

# Empirical Analysis of Bank-Enterprise Relationship Loan Default of Small and Micro Enterprises

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**Abstract:** Under the background of slowing economic growth and increasing international trade frictions, enterprises are facing more serious shortage of funds. Small and micro enterprises are faced with complex external environment, coupled with their poor financial management level, they are faced with more serious problems in enterprise financing. Based on the data of a commercial bank in a certain city, this paper sorts out data indexes of basic characteristics of enterprises, such as enterprise age, enterprise size, shareholding ratio of the first shareholder and bank-enterprise relationship, etc. Through heck man model, it measures which factors will affect the default rate of bank-enterprise relationship loans, and further analysis and discussion are carried out.

## 1. Introduction

As the social credit system has not been fully established and there is a general problem of information asymmetry in the social economy, it is difficult for the supply and demand of funds to understand each other in a timely and efficient manner, and then adjust the surplus and shortage. In the case of bank loans, the bank cannot effectively grasp the operation and financial information of enterprises, and it is also difficult to evaluate the rationality and potential risks of small and micro enterprises in loan application, which ultimately leads to the difficulty for the bank to provide financial support to small and micro enterprises at a reasonable interest rate, resulting in the difficulty of financing for small and micro enterprises with a large influence.

Establish a perfect social credit system and promote the communication between the small and medium-sized enterprises and Banks, are an important way to solve the small and medium-sized enterprise financing difficult dilemma, this article, from the perspective of relationship lending between Banks and enterprises to enhance communication, share information, and then will have valid information as the effective support for the loan.

## 2. The Present Situation of Credit Risk of Relational loan

The essence of relational loan is the cooperative relationship between Banks and enterprises. Banks obtain income by providing financial services and enterprises obtain funds to expand reproduction. However, in theory, the cooperation between Banks and enterprises, which should be mutually beneficial and win-win, has many problems in the actual implementation process. Banks have a large amount of funds but do not have appropriate channels to release them, and small and medium-sized enterprises have urgent credit needs but cannot meet them.

### 2.1. Access to Information is Difficult

Small and medium-sized enterprises generally fixed assets are less that can be mortgaged, financial management is not standard, can't provide the system to perfect the financial information for bank loan approval, due to the fact, information asymmetry between the adverse selection and moral hazard caused by far more serious than large enterprises: first, because the social credit system and legal system in our country is not perfect, the market is punishing, small and medium-sized

enterprises is faced with lower cost of default, small and medium-sized enterprises choose to evade the debt default, more easily choose loan defaults; Second, when Banks lend money to small and medium-sized enterprises, they will face excessive information collection cost and credit cost. Information disclosure methods of small and medium-sized enterprises are not standardized, information transmission mechanism is not perfect, and the credibility of enterprise internal audit information is low and accuracy is difficult to guarantee. Third, bank for small and medium-sized enterprise loan risk and return in asymmetry, small and medium-sized enterprises generally rely on a certain product or started with a particular technology development and in the process of development and long-term planning, production and operation is vulnerable to market shocks, in the same industry competition, easy to imitate and surpass, so its production and operation is not stable, performance and poor financial easy to happen, to increase more to bank credit risk, suppresses the enthusiasm of bank loans to small and medium enterprises.

## **2.2. The Incompleteness of Credit Market Causes Excessive Credit Default**

Information asymmetry is likely to lead to three kinds of defaults. The first one is that the bank makes a loan decision without sufficient information to refer to. Such a default usually starts from the construction of the bank's internal rating system and avoids credit default by establishing a more perfect rating system. The second is mainly due to the enterprise in order to obtain loans, conceal information or create false financial and business information, or refuse to repay, the enterprise loan fraud and default behavior; The third is mainly due to the impact of market changes on the development of production, which has a negative impact on enterprises in related industries. When enterprises are impacted by the industry, they will often have production and operation difficulties, and encounter financial difficulties, which will affect the timely repayment of loans.

## **2.3. Macroeconomic Impact Loan Default Risk**

Business is the market main body, in the process of production and business operation is closely linked with the rest of the market main body, enterprise production and business operation activities related to the economic cycle, the cycle, if the economic situation becomes poor, related industries will be adversely affected, in a certain industry enterprise nature can't get rid of cyclical adjustment, corporate profits are greatly reduced, the production and business operation is unsustainable and further reduce the enterprise profit, by lending money gained by the performance. In addition, there are many macro factors such as market interest rate, foreign exchange rate, fiscal policy and monetary policy that will have a close impact on the life and operation of enterprises.

## **2.4. Soft Budget Constraints Increase the Risk of Loan Defaults**

Generally speaking, the enterprise should withdraw all expenses from the sales revenue. If the sales revenue is not enough to cover all expenses, there will be insolvency, and the enterprise must go bankrupt, which can be called the budget constraint of the enterprise is hard. Under the constraint of soft budget, the life of the enterprise can be guaranteed, and it will not be destroyed because of temporary financial and management difficulties.

In the credit market, if the bank carries out loan settlement for the enterprise, the enterprise is likely to go bankrupt. In the case that the enterprise is short of cash, the bank can only auction the enterprise assets to pay off the debts, and the final repayment amount obtained by the bank may be relatively low. In the lending behavior, the bank will treat the early investment as sunk cost, and continue to inject capital and invest in new projects may bring greater returns to the bank compared with the loan liquidation for the enterprise. In order to obtain the full loan amount and interest, the bank will often choose to re-loan to the enterprise.

# **3. Source and Processing of Data**

## **3.1. Selection of Relevant Indicators of Bank-enterprise Relationship**

Data in this paper were collected from a city commercial bank in 2018, and 150 effective samples were selected, including enterprise age, shareholding ratio of the largest shareholder,

enterprise size and other indicators representing enterprise characteristics, number of corporate relationship Banks, number of Banks providing services for enterprises and other indicators representing bank-enterprise relationship.

Table 1. Descriptive statistics of variables.

The variable	Sam ple size	Aver age	Standa rd deviation	MIN	MA X
enterprise age	150	12.75	7.15	1.00	25.00
Shareholding ratio of first major shareholder	150	51.64	24.71	10.88	99.51
Enterprise Scale	150	717.64	384.99	12.94	1414.28
VIP	150	0.42	0.50	0.00	1.00
Number of related Banks	150	4.60	1.97	2.00	8.00
Types of services	150	4.28	2.78	1.00	9.00
defaults	56	104.42	51.16	15.23	227.89

### 3.2. Index Analysis

According to businesses from the city of small micro enterprise credit data can be seen that the small micro enterprise credit default is closely related to the largest shareholder ownership, the correlation between two variables coefficient is 0.74, visible, decision-making power concentrated against a fair and just regulation, enterprise credit is overly dependent on a large shareholder's credit consciousness. In relational loans, the default rate of enterprises is inversely proportional to the size of enterprises, which indicates that the larger the size of enterprises, the lower the default rate of loans. In addition, the default level of Banks is negatively correlated with the number of related Banks, which indicates that the friendly relationship between enterprises and multiple Banks is conducive to the turnover of funds and the reduction of the default rate.

## 4. Common Measures of Bank-enterprise Relationship

According to literature review and research, there are three main measurement variables of bank-enterprise relationship:

First, the length of bank-enterprise relationship is mainly concerned with time and space. On the one hand, the longer the relationship between Banks and enterprises is, the more beneficial it is for Banks to share information and reduce information asymmetry. On the other hand, the closer the distance between Banks and enterprises is in space, the easier it is to establish a closer relationship, which is called the length of the relationship between Banks and enterprises.

Second, the breadth of bank-enterprise relationship refers to the depth of cooperation between the bank and the enterprise. If there is cooperation, it can be expressed as a two-value dummy variable, the number of services provided by the bank to the enterprise, and whether the enterprise is a special user of the bank.

Third, the number of related Banks, generally a bank will serve more than one enterprise, an enterprise will also have business with more than one bank, from the point of view of the enterprise, the establishment of a close and friendly relationship with more than one bank, is conducive to enterprise capital adjustment.

## 5. Empirical Model of Bank-enterprise Relationship and Relational Loan Default

### 5.1. Selection of Indicators

Since the default data is a binary variable, the data of bank relational loan is essentially a logistic

regression problem. Since the evaluation is conducted with the data that the investigation target has been on multiple subjects for many years, in essence, the model is the linear probability model of panel data, and its mathematical expression is as follows:

$$Default_{it} = \beta_0 + \sum_{i=1}^m \beta_i FirmChaara_{it} + \sum_{i=1}^m \tau_i RelaChara_{it} \quad (1)$$

Default is a dummy variable, divided into 0 or 1, indicating whether the loan is in Default. FirmChaara is the basic information indicator of the enterprise, such as enterprise age and shareholding ratio of the first shareholder. RelaChara is the indicator of bank-enterprise relationship.

Although Banks' access to loans is subject to the cyclical impact of the economy and industry, the actual operation of small and micro enterprises is more dependent on their own operation and management, while not large enterprises are easily affected by the cyclical fluctuations of the industry. Therefore, in this paper, whether small and medium-sized enterprises can obtain bank loans or not is not an exogenous event. Therefore, endogenous problem will be an important problem in relational loan model, and more attention should be paid in the process of modeling.

## 5.2. Model measurement Results and Interpretation

In this paper, Stata13 software and heckman selection model are used to evaluate the default factors of small and micro enterprise relational loans. The calculation results are shown in table 2.

According to heckman selection model of the measurement results can be seen that the inverse Mills, a value of 22.45045, with significant under 95% confidence interval, this shows that in fact relations using heckman model measurement is appropriate, namely in the small micro enterprise relational loan default risk factors analysis, due to the default number belong to virtual binary variables, not suitable for ordinary regression model analysis, through the heckman selection model for linear probability model of panel data.

There is an obvious positive correlation between the loan default of small and micro enterprises and the life span of enterprises, which is a dilemma encountered in the social and economic development. Firstly, in general, the life span of small and micro enterprises is generally low. The longer the enterprises survive, the lower the probability is, and the higher the loan default rate is. In addition, small micro enterprise, the first shareholder's stake to enterprise's default rate also has obvious effect, whether it is hard to explain because of the excessive concentration of equity lead to defaults, but is an objective fact, small micro enterprises at the beginning of the establishment and operating, equity often excessive concentration, excessive concentration of equity can make the enterprise decision-making and supervision is difficult to disperse and sinking, enterprise management and decision making is the personal decision, enterprise managers with strong subjectivity. In addition, the enterprise scale is negatively correlated with the loan default of the enterprise. Generally speaking, the larger the enterprise scale is, the more relaxed its operating income and financial status will be. Compared with the small enterprises, both the loan repayment and the new loan can better complete the loan performance.

Table 2. Measurement results.

	coefficient	STD	z	P>	<95%	confidence interval
enterprise age	2.159918***	0.349668	6.18	0	1.474581	2.845256
Shareholding ratio of first major shareholder	1.866276***	0.105572	17.68	0	1.659359	2.073193
Enterprise Scale	-0.07499***	0.006668	-11.25	0	-0.08806	-0.06192
constant	0.516526	12.58244	0.04	0.967	-24.1446	25.17765
select						
Number of related Banks	0.211549***	0.056166	3.77	0	0.101465	0.321633
Types of services	-0.09398***	0.039654	-2.37	0.018	-0.1717	-0.01626
constant	-0.92695***	0.32211	-2.88	0.004	-1.55827	-0.29562
mills						
lambda	22.45045***	8.876498	2.53	0.011	5.052839	39.84807
rho	0.88187					
sigma	25.45773					
lambda	22.45046	8.876498				

## 6. Conclusion

To sum up, in essence, bank-enterprise relationship loan is a behavior in which partial Banks communicate with enterprises in the case of information asymmetry, so as to realize information sharing and provide effective support for loans. Look from the big situation, we should strive to promote the information disclosure, to establish a more comprehensive, objective, fair and just social credit system, in order to solve small micro enterprise financing difficult the problem of high rate of bad loans, Banks, small micro enterprises provide a platform to support, but also should see, in before the arrival of the era, should also promote the city business service place, let the real understanding of the local businesses, local bank serving local enterprises, will be more conducive to the bank and the enterprise to realize information exchange, promoting circulation of capital of high quality.

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