

Step one	(1) Sycontractrate	(2) Syloan	Step two	(3) Info	Step three	(4) Sycontractrate	(5) Syloan
State	0.283***	0.029***	State $_{t-1}$	0.242**	State	0.283***	0.029***
	(2.63)	(2.72)		(2.00)		(2.63)	(2.72)
_cons	−7.536***	−0.661***	_cons	−1.842	Info	0.218	0.015
	(−3.39)	(−3.01)		(−1.62)		(1.23)	(0.86)
					_cons	−7.422***	−0.653***
						(−3.34)	(−2.98)
Firm	Yes	Yes	Firm	Yes	Firm	Yes	Yes
Year	Yes	Yes	Year	Yes	Year	Yes	Yes
Industry	Yes	Yes	Industry	Yes	Industry	Yes	Yes
N	9858	9858	N	18,841	N	9858	9858
PseudoR^2	0.067	0.155	PseudoR^2	0.058	PseudoR^2	0.067	0.155

Note: (1) *, **, and *** indicate significance at the 1%, 5%, and 10% level, respectively; (2) the robust t-values adjusted for heteroscedasticity are shown in parentheses.

Table 22

Property rights, the quality of information disclosure, and the intermediary effect of loans for national shareholding banks (Summary Table).

Step one	(1) Gfzcontractrate	(2) Gfzloan	Step two	(3) Info	Step three	(4) Gfzcontractrate	(5) Gfzloan
State	0.235***	0.019***	State $_{t-1}$	0.242**	State	0.236***	0.019***
	(5.83)	(6.35)		(2.00)		(5.84)	(6.35)
_cons	−16.942***	−1.101***	_cons	−1.842	Info	0.130***	0.001
	(−315.95)	(−278.17)		(−1.62)		(4.01)	(0.23)
					_cons	−16.880***	−1.101***
						(−314.64)	(−278.13)
Firm	Yes	Yes	Firm	Yes	Firm	Yes	Yes
Year	Yes	Yes	Year	Yes	Year	Yes	Yes
Industry	Yes	Yes	Industry	Yes	Industry	Yes	Yes
N	5993	5993	N	18,841	N	5993	5993
PseudoR^2	0.090	0.222	PseudoR^2	0.058	PseudoR^2	0.090	0.222

Note: (1) *, **, and *** indicate significance at the 1%, 5%, and 10% level, respectively; (2) the robust t-values adjusted for heteroscedasticity are shown in parentheses.

banks continue to provide financial support to non-state-owned enterprises. Overall, the quality of the information disclosure by enterprises has a moderating effect rather than an intermediary effect on the relationship between property rights and bank loans.

With respect to the reform of the banking industry, measures such as the divestiture of non-performing loans, reform of the stock system, introduction of strategic investors, public listing, and market-oriented interest rates have transformed banks from low-cost financing vehicles for state-owned enterprises to self-financing business entities. We find that after nearly a decade of financial reform, foreign banks, national joint-stock banks, and local city commercial and agricultural banks dynamically adjust their allocation of credit according to the quality of the information disclosed by enterprises. To some extent, this reflects the market-oriented behavior of these types of banks. We also test the achievements of the banking marketization reform in relation to the quality of the information disclosed by enterprises and find that the market-oriented reform has had different effects on different types of banks.

We further examine the allocation of bank credit in relation to the credit supply and demand. We use the bank loan approval documents of listed companies to eliminate the financing needs of listed companies. After conducting PSM between state-owned enterprises and non-state-owned enterprises, we reexamine the relationship between property rights and bank loans. Our findings provide new empirical evidence supporting the existence of financial discrimination in the supply of bank credit. With the development of the finance sector, property rights are no longer the only basis for determining bank credit decisions. In particular, we find that the national joint-stock banks, local city commercial banks, and rural commercial banks attach great importance to the quality of the information disclosed by enterprises. In addition to the influence of macro factors, such as monetary policy, industrial policy, and financial development, which are difficult for enterprises to control, non-state-owned enterprises can use their own initiative by actively improving the quality of the information they disclose, and thus help alleviate the information asymmetry between banks and enterprises. This approach would help enterprises to overcome the financial discrimination present in the banking sector.

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