Trade Credit of Chinese Corporations: A Comparative Analysis

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Abstract

This paper studies the trade credit of Chinese corporations. Previous studies have presented various views on the utilization of trade credit. One study argued that non-state-owned firms utilized more trade credit than state-owned firms. Meanwhile, another study suggested that non-state-owned firms depended on informal financing channels rather than on trade credit. What is the actual financing pattern of Chinese corporations? To answer this question, we employ a large database of Chinese corporations and conduct comparative analyses between two groups: state-owned firms and non-state-owned firms. Statistical investigations reveal two findings. First, our empirical results demonstrate a higher utilization of trade credit for state-owned firms in contrast to a previous study. Second, we conclude that non-state-owned firms rely on informal financing channels due to asymmetric information.

JEL classification: O5; K0; G2
Keywords: Trade credit; Chinese economy

1. Introduction

This study investigates the financing structure of Chinese corporations. In particular, we focus on trade credit and delineate the financing structure. Analyses on the relation between economic growth and the financial system focus on trade credit. This is because existing studies have reported that in developing countries, where financial intermediation by banks is not mature, funds for economic growth are supplied in the form of trade credit. China supposedly has a problem with financial intermediation due to the barriers involved in a transitional economy, such as dealing with a company system, accounting system, and property rights. In spite of these barriers, China has achieved remarkable economic development. Hence, we infer from China's economic

success that a financing channel other than bank borrowing plays an important role in achieving economic development. Our interest does not lie in the realm of corporate finance but rather in development finance.

Previous studies have presented differing views on trade credit in China. One of the views suggested was that trade credit enables the growth of non-state-owned firms regardless of how limited their access is to bank credit. This view conforms to the idea in development finance that using an alternative financing channel facilitates economic development even if the financial system is inadequate. In contrast, another view argued that a financing channel other than bank credit is not trade credit but informal financing based on territorial connection and blood relationship. What these two views have in common is their use of financial channels other than bank loans; however, differences lie in the financial channels themselves. Furthermore, studies on the Chinese economy have pointed out that large companies have misused trade credit and involved in triangle debts. This particular view argues that state-owned firms utilize trade credit more heavily. As described above, existing studies present varying views on the position of trade credit.

The reason why these different views exist is because of the constraint of data. It is difficult to collect the financial data of non listed companies, and the data used by previous studies are limited to the subsets of area, industry, and company type because such data were collected via questionnaires or field surveys. The analytical methods used in these studies have a limitation in presenting a broad overview of the data. It is doubtful whether exploring the generality by selecting a small subset from a vast population presents a true picture. Hence, it can be stated that previous works have captured trade credit in a different way.

This study collects the financial data of non listed companies from a large database to obtain the total picture of trade credit. This examination synthesizes the different views to obtain an accurate depiction of the actual financing condition that Chinese corporations confront.

The remainder of the paper is organized as follows. The next section confirms the definition and economic function of trade credit. We then introduce the research area that covers trade credit. Additionally, a review of previous studies on the financing of Chinese corporations highlights the differences among the observations. Section 3 presents the details of the data and compares the data to reveal characteristics of the

corporations. Section 4 discusses the scales that measure the dependence of firms on trade credit. We subsequently compare state-owned and non-state-owned firms and present the interpretation of the results. Lastly, we summarize the findings of our investigation.

2. Significance of trade credit

2.1 Position

Trade credit is defined as the commercial credit that is extended by suppliers. Let us assume that a firm does not have enough disposable cash to purchase raw materials or products in process. The firm raises funds for production and commercial activities if a business manager anticipates distribution. The first thing that is considered is bank borrowing as a financing channel. A firm makes the settlement of the purchase cost by borrowing and, later, services the debt by proceeds from the sales. Meanwhile, another way of financing is postponing the date of payment by negotiating the terms of settlement with the supplier. In terms of financing, this method has the same effect as bank borrowing, which can be considered as trade credit through instruments such as promissory notes and accounts payable. Trade credit is also a major financing method for acquiring working capital in Japan.

Some studies on financial theory have suggested that trade credit has the advantage of information production. A substantial activity of financial institutions entails resolving information problems between a lender and a borrower by means of efficient information production. However, suppliers who grant trade credit demonstrate the advantage of information production over financial institutions. The first reason for this advantage is the lower cost of information production. Financial institutions collect the credit information necessary for the screening and monitoring of loans by maintaining contact with firms. In contrast, suppliers can monitor the firm's day-to-day activities; that is, the characteristics of suppliers enable cost containment. The second reason for this advantage is a stronger incentive for collecting information. Banks often require collateral for lending. The incentive for banks to monitor credit weakens because they can collect debt by the enforcement of security when a borrower defaults on debt service. On the other hand, suppliers do not generally secure collateral for the supply of trade credit. Thus, suppliers have huge incentives to collect information for monitoring the borrower's credit standing. The feature of information production is not exclusive to

financial institutions as suppliers have a similar function.

This economic function of trade credit takes on different meanings in the context of economic development. Trade credit is a vital financing method, which complements bank lending and supplies the funds necessary for economic growth in developing countries where the financial system is not mature. Information production is advantageous in explaining why trade credit becomes an alternative financing conduit in cases where legal and accounting systems of developing economies are weak.

Researches in economic growth, for example, the view expressed by La Porta et al. (1999), have suggested that not only capital, labor, and technology but also the level of institutional capability could contribute to economic development. Researchers consider a financial system as one of the aspects of institutional capacity. The improvement of institutions brings in economic growth. These improvements include financial deepening, the development of a stock market, the establishment of an accounting system for the financial infrastructure, established property rights, and legal enforcement.

The economic development of China is an apparent counter example of this view, since institutions in China seem to be improving very slowly. The lending by financial institutions is inclined to state-owned firms; thus, non-state-owned firms and small and medium-sized enterprises (SMEs) encounter difficulty in accessing bank loans. China is witnessing continues and remarkable economic growth despite the limited access to bank credit. Some studies explain that trade credit mitigates the problems of inadequate institutions and constraints on bank lending.

To sum up, trade credit has alternative or complementary relations with bank credit and is an important financing channel in circumstances where the information problem is severe or contract fulfillment is uncertain. This study investigates trade credit, although our interest is not limited to the financing pattern. We explore trade credit from the broader viewpoint of the relationship between economic growth and the financial system.

2.2 Previous studies

Some studies point out the Chinese economy's high growth, while other studies consider financing in China to be a problem. Here, we explore recent studies related to our examination and confirm how previous studies understand the financing pattern in Chinese corporations.

Ji (2006) explored financing problems of SMEs in China from theoretical and empirical viewpoints. He suggested that a formal financing channel was not available for SMEs in China and that the complementary role played by informal channels based on territorial connection and blood relationships resulted in the growth of SMEs. It is difficult to utilize even trade credit, let alone financing from the capital market and banks. Ji reported the fact that SMEs procure funds from family, friends, and underground banks.

Wang (2003) studied 29 state-owned firms in Shandong Province and observed that the financing structure of the firms differed according to the firm's asset size. Although this study is not a comparative analysis between state-owned and non-state-owned firms, Wang pointed out the varying financing structures among the state-owned firms. The focus of the study was not trade credit but explaining the factors of bank borrowing, and it concentrated on financing structures and not the role of the financial system in developing countries.

Ge and Qiu (2007) investigated trade credit in China and compared state-owned firms to non-state-owned firms in terms of the utilization of trade credit and showed that non-state-owned firms utilized trade credit more heavily. In addition, they observed that the main purpose of utilizing trade credit is not purchase and sale but fund procurement. These observations demonstrated that Chinese corporations raise funds from financing channels other than financial institutions even though the financial sector is weak.

However, there is also a study that demonstrated an expansion of trade credit for state-owned firms: Watanabe (2006) argued that a common factor behind various phenomena observed in China, such as undercapitalized corporations, triangle debts, and excessive investments, was the remaining control rights of the government on corporations. She investigated the trade credit of the coal mining industry in Hunan Province. The results of this study indicated the expansion of trade credit for state-owned firms, which have closer relations with the central government. She suggested that this problem was probably the result of the conventional method of financing accounts payable.

Furthermore, Ji (2006) also reported on triangle debts. Although trade credit is the most common financing channel among SMEs, the delinquency and default of commercial credit are escalating and manifesting into a social problem. Therefore, as indicated by all reports, the number of corporations that require settlement in cash for commercial transactions is increasing.

From the existing studies, we can observe two common features of the financing

pattern of Chinese corporations. First, most of the funds in the credit market are lent to state-owned firms and large companies. Above all, the loans of four large state-owned banks place disproportionate weight on the companies, which affiliated with the government.

Second, private companies have limited access to the capital market as well as bank credit. The first and second features are like two sides of a coin. The limited access is attributed to weak information production functions including screening and monitoring, and flaws in the accounting system that present the financial statements of the corporations as outstanding. Although security resolves the information problem between banks and corporations, most corporations cannot avail of bank loans because of insufficient collateral. Chinese corporations procure funds by way of informal financing channel due to insufficient internal reserves.

Meanwhile, we find different views on trade credit among previous studies. Ge and Qiu (2007) reported the fact that non-state-owned firms utilized trade credit when faced with limited access to bank credit. In contrast, Ji (2006) argued that non-state-owned firms depended not on trade credit but on informal financing extended by friends, family, and underground banks. Hence, to sum up the first point of difference, prior studies presented different opinions about the main financing channel.

The second point of difference can be observed in the comparative perspective of the state-owned and non-state-owned firms. Watanabe (2006) observed that the larger state-owned firms, which have a closer relation with the central government, depended heavily on trade credit. However, Ge and Qiu (2007) demonstrated that non-state-owned firms also utilized trade credit heavily. These two studies presented opposing opinions.

How do we evaluate the differences in the research findings on trade credit? Is there something wrong in either of the studies? Is there any explanation that unifies the differing views? In order to answer these questions, we examine two issues. The first issue, which corresponds to the second point of difference, is determining which of the two types of firms — state-owned or non-state-owned firms — utilizes trade credit more heavily. The second issue is determining how trade credit is distributed among non-state-owned firms, and the answer of this question will resolve the first point of difference.

Investigating a small sample as in the previous studies cannot provide an answer. This is because analyzing a small subgroup of data from a population produces diverging

observations. Hence, we obtain a sample from a large database of Chinese corporations and conduct our study on trade credit.

3. Overview of the data

In this section, we present the overview of the data for investigation. We obtain the financial data from the online database *Qin*, which is provided by Bureau van Dijk. *Qin* includes financial information of about 300,000 listed and non-listed corporations. These corporate data are supplied by the SinoRating division of the China Export & Credit Insurance Corporation (SinoSure). SinoSure is a large credit insurance corporation that specializes in the Chinese economy. Moreover, World'-Vest Base Inc. contributed additional information of listed companies for this database.

By using data from *Qin*, we can investigate whether previous studies that used small samples have generality. This is because our sample includes comprehensive data of non-listed companies and covers the whole of China. No study in the past has attempted a corporate analysis by using *Qin*.

The dataset includes 21,141 corporations; of these, 18,897 corporations are non-state-owned firms, while 2,244 are state-owned firms[1]. Following Ge and Qiu (2007), our sample excludes listed companies and joint companies. Listed companies can procure funds from the stock market, and joint companies have access to overseas funds. These companies are excluded because they are capable of raising external capital.

Table 1 presents the descriptive statistics comparing state-owned and non-state-owned firms. We capture the features of firms from the following five variables:

Ln(Sales): natural logarithm of sales in fiscal year 2005

Ln(Asset): natural logarithm of total asset in fiscal year 2005

1. We use following search criteria. For state-owned firms, criteria are 「Operating revenue(turnover)(th USD):2005, min=5000, max=11,000,000」 & NOT 「Private/Listed companies: listed companies」 & NOT 「Legal form: 2-HK&Macau, 3-Foreign, 4-Unknown」 & 「Legal form: 110-State-Owned Enterprises」. Although 3,760 firms fulfill criteria, 2,244 firms remain after an exclusion of firms which have missing data. For non-state-owned firms, criteria are 「Operating revenue(turnover)(thUSD):2005, min=5000, max=50,000,000」 & NOT 「Private/Listed companies: listed companies」 & NOT 「Legal form: 2-HK&Macau, 3-Foreign, 4-Unknown」 & NOT 「Legal form: 110-State-Owned Enterprises, 141-State Joint Ownership Enterprise, 143-Joint State-Collective Enterprise」. Although 38,847 firms meet search criteria, 18,897 firms remain finally. We demonstrate the search criteria of the database to preserve reproducibility by other researchers.

Ln(Employee): natural logarithm of the number of employees in fiscal year 2005
Growth: percentage of sales growth from 2004 to 2005
Gross margin: percentage of gross profit to sales in fiscal year 2005

When we examine the differences of variables between groups, it is important to consider whether a variable is distributed normally. In general, we investigate the mean difference between two independent groups by using a *t*-test. However, using a parametric test such as a *t*-test requires a normal distribution of variables as a prerequisite.

Table 1: Summary statistics

	Non-state-owned		State-owned		
	median	normality	median	normality	p-value
Ln(Sales)	11.3	19.5**	11.7	12.7**	0.00
Ln(Asset)	10.8	14.5**	12.1	8.7**	0.00
Ln(Employee)	5.5	12.1**	6.4	8.2**	0.00
Sales growth	27.3	17.3**	17.9	12.8**	0.00
Gross margin	10.5	19.4**	13.5	11.7**	0.00
No. of sample	18897		2244		

Note: The asterisk * denotes significant at 1% level.

We test the normality of the distribution for the respective variables with the Shapiro-Wilk test. In the table, the column of normality demonstrates the results of the examinations. The results do not support normal distribution. Hence, we determine the mean difference with the Wilcoxon rank-sum test, which is a non-parametric test. The p-value column shows the test results. We observe significant differences between state-owned and non-state-owned firms for all variables.

An overview of the data reveals that state-owned firms are bigger than non-state-owned firms in terms of variables of sales, total asset, number of employees, and gross margin. Meanwhile, non-state-owned firms show a higher growth of sales than state-owned firms.

4. Comparative analyses

4.1 Choice of scales

We tentatively use two scales that measure the utilization of trade credit. One scale is obtained by dividing the amount of accounts payable by total asset (accounts payable/ total asset) while the other is obtained by dividing the amount of accounts payable by sales (accounts payable/sales). Both scales are presented in terms of percentages. The use of these scales follows prior studies. Fisman et al. (2003) investigated the relations between trade credit and industry growth by employing the scale of accounts payable/ total asset. Tsuruta (2007), who has studied SMEs in Japan, divided accounts payable by total asset and sales. Watanabe (2006) used sales for the normalization of the data, while Ge and Qiu (2007) used total asset and sales. Our study uses a scale obtained by dividing accounts payable by both total asset and sales to ensure consistency with prior works.

We compare state-owned and non-state-owned firms by industry. It is widely considered that the features of the market structure and products affect a firm's dependence on trade credit. The following is an example of how a product feature enhances the utilization of trade credit. An industry that tends to hold a versatile inventory of raw materials depends on more trade credit. It is easy for that industry to resell and dispose of inventory owing to this versatility. Thus, the supplier can collect receivables by seizing and reselling inventory in case of default by the industry[2]. Fisman et al. (2003) investigated 43 countries and demonstrated that the utilization of trade credit differs by industry. We also conduct comparative analyses that reflect these studies[3].

Industrial classification employs the first two digits of the Standard Industrial Classification (SIC) code used in China. Our examination covers 27 industries which is the required sample size for statistical tests. Table 2 compares two scales concerning the use of accounts payable. The values of the two scales are medians for both state-owned and non-state-owned firms. A preliminary check is conducted using the Shapiro-Wilk test with normal distribution. We employ a median where the variables lack normal distribution.

2. Price discrimination and quality certification are also the factors which explain difference in the utilization of trade credit. Fisman et al. (2003) provides a useful survey about this issue.
3. Grouping by province or asset size is a candidate for a sample classification. This study employs the industry classification following previous studies.

Table 2: Comparisons of trade credit (unit:%)

industry	accounts payable/total asset			accounts payable/sales			No. of sample	
	non-state-owned	state-owned	p-value	non-state-owned	state-owned	p-value	non-state	state-owned
6	3.9	4.6	0.37	1.9	7.5	0.00	615	153
7	7.2	11.8	0.45	8.4	13.3	0.23	34	20
8	6.5	5.5	0.32	3.4	5.8	0.39	226	21
9	1.1	2.7	0.05	0.5	3.8	0.00	232	53
10	5.2	4.1	0.53	1.7	5.3	0.04	195	21
13	5.2	4.9	0.91	1.6	1.9	0.05	1921	101
14	7.7	6.4	0.49	4.5	6.7	0.21	578	27
15	7.4	6.6	0.96	5.8	11.3	0.00	345	31
16	8.3	6.0	0.12	8.8	6.1	0.03	39	56
17	6.1	5.5	0.82	3.6	3.2	0.00	2752	91
18	9.9	9.4	0.89	4.1	11.4	0.01	710	20
20	5.4	4.4	0.95	1.9	8.2	0.00	360	18
22	9.1	9.5	0.43	6.1	10.6	0.03	783	28
23	9.5	6.4	0.00	10.3	11.3	0.49	247	72
25	8.3	7.6	0.41	4.5	4.9	0.78	468	33
26	8.6	6.8	0.23	5.1	7.2	0.00	2394	175
27	7.1	7.1	0.85	7.6	11.2	0.06	696	40
29	6.6	8.3	0.83	5.0	11.5	0.14	280	17
31	8.9	8.8	0.53	5.9	14.4	0.00	2315	114
32	7.9	10.5	0.01	3.3	9.3	0.00	1465	53
33	6.3	5.7	0.61	2.6	6.4	0.00	1002	51
36	8.4	10.0	0.81	8.3	12.7	0.09	83	28
37	9.8	21.3	0.01	6.5	35.0	0.00	102	21
42	8.1	10.8	0.28	3.5	29.2	0.00	311	21
44	3.3	3.1	0.04	6.9	3.4	0.00	632	861
45	2.5	2.6	0.84	3.4	5.1	0.17	49	42
46	1.3	0.35	0.07	4.1	1.8	0.11	71	88

Note : Dotted areas stand for significant results.

Table 2 shows a marked difference of results between the scales. We can point out two differences: One is a difference in the test results. The Wilcoxon rank-sum test produces five significant results for the scale of accounts payable/total asset and seventeen significant results for the scale of accounts payable/sales. The other difference is the adverse change of magnitude relation by scales. Using a different scale enlarges the

difference in some cases. The firms containing industry codes 8, 10, 13, and 14 are the cases that have inverted magnitude relations. Those with industry codes 6, 9, and 18 are the cases in which the difference widens due to a scale employed for comparison. Ge and Qiu (2007) did not observe any marked differences between the scales.

The differing results by the scale employed are attributed to the difference in the characteristics of the financial conditions among the groups. As for state-owned firms, the value of accounts payable/sales tends to be larger than that of accounts payable/total asset. From the differences of the two scales, we can presume that the total asset size is much larger than that of sales. The various results by the scales employed can be explained if the ratio of total asset to sales is different.

Hence, we examine whether ratios are different among the groups. Table 3 shows the medians, since the ratio of total asset to sales does not indicate normal distribution. We use the Wilcoxon rank-sum test for a test of mean difference. The Wilcoxon p-value column demonstrates these results.

Table3 : Comparisons of total asset/sales

industry	median		Wilcoxon	industry	median		Wilcoxon
	non-state	state	p-value		non-state	state	p-value
6	0.53	1.44	0.00	25	0.57	0.63	0.21
7	1.21	1.64	0.08	26	0.61	1.08	0.00
8	0.55	1.20	0.00	27	1.1	1.69	0.00
9	0.38	1.12	0.00	29	0.58	1.04	0.00
10	0.35	0.96	0.01	31	0.68	1.58	0.00
13	0.32	0.48	0.00	32	0.43	0.89	0.00
14	0.56	0.89	0.00	33	0.41	1.11	0.00
15	0.83	1.59	0.00	36	0.92	1.78	0.00
16	1.15	0.94	0.07	37	0.61	1.66	0.00
17	0.59	1.18	0.00	42	0.43	1.97	0.00
18	0.41	0.97	0.00	44	1.90	1.10	0.00
20	0.39	1.80	0.00	45	1.38	2.20	0.00
22	0.64	1.37	0.00	46	4.77	5.39	0.14
23	1.00	1.62	0.00				

As expected, state-owned firms show higher ratios. However, firms with industry codes 16 and 26 demonstrate lower ratios. The differences in ratios are generally considerable and the gaps between the groups are economically significant. Most of the

ratios for non-state-owned firms are less than one. This result indicates that the total asset size is smaller than sales. On the other hand, many ratios are larger than one for state-owned firms. The results highlight the bigness of asset size of state-owned firms.

We also use the scale of accounts payable/sales because using two different scales can reveal the characteristics of financial standing. Besides, we use this scale because the shortage of working capital produces a demand for trade credit. Accounts payable/sales is an appropriate scale for examining the utilization of trade credit because the excess and deficiency of working capital are related to sales.

4.2 Results and discussion

We revisit Table 2 and we observe significant differences in the utilization of trade credit between state-owned and non-state-owned firms in 17 industries out of the 27 industries investigated. Out of 17 the industries, 14 demonstrate that state-owned firms depend on trade credit more than non-state-owned firms do[4].

The first agenda of our study is to determine which groups utilize trade credit more heavily. Some of the previous studies concluded that non-state-owned firms depend on trade credit more heavily. However, after investigating a larger sample, we find evidence to the contrary. The financing pattern, on which non-state-owned firms depend more than state-owned firms, does not preserve the generality allowing for this result.

Furthermore, the results imply that state-owned firms expand trade credit excessively in some cases. Table 4 demonstrates the distribution shapes of accounts payable/sales. Percentile points show distribution shapes because the variables are not normally distributed. Note that Table 4 covers the industries in Table 2 that show significant differences in the utilization of trade credit. Excessive high values are scattered at the 95% point; for example, the percentile points are 60.3% for firms with industry code 6, 70.2% for firms with industry code 20 and 85.5% for firms with industry code 37. These results coincide with the situation referred to by Watanabe (2006).

4. Tobacco, textile and electricity are the industries in which non-state-owned firms show higher utilization of trade credit. It is interesting exercises to explore the reason why these industries use more trade credit.

Table 4: Distribution of accounts payable/sales (unit:%)

industry		5%point	25%point	median	75%point	95%point
6	non-state	0	0.2	1.9	9.5	29.6
	state	0	1.8	7.5	15.9	60.3
9	non-state	0	0	0.5	4.5	20.0
	state	0	1.2	3.8	11	44.4
10	non-state	0	0	1.6	6.7	33.0
	state	0	1.5	5.2	13.8	22.7
15	non-state	0	1.7	5.8	11.9	34.1
	state	1.1	5.1	11.3	16.3	34.1
18	non-state	0	0.9	4.1	11	30.4
	state	0	5.8	11.4	17.1	32.5
20	non-state	0	0.3	1.9	6.1	24.1
	state	0	1.7	8.2	23.3	70.2
22	non-state	0	1.7	6.1	13	29.1
	state	0	4.9	10.6	19.4	38.2
26	non-state	0	1.3	5.1	11.6	27.5
	state	0	3.1	7.2	16.0	48.0
27	non-state	0	2.7	7.6	15.0	34.1
	state	1.2	4.2	11.2	18.5	48.3
31	non-state	0	1.2	5.9	15.9	45.8
	state	0	4.5	14.5	25.4	66.3
32	non-state	0	0.3	3.4	11.2	34.1
	state	0.6	5.7	9.3	16.5	42.6
33	non-state	0	0.5	2.7	9	26.7
	state	0	1.5	6.4	15.4	36.9
37	non-state	0	0.4	6.6	17.2	41.4
	state	5.4	23.1	35.0	56.3	85.5
42	non-state	0	0.2	3.5	10.4	26.8
	state	0.5	8.1	29.2	33.9	49.3

The second agenda is to determine how the utilization of trade credit for non-state-owned firms is distributed. Table 4 shows the existence of a corporation cluster with extremely low utilization of trade credit. The numeric values at the 25% point for non-state-owned firms are quite small. For example, we cannot find the utilization of trade credit at the 25% point in firms with industry codes 9 and 10. Other industry classifications show less than 1% utilization of trade credit.

Figure 1 depicts the situation of non-state-owned firms much more intuitively. This figure is a histogram of the utilization of trade credit by firms in industry code 6. We find

a high relative frequency at lower values of accounts payable/sales. This implies that many non-state-owned firms utilize little trade credit. This observation does not support the view that trade credit complements the financing of non-state-owned firms that face difficulties in accessing bank credit.

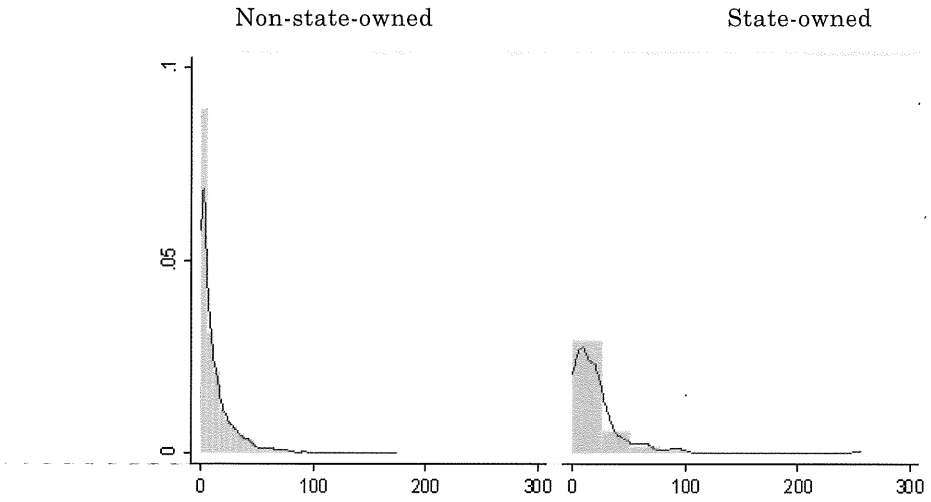

Figure 1: Comparison of histogram

We summarize the comparative analyses in two points. First, the result does not support the view that non-state-owned firms utilize trade credit more heavily. Comparative analyses by industry show that state-owned firms show high values of utilization in most industries.

Triangle debts, as pointed out by Watanabe (2006), most likely explain the high value for state-owned firms. Trade credit is expanded by following the complex commercial rules: delayed payments to suppliers, compelling trade credit to meet financing demand, and hesitance to pay in the first place. The extremely high values at the 95 % point observed in Table 4 infer these situations.

The other factor states that it is easy for state-owned firms to procure trade credit from suppliers. Trade credit brings about the same effect as borrowing by extending the payment date for materials and products purchased. The supplier's account executives and accounting personnel require a screening of credit risk to ensure the collection of

receivables. Trade credit and bank credit require the same level of screening; however, non-state-owned firms have a disadvantage in terms of screening. Although more than 25 years have passed since the reform and opening up of the economy, disfavor toward non-state-owned firms is still prevalent. State-owned firms are still protected by the government while non-state-owned SMEs are in a disadvantageous position. Furthermore, the prejudice that SMEs have a problem in terms of the poor quality of management and financial statements, discretional debt repayment, and low credibility widely prevails. Such negative notations about non-state-owned firms make the obtaining of credit difficult.

The high utilization of trade credit by state-owned firms is convincing in the light of triangle debts and the incredibility of non-state-owned firms. Thus, the high utilization of trade credit by non-state-owned firms, which is observed in Ge and Qiu (2007), is not a general case. Such a case captures a corporate behavior under circumstances in which certain conditions are met.

Second, informal financing channels rather than trade credit complement the financing of non-state-owned firms. One group in particular utilizes little trade credit, as shown in Table 4 and Figure 1. We cannot assume that this group finances capital demand thorough bank loan allowing for the situation where bank credit is availed by state-owned firms. In that case, the observed results the support a view that informal financing channels flourish as argued by Ji (2006). The explanation that borrowing from family, friends, and underground banks complements financing is consistent with the situation of non-state-owned firms.

One factor that accounts for the dependence on informal financing channels is asymmetric information. Bank borrowing is difficult to avail of because of severe information problems. The combination of indiscriminate financial statements, ambiguous property rights, and lack of screening skills exacerbate the asymmetry of prior information. Moreover, the borrowed funds are invested in other firms after a loan is executed. To a large extent, monitoring to confirm the willingness and endeavor of repayment are not conducted.

Next, suppliers have more advantages in terms of information production than do financial institutions because suppliers can easily access their customers. This is because suppliers can obtain information about business conditions in day-to-day operations. However, the rules of trade credit are complex as observed in cases of severe

triangle debts. Hence, the granting of trade credit is allegedly shrinking.

In contrast, family and friends facilitate credit supply because of a lack of asymmetric information. They are in a position to determine whether a borrower is credible; moreover, the borrower does not repay because the lenders and borrowers have a close relationship. Besides, discipline achieved by social norms, whereby maintaining one's reputation ensures the fulfillment of the obligation, affects the alleviation of the information problem. Informal financing channels have different mechanisms for resolving information problems from the financial institution's function of information production. Thus, credit supply for growth is granted by way of relationship rather than trade credit.

Through previous studies and our results, the view that non-state-owned firms utilize trade credit actively to procure growth funds does not explain the general financing pattern of Chinese corporations. Firms that utilize little trade credit do exist; moreover, there are many firms that use informal financing channels. This view depicts the reality of corporate finance in China. Moreover, the Chinese economy is confronting the problem of state-owned firms' heavy dependence on trade credit, which indicates their involvement in triangle debts.

5. Conclusions

This study verifies the various views on the trade credit of Chinese corporations. We conduct two investigations to examine whether the view that non-state-owned firms heavily utilize trade credit can be generalized. One of the investigations is a comparison between groups determine which groups utilize trade credit more heavily. The other is how the utilization of trade credit for non-state-owned firms is distributed. This study employs a large database and conducts statistical analyses. We obtain the following two results.

First, the results do not support the view that non-state-owned firms show a higher utilization of trade credit. The results of the comparison by industry reveal the industries in which state-owned firms depend on trade credit more heavily. Triangle debts and the low credibility of non-state-owned firms are the probable causes of the differing financing patterns.

Second, non-state-owned firms who experience difficulty with bank borrowing generally

do not utilize trade credit as a complementary financing channel. The utilization of trade credit illustrates the existence of non-state-owned firms that utilize little trade credit. Thus, we can consider these firms as dependent on informal financing channels. This financing pattern is explained by a mechanism that is equipped with informal financing channels for resolving information problems.

These results conclude that non-state-owned firms do not heavily depend on trade credit. A general view, which prevails in the realm of development finance, does not have explanatory power. Phenomena such as arrears of state-owned firms, complex rules of commercial credit, and complementary informal financing channels are the reality that the Chinese economy is facing, and we cannot draw a complete picture of corporate finance in China without considering this reality.

Although the study focuses on trade credit itself, we have the opportunity to observe the financial problems that arise through trade credit. These problems include a weak accounting system that produces indiscriminate financial statements, low information production skills for banks, and low willingness to fulfill obligations. An amalgamation of these problems poses difficulties in terms of bank borrowing for non-state-owned firms. Financing problems are quite capable of constraining the development of the Chinese economy, which is witnessing remarkable growth. Thus, we should closely monitor the financing problems in China.

Lastly, we illustrate the orientation for further research. This study conducts simple comparative analyses; as such, our study is in the stage of preliminary analysis. The next question is whether we can find a difference between groups in the utilization of trade credit even if we consider other variables. To answer this question, we require regression models. Moreover, in the future, we will examine the accounts receivable of the lending side. Investigating the lending side is an interesting challenge because analyses of accounts receivable might provide a new insight into corporate finance in China.

Appendix: Details of industry codes

6	Coal mining
7	Crude petroleum and natural gas exploration
8	Ferrous metal
9	Non-ferrous metal ore mining

10	Non-metallic ore mining
11	Mining
13	Farm products and byproduct processing
14	Food manufacturing
15	Brewery
16	Tobacco products
17	Textile industry
18	Garment, footwear and headgear manufacturing
20	Timber processing and wood products
22	Paper-making and paper product industry
23	Printing and record medium duplication
25	Petroleum refining
26	Chemical materials and chemical products manufacturing
27	Pharmaceutical manufacturing
29	Rubber manufacturing
31	Non-metallic mineral products
32	Ferrous metal smeltering and rolling
33	nonferrous metal smeltering and rolling
36	Special equipment manufacturing
37	Transportation equipment manufacturing
42	Artworks
44	Electricity, fuel gas and water production and supply
45	Fuel gas production and supply
46	Water production and supply

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