Borrowing from Banks Costs More than Borrowing from the Market in China
By Alan E. Liu and Jun Liu[1]
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Abstract
We report preliminary evidence that bank financing is more costly than bond financing for firms listed on China's stock exchanges, in the sense that bank loan interest rates are higher than bond yields. In contrast, in the US, bank financing is less costly. The higher bank financing cost in China may be attributed to higher reserve requirement, a floor on loan interest rate, or monopoly power of banks. We also find that state-owned enterprises (SOEs) face lower financing costs in both bank loans and bond markets than non-SOEs but the difference between bank loan rates and bond yields is greater for SOEs.

Introduction

Two main ways of debt financing for a firm are loans from commercial banks and bonds from public markets. The financing cost, measured in terms of interest rate in the case of bank loans and yields in the bond case, is one of the key determinants of the choice of financing. There are some reasons for bond yields to be higher than loan rates. For example, bank loans tend to be shorter in maturity, more flexibility, less asymmetric information. On the other, less competition in loan markets is a major reason for higher loan rates. The relative difference between loan rates and bond yields helps understanding of the economics of financing as well as market structure, regulation and macro-economic policies.

We find that the average of loans rates, from 2005 to 2019 with 9,453 firms, is 6.56% with a standard error of 0.26%. The average of bond yields, from almost all bonds issued in interbank markets and the exchange from 2008 to 2019 is 5.69% with a standard error of 0.01%. The difference between the average loan rate and bond yield is 87 bps with a standard error of 3pbs.

We also find that both loan rates and bond yields are lower for state-owned enterprises (SOEs) than non-SOEs, which is not surprising under China's prevailing policy that favors SOEs, and loan rates are higher than bond yields for both SOEs and non-SOEs on average. However, the difference between loan rates and bond yields is much higher for SOEs (102 bps) than non-SOE (74 bps).

Schwert (2020) finds that the implied credit risk premium of loans is much higher than that of bonds issued by the same firm, using a data set that has much more detailed information

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[1] Alan Liu: Tilden Preparatory School, Walnut Creek, CA 94596. Email: alanemoryliu@gmail.com. Jun Liu: Rady School of Management, University of California San Diego, LaJolla, CA 92093. Email: junliu@ucsd.edu.

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and a highly sophisticated model. However, for majority of firms in his data set, the loan rates are lower than bond yields. We find that loan rates are outright higher than bond yields on average.

Various market frictions in China can lead to higher Loan rates than bond yields. First, for a long time, interest rates are controlled. For example, there used to be a formal floor on loan rates imposed by the central bank (Liu, Wang, and Xu (2021)). Second, the reserve requirement of deposits is much higher in China, the reserve requirement rate is about 20% (compared to 10% in the US), Chang, Liu, Spiegel, and Zhang. Banks may pass the cost of high reserve requirement rate to firms by charging higher loan rates. Third, the banking industry is not as competitive as in US. There are smaller number of banks and the industry is dominated by a handful of large banks and there is high degree of homogeneity among banks. Beyond formal floor on loan rates, higher loan rates can exist due to formal and informal collusions among banks. Better data set and more careful study are needed to understand various channels that contributes to higher loan rates in China.

Data and methodology

The loan and bond data are both taken from CSMAR (The China Stock Market & Accounting Research) Database, which offers data on the firms listed in China's stock markets (similar to CompuStat in the US). The data cover all information on financial statements of the listed companies. We use Stata for cleaning the raw data and constructing the variables of interest.

The loan sample covers 9,453 firms from 2005 to 2019. It contains information on firm identification number, firm name, loan bank, loan amount, loan term (year), loan start date, base interest rate, interest rate, loan maturity terms, and type of loans. In the data set, a firm has observations on loan interest rates in different months of the year. To facilitate comparison, we focus on the within-year average loan rates by taking the mean of the loan rates for a given firm within the same year.

The bond sample covers 8,923 firms from 2008 to 2019. It contains information on bond identification number, bond name, issuing date, issuing amount, coupon interest rates, bond yields, maturity terms, issuing firm name, and firm identification number. Since a given firm may issue bonds multiple times within a year on various dates, and those dates vary across firms, we focus on the within-year average bond yields by taking the mean of the bond yields for each firm within a year.

To examine the effect of different firm ownership status (SOE or non-SOE) on firm borrowing costs, we merge the loan data and bond data with the dataset that contains the ownership information, which is also taken from CSMAR. This latter dataset includes all firms listed on the Chinese stock markets, with the indicator `SOE` that takes the value of one if the firm is identified as a state-owned enterprise and zero otherwise. An SOE firm is identified based on the ownership of the majority share: if the state (central or local government) owns 50% or more of a firm's share, then the firm is classified as an SOE.

We also consider the implications of other firm characteristics such as firm age and size for their financing costs. For this purpose, we use the balance-sheet information for the publicly

listed firms in our sample. We measure firm size by its average sales. We construct the firm age by calculating the difference between a given year in the sample and the firm's establishing year. To check robustness of our analysis, we further control for the maturity terms (long-term vs. short-term) of loans and bonds when we comparing the loan rates and bond yields.

To examine the differences in firm financing costs between loans and bonds, we first compare the average loan rates and the average bond yields in our samples. We then further examine the distributions of loan rates and bond yields across all firms and also within the groups of SOE firms and non-SOE firms by creating kernel density graphs. Finally, we examine the statistical significance of the difference in the loan rates and bond yields facing SOEs vs. non-SOEs by using the paired t-test in Stata.

Findings

Table 1 shows the sample mean and standard error of the mean for the loan rates and bond yields for the full sample as well as subsamples based on their ownership status (SOE vs. non-SOE). Panel A displays the statistics of the loan rates for all firms, SOEs, and non-SOEs, respectively. Panel B shows the statistics of the bond yields for all firms, SOEs, and non-SOEs, respectively. In the sample with all firms, the average loan interest rate is higher than the average bond yields (6.56% vs. 5.69%). Loan rates are 87bps higher than bond yields on average and this is statistically significant.

Table 1: Comparison of Loan Interest Rates and Bond Yields

Sample	Obs	Mean	Std Err.
	A. *Loan Rates*		
All Firms	9,453	6.5582	.0261
SOE	5,588	6.2055	.0315
Non-SOE	3,865	7.0682	.0436
	B. *Bond Yields*		
All Firms	8,923	5.6889	.0147
SOE	4,987	5.1904	.0178
Non-SOE	3,936	6.3205	.0207

Note: This table shows the mean and the standard error of bank loan interest rates (Panel A) and firm bond yields (Panel B). The units of the loan interest rates and the bond yields are percent. "SOE" stands for state-owned enterprises. "Non-SOE" stands for non-state owned firms (i.e., private firms).
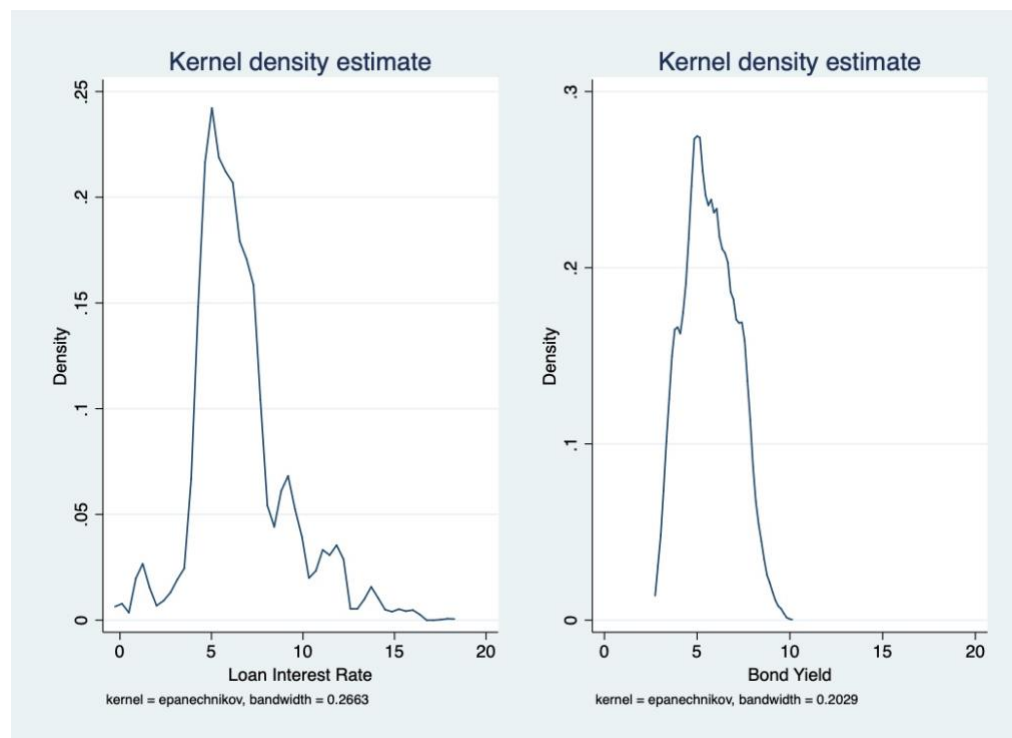
Source: CSMAR and authors' calculations

Table 1 shows that the average loan rate is also higher than the average bond yield for each subsample of firms. The average loan rates are also higher than the average bond yields for the subsample of SOEs (6.21% vs. 5.19%) and of non-SOEs (7.07% vs. 6.32%). The difference between loan rates and bond yields is 102bps for SOE and 75bps for non-SOE, and again both differences are statistically significant.

Furthermore, Table 1 shows that, on average, SOE firms face lower financing costs—in terms of both loan rates and bond yields— than non-SOEs. The difference in the average loan rates facing SOEs and non-SOEs is about 86 basis points, and the difference in the average bond yields is about 113 basis points. This finding suggests that, under China's prevailing policy, SOEs have preferential credit access in both the bank loan market and the bond market.

To examine the full distribution of loan interest rates and bond yields in our sample, we plot in Figure 1 the kernel density graphs of the loan rates (left panel) and the bond yields (right panel).   A kernel density graph approximates the distribution density of the sample and is a smoothed version of histograms and shows the range of the variable and the frequency (i.e., density) of the potential values of the variable.

Figure 1. Distributions of Loan Interest Rates and Bond Yields

Note: This figure shows that kernel density graphs of the loan interest rates (left panel) and the bond yields (right panel) in the full sample with all firms included.
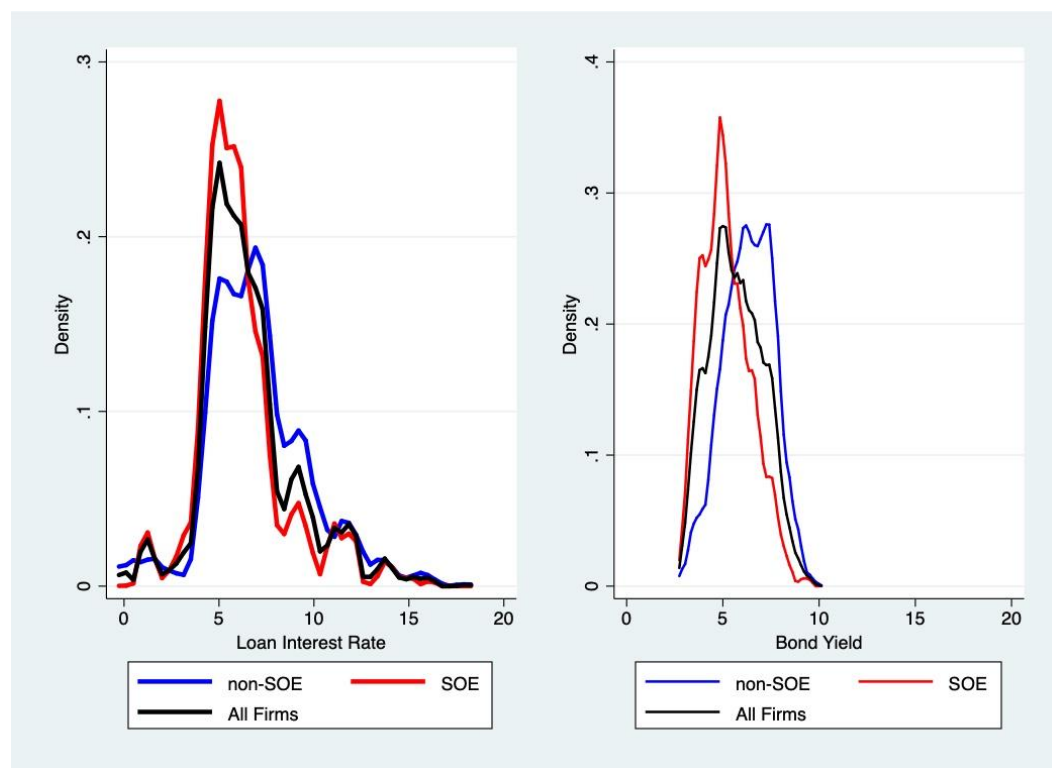*Source*: CSMAR and authors' calculations.

Figure 1 shows that the distribution of the loan rate has a wider range than that of the bond yields, consistent with the higher uncertainty associated with loan financing shown in the summary statistics (Table 1).   The distribution of the loan rates has also a longer right tail than that of the bond yields, which indicates that some firms face extremely high financing costs if they borrow from banks, but not if they borrow from the bond market. This finding suggests that loan markets are less competitive.

This pattern holds for both the subsamples of SOEs and non-SOEs, as shown in Figure 2. Furthermore, moving from the SOE group to the non-SOE group, the distributions of both the loan rates and the bond yields shift to the right. Thus, non-SOE firms face higher funding costs than SOE firms.

Our main conclusions are: (1) average loan interest rates are higher than average bond yields; (2) loan financing is associated with more uncertainty than bond financing; and (3) SOE firms face lower funding costs than non-SOEs in both the bank loan markets and the bond markets.

Figure 2. Distributions of Loan Interest Rates and Bond Yields by SOE vs. Non-SOE

Note: This figure shows the kernel density graphs of the loan interest rates (left panel) and the bond yields (right panel) for all firms (black lines), SOEs (red lines), and non-SOEs (blue lines).
Source: CSMAR and authors' calculations.

We also use the paired t-test to examine the statistical significance of the difference between the two alternative channels of firm financing.

A paired t-test is used when we are interested in the difference between two variables for the same subject. In this case, the paired t tests indicate the formal statistical significance of the difference between the two types of rates, loan and bond, and allow for control of some key firm

characteristics in testing the difference such as firm ownership status (SOE vs. non-SOE), size, and age. We can also control for the terms of bonds and loans (long-term or short-term).

Conclusion

       In this paper, we compare the relative costs of bank loans and corporate bonds for Chinese firms. We find that on average, loan financing is more costly than bond financing for all firms. We also find that state owned enterprises face lower funding costs in both loan and bond markets than non-SOEs.

       Our findings suggest that banks might have some market power, consistent with Schwert's (2020) findings using U.S. data. Our result also suggests that non-SOEs in China face higher financing costs than SOEs, reflecting the Chinese government policy that favors SOEs. This finding is consistent with Song, Storesletten, and Zilibotti (2011), who show that SOEs in China have lower productivity but can survive because of their better access to credits than non-SOEs.

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