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Choice of Corporate Debt in China: The Role of State Ownership

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Pierre Pessarossi* and Laurent Weill**

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Abstract

We analyze the determinants of debt choices for Chinese firms between bonds and syndicated loans. This issue helps appraise the weak development of bond market in China. We test if flotation costs, asymmetries of information, and renegotiation and liquidation costs influence the choice of debt in line with former studies in the context of regulatory interference in the bond market. We check the role of central state ownership on debt choice in order to assess to what extent corporate debt choices are politically or economically driven. We test these hypotheses on a dataset of 220 listed Chinese firms over the period 2006–2010. We find evidence in favour of the influence of central government ownership on the financing choices of firms it owns, as central state-owned firms are more likely to issue bonds. We also observe limited support for the premise that this influence is stronger for central state-owned firms located closer to the capital. Furthermore, we identify that these companies tend to borrow uniquely on the bond market rather than tapping both debt markets. We provide evidence in favour of the flotation costs hypothesis, but provide mixed evidence for the information asymmetry hypothesis and rather reject the renegotiation and liquidation hypothesis. All in all, our findings show that financial factors play a much more minor role in corporate debt choices compared to other countries, whereas state ownership remain a key determinant of preferring the bond market.

JEL Codes: G21, P34.
Keywords: corporate bonds, syndicated loans, debt choice, China, state ownership.

*) University of Strasbourg, LaRGE Research Center, Strasbourg, France

**) Corresponding author. Institut d'Etudes Politiques, Université de Strasbourg, 47 avenue de la Forêt Noire, 67082 Strasbourg Cedex, France. E-mail : laurent.weill@unistra.fr

Pierre Pessarossi* and Laurent Weill**

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Tiivistelmä

Tutkimuksessa analysoidaan kiinalaisten suuryritysten päätöksiä kahden rahoitusinstrumentin, joukkovelkakirjojen ja syndikoitujen luottojen, välillä. Tutkimusaineisto koostuu 220 kiinalaisesta pörssinoteeratusta yrityksestä vuosina 2006–2010. Tulokset osoittavat, että valtionomistus vaikuttaa valintapäätökseen. Keskusvallan omistamilla yrityksillä on merkittävästi suurempi todennäköisyys laskea liikkeelle joukkovelkakirjoja kuin muilla yrityksillä. Aiemmassa kirjallisuudessa esille tuoduilla taloudellisilla tekijöillä (lainan liikkeellelaskun kustannukset, epäsymmetrinen informaatio tai lainan likvidointikustannukset) on vain rajoitetusti merkitystä valintapäätökseen.

JEL -luokitus: G21, P34.
Asiasanat: yritysten joukkovelkakirjat, syndikaattilainat, Kiina, valtionomistus

1 Introduction

In spite of its impressive growth, China still owns an underdeveloped financial system. Two features are of particular interest. On the one hand, the financial system is dominated by the banking industry which focuses its financing towards the state companies.[1] On the other hand, the corporate bond market remains strikingly weak. In 2006, the corporate bond market provided only 1.4% of the financing needs of Chinese firms (Hale, 2007) in spite of its growth.[2]

In terms of modernization of the Chinese financial system, corporate bond market development is a major issue. There is consensus that an inefficient financial system could hamper future Chinese economic growth (Allen et al., 2009). A well-functioning corporate bond market can provide a better allocation of capital in the economy (e.g. Herring and Chatusripitak, 2006). The corporate bond market plays an informational role by providing the public with market determined structure of interest rates for a particular class of risk and maturity. As Chinese banks do not behave efficiently (Berger, Hasan and Zhou, 2009), market consensus could improve the risk management for bank loans by providing benchmarks for risk pricing. Increased competition between banks and the bond market could also put pressure on banks to attract other types of borrowers such as small and medium enterprises which are currently rationed on the credit market. Finally, the corporate bond market development could also share credit risk which is currently concentrated in the banking industry.

In its *Opinions of the State Council on Promoting the Reform, Opening and Steady Growth of Capital Markers* in 2004, Chinese Communist Party members have recognized the usefulness of capital markets and the importance of developing the corporate bond market. The Governor of the People's Bank of China (PBOC) stated that "China's underdeveloped corporate bond market has distorted the financing structure in the economy which poses a threat to financial stability, as well as to social and economic development" (Zhou, 2005). However, China's corporate bond market development has notoriously been impeded by tight regulation on bond issuance approval. Until 2007, firms

[1] Even if total bank credit ratios are rather high in China (between 100% and 120% of GDP over the past decade), Allen et al. (2009) observe that the size of Chinese banking industry in terms of total bank credit to non-state sectors amounted to just 31% of GDP in 2005.
[2] Annual growth of the corporate bond market reached 24.13% on average during the period 1990-2006 (People's Bank of China and China Statistical Yearbooks, cited by Allen et al., 2009).

needed approval from the National Development and Reform Commission (NDRC) which favoured large state-owned enterprises. As a result, the choice between arm's length debt and bank debt has been biased by state regulatory body interventions. The situation evolved after 2007 when the China Securities Regulatory Commission (CSRC) partly gained control of the approval process.

Our objective in this paper is to analyze the determinants of the choice for a Chinese firm to issue a bond rather than borrowing in this context of state intervention in the corporate bond market. The main alternative financial instrument to a bond is a syndicated loan, as a bond issuance is associated with a large amount more commonly provided by a syndicate of banks than by one single bank. Therefore, we focus on the choice of issuing a bond rather than asking for a syndicated loan. Three theories have been provided to explain the choice between public and private debt issuance in the literature which rely on flotation costs (Blackwell and Kidwell, 1988), asymmetries of information (Diamond, 1991; Rajan, 1992), and costs of debt liquidation and renegotiation (Berlin and Loeys, 1988).

Our first contribution is to analyze the relevance of these theories to understand the choice of corporate debt in China. As the corporate bond market development has been impeded for a long time, it is still unclear to what extent corporations choose their debt markets on economic grounds. It is therefore of interest to determine if the choice of debt is mainly driven by political preference or if financial factors play a determinant role as in other countries. We then extend two empirical works which have similarly investigated the choice of large debt financing between bond and syndicated loan based on these three theories. Esho, Lam and Sharpe (2001) perform this analysis on a sample of debt financing in Asian countries, widely dominated by financing of Japanese companies. China is included in the sample but only for 6 syndicated loans whereas no Chinese bond is considered. They test the influence of several financial variables to investigate the relevance of the three theories. They find empirical support for the three theories with notably bond issuances positively related to firm size and negatively to the probability of financial distress of the issuer. Altunbas, Kara and Marques-Ibanez (2010) focus on determinants of financing choices between corporate bond and syndicated loan markets in European countries. They also find support to the three theories of corporate financing choices. In particular, larger firms, with more financial leverage, higher fixed assets to total asset but fewer growth opportunities are more likely to borrow from the syndicated loan market rather than the corporate bond market.

However we do not restrict our analysis to the investigation of these three theories on China as the corporate bond market has been suffering from political interferences. Our second contribution is to take into account a key characteristic of this country: the influence of the State in the economy. Namely, several elements suggest that the choice of debt financing might be influenced by ownership. On the one hand, central state-owned firms issue far more bonds than other types of firms. The NDRC notoriously favoured these large borrowers (with backings from government-owned banks) to avoid defaults on the corporate bond market. On the other hand, the CSRC has a reputation of promoting reforms in the Chinese financial system. The CSRC published new issuances rules on the 15th of August 2007 supposedly allowing all types of firms meeting required criteria to receive an approval for bond issuance. It is however not clear up to this date if corporate bond issuance is free from political intervention in China. Thus, we consider a fourth hypothesis in our analysis – central government ownership – which can influence approval required to issue a corporate bond. As, historically, central state-owned enterprises have been favoured in their access to the corporate bond market we check whether state ownership at the central level plays a role on the choice of debt financing with recent data on listed firms' debt choices. As this influence of state regulatory bodies in giving approval has been driven by the will to avoid corporate bond defaults on the market, we expect central state-owned firms that present less asymmetries of information for the regulators to be particularly favoured in the approval process. As distance is associated with greater information asymmetries (e.g. Petersen and Rajan, 2002), the distance between Beijing – where the CSRC and the NDRC are both located – and the headquarters of the firms proxies the degree of asymmetries of information from the regulator's point of view.

We test these four theories of corporate financing choices on a dataset of 220 Chinese listed firms during the period 2006-2010. In line with Esho, Lam and Sharpe (2001), we employ an incremental approach rather than focusing on balance sheet ratios. This allows us to identify factors related to a particular issuance type. Therefore, we study which factors increase the probability for a firm to issue a bond rather than a syndicated loan. We also examine which factors explain a firm's choice to select only one of these markets rather than borrow on both markets during the sample period.

The rest of the paper is organized as follows. Section 2 presents an overview of the large debt markets in China. Section 3 reviews the determinants of financing choices.

Section 4 describes data and methodology. Section 5 develops the results. Section 6 concludes.

2 Overview of large debt financing markets in China

2.1 The corporate bond market

The bond market still remains very small, although its annual growth was sustained at 26.9% on average during the period 1995-2005 (OECD, 2010). The total outstanding bonds reaches 45% of GDP by mid-2009, a comparable figure to other emerging countries, but the corporate segment accounts only for one tenth of it. The lack of current development of the corporate bond market is a direct consequence of the tight regulation over issuance approvals. During the 1980s and 1990s, a large number of bond issuances ended-up in default. The central-government had to intervene to bail-out companies. This episode mostly explains why the government has remained cautious in pushing bond market development. In 1998, the NDRC[3] tightly modified the approval process for corporate bond issuance, *de facto* allowing almost exclusively large central-state owned firms to issue corporate bond market. Issuances were subject to an annual quotas system, required a one hundred per cent guarantee from a bank and were at the discretion of the regulatory body. As a consequence, even rare approved privately-owned firms had difficulties in issuing bonds because of the necessity to find a bank as guarantor.[4]

The official recognition of the necessity to develop the corporate bond market comes in 2004 in the *Opinions of the State Council on Promoting the Reform, Opening and Steady Growth of Capital Markets*. The corporate bond amount issued in 2005 was 204.65 RMB billion, up from 32.70 in 2004. However, the major regulatory change in the market intervenes in 2007 with the decision to share the approval decision between the NDRC and the CSRC. The reform was presented as a major step in the market development. Since the reform, the CSRC is responsible for the approval of issuances to all companies with a cor-

[3] In 1998, the NDRC was named State Development Planning Commission. Among its official assignment, the NDRC is supposed to maintain the balance of economic development and to guide restructuring of China's economic system (NDRC website).

[4] Hongdou Group was the first private company to receive quota from the NDRC in end 2005, but it never sold bonds as it could not find a bank as guarantor (South China Morning Post, 2007).

porate structure and does not apply a quota system over yearly issuances. The regulatory body issued new rules of issuance with immediate effect in mid-august 2007. Under the CSRC rules, corporations are no longer supposed to receive a bank guarantee. Bonds can amount to 40% of the company's net assets in the end of the last accounting year and interest rates have to be less than the annual net profit during the three previous years. Every issuance has to be rated by a CSRC approved credit agency. Moreover, the PBOC no longer controls the coupon rate of the corporate bond. Finally, corporations can issue bonds not only for fixed asset investment purpose as was previously the case under the NDRC, but for all purposes.

On the demand side, the Chinese bond market is fragmented into three bodies: the interbank market, the exchange market and the bank counter market. The main body, the interbank market, is a quote-driven over-the-counter (OTC) market in which deals are negotiated between two counterparties on the basis of bid-ask prices. It absorbs about 95% of the bond trading (OECD, 2010). Contrary to what its name indicates, the interbank market involves several different institutional investors: domestic and foreign banks, mutual funds, securities firms, insurance companies, and other non-bank financial institutions and corporations. By the end of February 2009, there were 1219 institutions and 7375 registered members in the market (Standard's & Poors, 2009). In December 2004, non-financial corporate bond trading was allowed in the interbank market, boosting the secondary market for this type of securities.

The exchange market has been set up for small, medium and individual investors. This order-driven market is supervised by the CSRC and can be accessed through the Shanghai and Shenzhen exchanges. As stated above, this market represents a very small fraction of the trading compared to the interbank market. Investors can invest in corporate bonds using securities firms' brokerage services, while commercial banks are prohibited from trading in the exchange market. The bank counter market is devoted to individual investors with a very limited variety of bonds instruments available (mainly government bonds).

At the end of 2008, the market amount outstanding reached RMB 700 billion with insurance companies, commercial banks and mutual funds as major investors owning 45.7%, 27.3% and 8.5% respectively of the total amount outstanding (Standard's & Poors, 2009).

2.2 The syndicated loans market

A syndicated loan involves a group of lenders which jointly grant a loan to a single borrower. The process of syndication starts with a lead bank mandated by the borrower to design the main characteristics of the financial contract. The lead bank (or arranger) of the loan promotes the loan to other banks or financial institutions which can potentially participate in the deal. Every participant funds and is responsible for a part of the loan. The monitoring role of the borrower usually falls to the arranger of the loan.

The syndicated loan market is an international debt market in which foreign bank participation can be very high, especially in emerging markets. In China, half of the participants have been domestic banks on the period 1999-2002 (McCauley, Fung and Gadanecz, 2002). Further evidence suggests that foreign banks tends to be either the only participants or totally absent in Chinese syndicated loans (Godlewski, Pessarossi and Weill, 2010).

The syndicated loans market grew markedly in China in the last decade with an outstanding amount of syndicated loans multiplied by four between 2005 and 2008 (CSRC). The market accounted for 7.11% of total corporate loans in 2009; meanwhile, according to the China Banking Association, it can reach 20% of the total lending in some developed countries.

One characteristic of syndicate structure in China was the domination of foreign banks to play the role of arranger in the loans (Gadanecz, 2004). With less experience in the process of loan syndication, Chinese domestic banks tended to enter syndicates more often as participants. The financial crisis has reversed this fact and has strengthened the role played by domestic banks in loan syndication in China. Foreign banks usually involved in the market withdrew their participation due to financial difficulties. The supply of credit by Chinese banks more than offset this withdrawal, which resulted in a growth of syndicated loan issuances, an uncommon figure for this market during the period of the financial crisis. As a consequence, domestic banks as lead managers in loan issuances have increased markedly since 2007 and now largely dominate syndicates with foreign banks lead managers. The increased importance of domestic banks in the Chinese syndicated loan market was also reflected in the currency used: in 2006, almost 80% of syndicated loans were issued in foreign currency (mainly USD), meanwhile in 2009 foreign currency loans accounted for less than 5% of the market (Chui et al., 2010).

3 Determinants of debt choice

Our aim is to explain the choice of debt financing for Chinese companies. We define the dependent variable as a dummy variable equal to one if the firm issues a bond and zero if it issues a syndicated loan. We consider four hypotheses for the choice of debt financing in China: flotation costs, asymmetries of information, renegotiation and liquidation costs, and central government ownership influence.

The *flotation costs* hypothesis considers that the issuer takes into account the fixed costs associated with public issuance. As these costs can be large, public issuance is more likely to take place when firms are large and need to borrow important amounts in order to make economies of scale (Blackwell and Kidwell, 1988; Smith, 1986). We test the flotation costs hypothesis with the variable *Firm Size*, defined as the log of total assets. We expect a positive impact of this variable on the probability of issuing a bond.

The *information asymmetry* hypothesis builds on the special role played by banks in financing the economy (Fama, 1985). As banks act as delegated monitors, they usually are cost efficient when screening and monitoring the borrower (Diamond, 1984). However, when information asymmetries decline between the borrower and investors, the borrower can avoid these monitoring costs by issuing debt directly on the public market (Diamond, 1991). Thus, reputation plays a central role in the choice of debt framework as well-known good or bad credit rated firms can be better off by directly taping the bond market rather relying on bank debt. Moreover, as banks can extract rents from their relationship with the borrower, private debt can distort incentives to make efforts and reduce the net present value of the investment (Rajan, 1992). Denis and Mihov (2003) show how credit quality affects the choice of debt market and that highest credit quality borrowers choose to issue debt in the public market.

In a nutshell, the information asymmetry hypothesis predicts that firms with a better reputation and higher credit quality are more likely to choose public debt. In line with Esho, Lam and Sharpe (2001) and Altunbas, Kara and Marques-Ibanez (2010), we test the information asymmetry hypothesis with three potential determinants of the choice of debt financing.

Reputation is proxied by the ratio of long term debt to total debt (*Long Term Debt*). Firms with a higher ratio have succeeded to raise long term debt in the past. Thus they should benefit from a better reputation on the market and be more likely to issue pub-

lic debt. Profitability can be a visible signal of a firm ability to repay its debt. We expect consequently the return on assets (*ROA*) to have a positive influence on bond issuance. Finally, we take into account growth opportunities which are proxied by the market to book ratio (*Market to Book*). A higher market-to-book ratio indicates that a firm has good investment or growth opportunities. More investment opportunities enhance the possibility of asset substitution (Jensen and Meckling, 1976) or underinvestment (Myers, 1977). From this point of view, a high market-to-book ratio could be seen as a proxy for important moral hazard problems (Krishnaswami, Spindt, and Subramaniam, 1999). We predict a negative impact on bond issuance for this variable.

The *renegotiation and liquidation cost* hypothesis refers to the difficulty a borrower encounters when he needs to renegotiate its debt with numerous lenders. A problem of coordination can arise between lenders, which can lead to the survival of negative NPV projects or to the too-early liquidation of positive NPV projects (for instance because of too lenient or harsh covenants). In contrast, a bank can determine if it is efficient to continue or liquidate prematurely a project. This happens because banks monitor borrowers more closely which allow them to determine more efficiently whether it is optimal to liquidate or continue the project (Berlin and Loeys, 1988, Chemmanur and Fulghieri, 1994). Thus, firms with a high probability of financial distress, or with a high liquidation value project, benefit more from this special expertise. They may consider reliance on banks for their financing needs to be beneficial.

Liquidation value is measured by the ratio of fixed assets to total assets (*Fixed Assets*) following Johnson (1997) and Esho, Lam and Sharpe (2001), as a larger share of fixed assets in total assets is associated with a higher collateral value. We thus expect this ratio to have a negative impact on the probability to issue a bond.

In line with Esho, Lam and Sharpe (2001) and Altunbas, Kara and Marques-Ibanez (2010), financial distress is proxied by two variables: the ratio of total debt to total assets (*Leverage*), and the ratio of current assets to current liabilities (*Current Ratio*). More leveraged firms are associated with a greater probability to rely on syndicated loans, as the probability of financial distress increases. Reciprocally, a lower ratio of current assets to current liabilities enhances the likelihood of financial distress in the short term and thus this ratio is expected to be inversely related to a public issue.

The hypothesis of the *central government ownership influence* considers that firms owned[5] by the central government should issue more bonds than others. As regulators have pursued a goal of stability in the corporate bond market, they tend to favour firms owned by the central government. Due to the strong links between the regulators and central state-owned firms, we expect these firms to have a higher probability to issue bond rather than syndicated loans as they are favoured to obtain an approval. In parallel, the central government might also influence central state-owned enterprises decisions to prefer the bond market in order to insure a smooth development of the market with few defaults. We therefore need to determine the impact of political ties in the choice of debt markets. The importance of this four factor is to check whether it mostly explain the choices of debt market – which indicate that choice of debt are politically driven – or whether financial factors remain the most important determinants.

We test this hypothesis by including the variable *Central State-Owned,* which is a dummy variable equal to one if the central government is directly or indirectly the controlling shareholder of the firm. We expect central state-owned firms to have a greater probability to choose bonds for two main reasons. First, these firms have a higher probability to receive an approval to issue a bond. Second, because central authorities pursue a goal of smooth development of the corporate bond market, the central government could incite them to favour the corporate debt market rather than borrowing from banks. Thus, we argue that the ownership influence on choice of debt can come from either the firm side or the central authorities' side.[6]

However the ownership ties between regulatory authorities and central state-owned firms might depend on the degree of information asymmetries between the market regulators and the firms. One way to specifically catch these asymmetries of information is to measure the physical distance between the headquarters of the central state-owned firms and the regulators. Distance is associated with greater information asymmetries in the literature (e.g. Petersen and Rajan, 2002). If regulators favour firms which appear to them the less likely to default, they will choose central state-owned firms which present less asymmetries of information for them.

[5] Here ownership of the firm refers to the nature of the controlling shareholder. A firm is considered state-owned when the controlling shareholder is the State, even if minority shareholders include private investors.
[6] We will address the question of the influence coming from the central authorities' side in section 5.2.

Thus, we complement our investigation of this theory by adding the variable *Distance*, which is defined as the crow-fly distance in miles of the firm headquarters from Beijing, and the interaction term between *Central State-Owned* and *Distance*. We expect this interaction term to be negatively related to the probability to issue a bond, as greater distance imply more information asymmetries between central state-owned firms and the regulators.

We also include some control variables in our analysis. A dummy variable equal to one if the firm is controlled by a private investor (*Privately-Owned*) is added in the model. Dummy variables for the industry of the firm and for the year of debt issuance are also included in the estimations to control for industry and year effects. Finally, we control for the economic development of the province of the firm with the average GDP growth of the province over the period (*GDP Growth*).

4 Data

We use data from Bloomberg database. This database allows us to collect information on syndicated loans and corporate bonds issued by non-financial listed Chinese firms. We obtain 447 syndicated loans and 213 corporate bonds issued on the period 2006-2010 by 220 firms. Bloomberg database is also used to collect financial information on these borrowers. We match financial data of the end of the year preceding firm issuance of debt.

Information on ownership is collected on the download centre of China Security Index Co. website[7]. The download centre provides us with constituents list of central state-owned, local state-owned, and privately-owned enterprises indexes. The "CSI Central State-owned Enterprises Composite Index" includes all firms directly controlled by the central government and traded on Shanghai and Shenzhen securities markets, the "CSI Local State-owned Enterprises Composite Index" consists of all enterprises directly controlled by a local government (Province or Municipalities) and traded at Shanghai and Shenzhen stock exchange, meanwhile all companies under control of private shareholders in these stock markets constitute the "CSI Private-owned Enterprises Composite Index". As there has not been transfers of ownership from the state to the private sector on the pe-

[7] www.csindex.com.cn/sseportal_en/csiportal/indexquery.do

riod of the study (Allen and Shen, 2011), this ownership information is consistent with our sample. We then use the equity ticker symbol to match the ownership information with our dataset.

Table 1 displays the descriptive statistics by borrower categories for the variables used in the estimations. We divide borrowers in three categories. Category 1 includes firms which only borrowed from the syndicated loan market during the sample period. Category 2 is composed of firms which only issued bonds during the sample period. Category 3 includes firms which had access to both markets during the sample period. This classification allows us to distinguish the factors that cause a borrower to rely on only one debt market. Moreover, borrowers which can tap both debt markets may differ from both other categories. In developed countries, this can reflect a difference in size: very large firms have larger financing needs and thus rely on both markets (Altunbas, Kara and Marques-Ibanez, 2009). This framework might also apply to China. Nevertheless, firms could also choose to rely on only one market because of the political ties between central state-owned firms and the central government. It is thus important to study distinctively what factors drive each borrower type choice of debt market.

We interestingly observe that ownership types are not equivalently represented in each borrower category. Namely, central state-owned companies represent a larger share of borrowers relying only on the bond market or on both markets. To say it differently, this finding suggests that central state-owned companies use more bond than syndicated loan for their financing needs. The same observation does not stand for local state-owned companies which rely more on syndicated loans or for privately-owned companies.

Firm size greatly differs across borrower categories. Firms participating to both debt markets are on average larger than those using only the syndicated loan market, with an average of 26,604 Millions of USD total assets against 14,854. More surprisingly, firms which only access the bond market are much larger than those accessing both debt markets (with an average of 123,472 total assets). This finding is in sharp contrast with the observation from Altunbas, Kara and Marques-Ibanez (2009) on European countries. It might suggest the role of ownership for the use of public debt in China, as larger companies are central state-owned. To sum it up, the analysis of the descriptive statistics suggests a possible role of ownership on the use of public debt. In complement, Table 2. provides descriptive statistics of the same sample divided by ownership type. We distinguish between *Private-Owned* enterprises (POE), *Local State-Owned* enterprises (LSOE) and *Central State-*

Owned enterprises (CSOE). We identify central state-owned enterprises as having a strong preference for bonds (44% of issuances where bonds on the period) compared to local state-owned enterprises (29%) and private-owned enterprises (21%). These descriptive statistics show that, overall, discrimination in the approval process is not total as private-owned and local state-owned enterprises have accessed the corporate bond market. The *Private-Owned* enterprises are also smaller, much more profitable, with less *Fixed Assets* and a higher *Current Ratio* than *Local* and *Central State-Owned* enterprises.

5 Results

This section is devoted to the presentation of our results. We perform logit regressions with random effects at the firm level to estimate the determinants of the choice of debt financing. As we have different types of firms depending on their use of syndicated loan and bond markets, we perform two sets of estimations.

First, we analyze the determinants of the choice between syndicated loans and corporate bond to determine to what extent they depend on political or financial factors, and compare these results with those of developed countries. Second, we compare the financing choices of firms using one debt market relative to those which have used both debt markets to determine what can explain the will to diversify the source of debt funding for a firm in China.

5.1 The determinants of the choice between corporate bond and syndicated loan

We start our investigation by looking at the financing choices of firms which have only used the same debt market on the sample period. In this first stage, we exclude from the sample borrowers which used both debt markets. Therefore, the sample is restricted to firms from categories 1 (borrowing only from the syndicated loan market) and 2 (issuing only corporate bonds). This allows us to properly analyze the choices of debt with firms which do not diversify their sources of debt funding. Table 4 reports the results for this

model. We perform two specifications of the model, depending on the inclusion of *Distance* and of the interaction term between *Distance* and *Central-State Ownership*.

The first finding is the role of central state ownership on the choice of corporate debt. The coefficient of *Central-State Owned* is significantly positive, meaning that firms owned by the central government are more likely to issue bonds than other companies. This result comes as a half-surprise in the sense that favouritism of central state-owned firms in accessing the corporate bond market is well-known, even if the 2007 reform supposedly liberalized the market to every borrower type regardless of its ownership structure. Thus, we find support that political ties play an important role in the choice of debt markets. Contrary to developed countries, the corporate debt market has not yet matured enough to remove political interferences. This could potentially damage its ability to guarantee a better allocation of capital.

We scrutinize this result by analyzing the interaction term between distance and central-state ownership to check if the effect of ownership evolves with the distance from Beijing. How can we interpret the interaction term between *Central-State Owned* and *Distance*? In a logit regression, the interaction term and the interaction effect can differ in sign and statistical significance. We follow Ai and Norton (2003) to compute the marginal interaction effect of our model. All formulas are reported in Appendix A. Graphic 1 in appendix B represents the interaction effect with confidence intervals of 10% and 1% for all possible values of *Distance* and mean values of other model variables.

The interaction effect is significantly negative for all values of *Distance*. This suggests that the probability of a central-state owned firm to issue public debt decreases as distance from Beijing increases. At some point – i.e. when the central-state owned firm is very far from the central government –distance stops to influence the probability to prefer bond issuance rather than borrow from the syndicated loan market. *Ceteris paribus*, a central state-owned firm located in Beijing has a higher probability to issue a bond compared to a central-state owned firm located 200 miles away from the capital city, whereas the probability of issuing a bond for two central-state owned firms located 1200 and 1400 miles respectively from Beijing does not change.

This finding shall reflect the degree of information asymmetries between the central state-owned borrowers and the regulators. As regulators might have a preference for firms with less asymmetries of information in order to limit the probability of default on the bond market, they might favour central state-owned firms closer to them. However, at

some threshold from the regulators, distance stops to play an influential role on debt choice.

It is of interest to observe that only central-state ownership influences the choice of debt, as the variable *Privately-Owned* is not significant, meaning that local-state owned and privately-owned companies do not show significant differences in the choice of debt financing.

Apart from political interferences, we now turn to the financial factors that should influence the choice between debt markets. The flotation costs hypothesis is supported by our results, as we find a positive and significant relation between firm size and bond issuance. As issuance of public debt involves higher costs, economies of scale are possible only for larger firms with important financing needs. This result is in line with Esho, Lam and Sharpe (2001) and Altunbas, Kara and Marques-Ibanez (2009).

The information asymmetry hypothesis receives little support from our estimations. We observe a positive coefficient for *Long Term Debt*, which accords with the view that firms with greater reputation are more likely to issue bond. However this variable is only significant in the first specification. Furthermore, *ROA* and *Market to Book* are not significant, which is at odds with the hypothesis that profitability and growth opportunities would influence the choice of debt. Thus contrary to evidence found in other countries, reputation does not play an important role in accessing the bond market. This might be a direct consequence in the state interventionism in choices of debt market.

Finally, we find mixed evidence regarding the renegotiation and liquidation costs hypothesis. Liquidation value proxied by *Fixed Assets* is not significant, while *Current Ratio* which is one of both measures controlling financial distress also lacks of significance. Nevertheless, *Leverage* which also measures financial distress is significantly negative as expected, which means that greater leverage reduces the ability to issue bond. This latter finding is in conformity with Esho, Lam and Sharpe (2001) and Altunbas, Kara and Marques-Ibanez (2009). This can be explained by the fact that the benefits of an optimal renegotiation with few lenders increase with financial distress. It reflects the ability and skills of banks to achieve a better renegotiation as in other countries. It might also be a consequence of links between state-owned banks and borrowers which allow them to easily obtain favourable debt renegotiations in case of financial distress that they cannot achieve with the market.

We now turn to the second model in which we also consider firms which have issued both bonds and syndicated loans over the period but on different years. We thus extend our sample considerably. We do not however take all firm-year observations into account as those from category 3 which have issued a bond and a syndicated loan on the same year are still excluded. The estimations of this model are displayed in Table 5. As above, we adopt two specifications, depending on the inclusion of distance and of the interaction term between *Distance* and *Central State Owned*.

Several conclusions emerge. First, our main finding regarding the role of central-state ownership on the corporate debt choice is confirmed. The coefficient of *Central State Owned* is still significantly positive in both specifications. However *Distance* does not seem to play the same role on the choice of debt by central-state owned companies. Indeed the interaction term between *Distance* and *Central State Owned* is still negative but not statistically significant as reported in Graphic 2 in Appendix B. In this estimation, the sample includes now firms which have issued both bonds and syndicated loans over the period. This indicates that these firms present less asymmetries of information for central regulators. As they indifferently tap both debt markets on the sample period, these firms are more likely to be well established companies with a strong reputation. This can explain why the addition of these borrowers in the sample weakens the interaction between *Distance* and *Central State Owned*.

Second, the conclusions regarding the three other hypotheses are very similar. The flotation costs hypothesis is still supported with the significant and positive influence of *Firm Size* on debt choice. The renegotiation and liquidation hypothesis still obtains mixed support with the significantly positive coefficient for *Leverage*, but no significant sign for *Fixed Assets* and *Current Ratio*. The only slight exception concerns the information asymmetry hypothesis which is now totally contradicted by the findings. Namely, among the three variables used to test this hypothesis the only one significant above, the ratio of *Long-Term Debt* to total debt becomes now not significant in both specifications.

In a nutshell, our estimations have shown that central state-owned firms have a greater probability to issue a bond rather than a syndicated loan. We find limited evidence on the role of distance from the capital to weaken this ownership influence. Finally, we find limited support for the three traditional hypotheses on the choice of debt financing of Chinese companies. Thus, the choice of debt market appears severely influenced by state

intervention in China. Financial factors do not play a strong role in determining firms' choices of debt.

5.2 The determinants of the choice between one and two debt instruments

Until now we have only considered firms issuing one debt instrument for a given year. We now extend the investigation by analyzing the determinants of the choice to use two debt instruments rather than only one. We notably include observations of joint debt issuance for a given year in our sample. We want to study the factors influencing the joint use of debt instruments.

Our aim is to identify the factors increasing the probability of a company to prefer borrowing exclusively from the corporate bond market rather than taping both debt markets, and those enhancing the probability to borrow only from the syndicated loan market rather than both debt markets. One way to conduct this analysis is to set two binomials logit models (Beg and Gray, 1984). Thus, we now estimate two new specifications which differ from the former one for the dependent variable. The first model explains a dependent variable equal to one if the firm issues in a given year a syndicated loan or a bond (or a joint issuance of both debt instruments) and has tapped both debt markets on the sample period, and zero if the firm issues a bond and has tapped only the bond market on the sample period. The second model explains a dependent variable equal to one if the firm issues in a given year a syndicated loan or a bond (or a joint issuance of both debt instruments) and has tapped both debt markets on the sample period, and zero if the firm issues a syndicated loan and has tapped only the syndicated loan market on the sample period. The results of these estimations are reported in Table 6.

These estimations are of utmost interest for our analysis. Indeed, up to this point, we have argued that central state-owned enterprises benefit from their close ties with central authorities to access the corporate bond market. However, the political interference in the choice of debt might be more complex than that. The development of the corporate bond market is one central government policy goal, and a part of the strategy to reform the financial system by promoting capital markets. It is therefore likely that in order to insure a smooth development of this debt market, the central government also exerts an influence

on central state-owned enterprises to favour the issuance of bond rather than borrowing from banks, and not only passively favour them in the approval process. Thus, the influence can come not only from central state-owned firms to regulators but also from central authorities – which pursue policy goals of a smooth bond market development – to firms' decisions. By comparing firms borrowing only in the corporate bond market to those which borrow from both debt markets, we empirically address this question. Accessing to both markets indicates that a firm does not strongly suffer from discrimination in entering the corporate bond market. Thus, if central state-owned companies prefer to issue debt only in the corporate bond market, this should also partly reflect influence coming from the central government towards them.

The first model shows a significantly negative coefficient for *Central-State Owned*, i.e. central state-owned companies have a higher probability to rely only on the corporate bond market than to borrow on both debt markets. Reciprocally, the second model leads to the conclusion that these companies prefer accessing both debt markets rather than only the syndicated loan market. Central state-owned companies appear then to neglect the syndicated loan market and rely mostly uniquely on the corporate bond market. Thus, these results are in favour of the central government will to secure the corporate bond market development through issuances of firms it controls.

We again find evidence of an interaction between physical distance and central state ownership of firms. Graphs 3 and 4 in Appendix B report the interaction effect between *Distance* and *Central State Owned* around confidence intervals of 1% and 10% respectively for the model in column 1 and 2. The farther a central state-owned firm is from the central government, the more likely it is to issue debt in both markets rather only in the bond market. Symmetrically, a central state-owned firm farther from Beijing has an increased probability to rely only on the syndicated loan market rather than both debt markets. We thus find further evidence that distance from regulatory authorities might play a role in debt choices in China.

As a consequence, the findings of these models comparing the use of one debt instrument relative to the joint use of both debt instruments confirm that ownership ties with the central state government play a significant role on financing choices of Chinese listed firms. It allows us to paint a more complex picture of these relations by showing that choice of issuing bond can also partly come from central authorities to firms and not only the reverse.

In both models, only few financial variables are significant. It is of interest to observe that firm size favours the use of both debt markets rather than relying only on the syndicated loan market, which is in line again with the flotation costs hypothesis. We do not however point out some role of firm size on the choice of using only bond rather than both debt instruments. Furthermore, a greater ratio of long-term debt to total debt influences positively the choice of borrowing on both debt markets in both specifications. All in all, this might indicate that reputation is not absolutely neutral for a firm in accessing debt markets.

We also point out that firms with greater leverage prefer to borrow from both markets rather only in the bond market. It suggests that a preference remains– at least partly – for carrying bank debt when the probability of financial distress is higher. Finally, we observe that a greater current ratio favours the use of both debt markets relative to each type of debt.

6 Conclusion

One of the main challenges of China's financial system modernization is the development of the corporate bond market. A well-functioning market can provide a better allocation of capital in the economy, reduce credit risk in the banking system and force financial intermediaries to expand credit to new categories of borrowers due to the increased competition. However, the development of bond markets remains strikingly weak in spite of its recent expansion due to continual political intervention in the issuance approval process. To determine the extent of competition between intermediation and public financing, we have analyzed the determinants of choice of debt markets for a sample of Chinese listed firms on the period 2006-2010.

Our main finding is that central authorities continue to severely influence firms' choice of debt. Namely, central state-owned firms are more likely to issue a bond than a syndicated loan in comparison to either local state-owned or privately-owned companies. Furthermore, we find limited support in favour of the fact that this influence is stronger for central state-owned firms located closer to central government, which is in line with the view of greater information asymmetries between central regulators and firms. Regulators prove to be cautious on the market development by favouring central state-owned corpora-

tions for whom it has less information asymmetries. We also identify that central state-owned companies tend to borrow uniquely on the bond market rather than tapping both debt markets. This indicates that political interference in the market is a complex process with central state-owned companies enjoying preferential access to the bond market, but also likely being pressured into preferring bonds rather than syndicated loans as regulatory authorities promotes a smooth development of the market.

The political bias of the corporate bond market shows that, contrary to developed and other Asian countries, debt choice weakly depends on financial factors. We mainly provide evidence in favour of the flotation costs hypothesis, as larger firms tend to prefer bond issuance rather than borrowing on the syndicated loan market. Nevertheless, our findings provide mixed evidence in favour of the information asymmetry hypothesis and rather contradict the renegotiation and liquidation hypothesis. These latter results are in opposition to those observed in the studies from Esho, Lam and Sharpe (2001) on Asian countries and Altunbas, Kara and Marques-Ibanez (2010) on European countries, who support all the three standard hypotheses.

We can thus conclude that our results show the role of very different factors in corporate financing choices in China as in other countries, which are notably caused by the influence of the State in corporate decisions.

The implications of our results may appear pessimistic for the development of the bond market in China, and the modernization of the financial system. In order to promote the development of the capital markets, the central state should restraint its intervention in the issuance process. A better allocation of capital in the economy through a competitive corporate bond market can only be achieved if firms are free to choose their debt markets on financial grounds. However, the recent reform of the approval process in 2007 should mitigate political intervention in the future. In case of success, the reform shall promote the corporate bond market as a real alternative to bank debt financing.

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APPENDIX A

Ai, Norton and Wang (2004) define the marginal interaction effect in a logit model as being 'the change in the predicted probability that $y = 1$ for a change of both x_1 and x_2'.

Thus, the interaction effect is equal to:

$$\frac{\partial \frac{\Delta F(u)}{\Delta x1}}{\partial x2} = (\hat{\beta}_2 + \hat{\beta}_{12})[F\{\hat{\beta}_1 + (\hat{\beta}_2 + \hat{\beta}_{12})x_2 + X\hat{\beta}_k\} \times (1 - F\{\hat{\beta}_1 + (\hat{\beta}_2 + \hat{\beta}_{12})x_2 + X\hat{\beta}_k\})] - \hat{\beta}_2[F(\hat{\beta}_2 x_2 + X\hat{\beta}_k) \times \{1 - (\hat{\beta}_2 x_2 + X\hat{\beta}_k)\}],$$

where $F(u)$ is the logistic cumulative distribution function with

$$F(u) = \frac{1}{1 + e^{-(\beta_1 x_1 + \beta_2 x_2 + \beta_{12} x_1 x_2 + X\beta_k)}}$$

x_1 corresponds to the discrete variable *Central State-Owned*,

x_2 corresponds to the continuous variable *Distance*,

$X\beta_k$ is a vector of control variables times a vector of parameters coefficients, including one intercept.

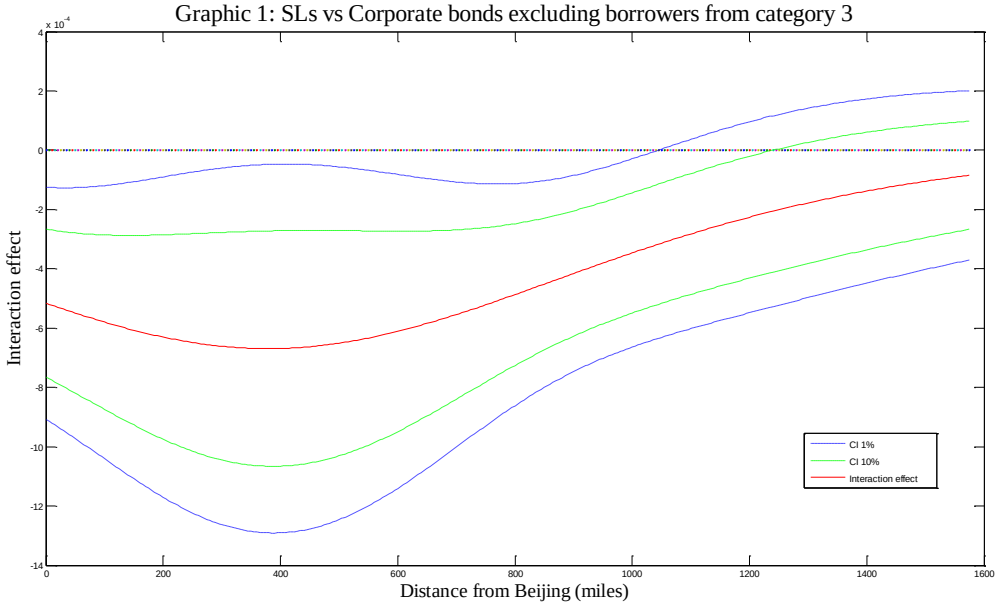
The asymptotic variance of the interaction effect is estimated consistently by the following formula:

$$\hat{\sigma}_{12} = \frac{\partial[\partial\ (\Delta F(u)/\Delta x1)/\partial x2]}{\partial \beta'} \tilde{\Omega}_\beta \frac{\partial[\partial(\Delta F(u)/\Delta x1)/\partial x2]}{\partial \beta},$$

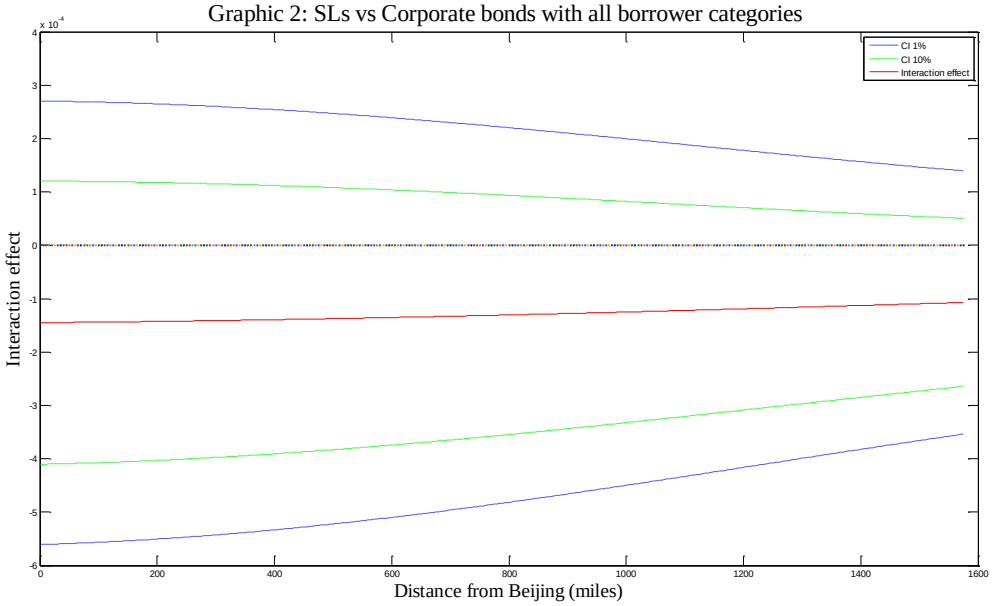
where $\tilde{\Omega}_\beta$ is a consistent covariance matrix estimator of the vector parameters estimates $\hat{\beta}$.

APPENDIX B

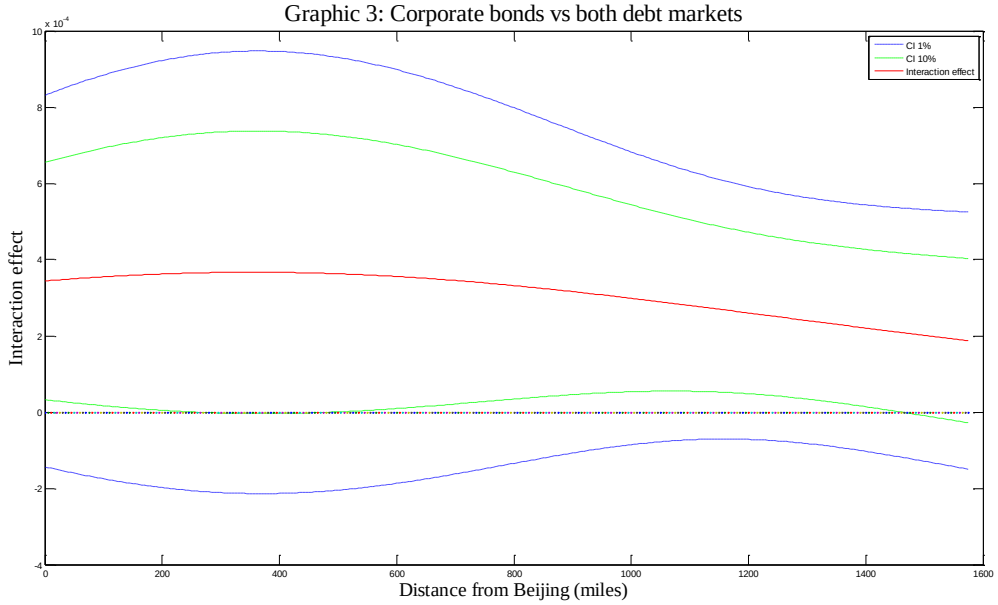
Graphic 1: SLs vs Corporate bonds excluding borrowers from category 3



Graphic 2: SLs vs Corporate bonds with all borrower categories



Graphic 3: Corporate bonds vs both debt markets



Graphic 4: SLs vs both debt markets

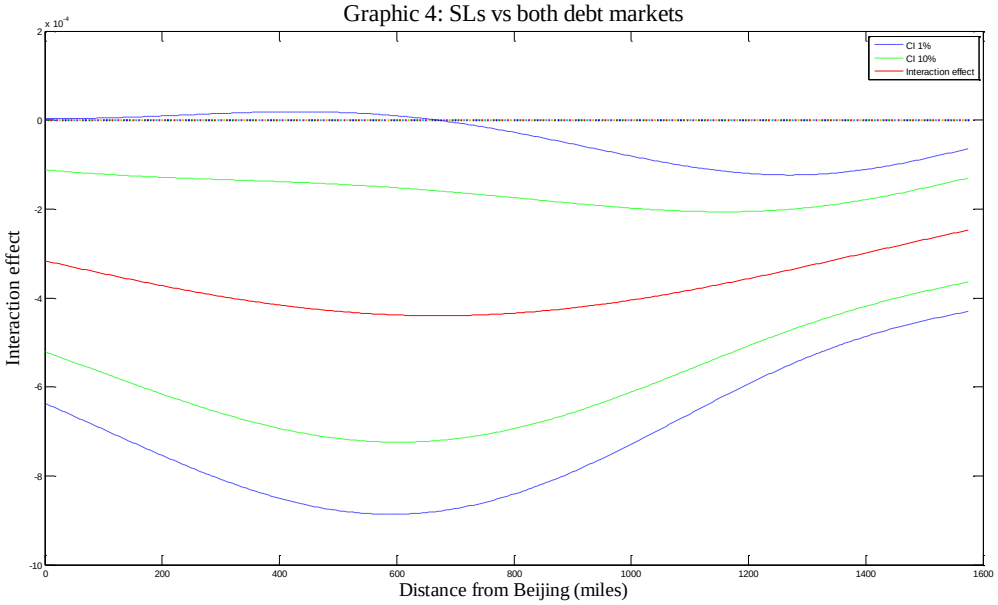


Table 1 Descriptive statistics by borrower type

The table below provides the mean values with standard deviations in brackets for the independent variables used in the estimations.

Variable	Description	Category 1 Syndicated loans	Category 2 Bonds	Category 3 Both markets
Central State Owned	Dummy variable equal to 1 if the borrower is controlled by the central government; 0 otherwise (%)	18.88 (39.20)	41.67 (49.45)	36.89 (48.37)
Local State Owned	Dummy variable equal to 1 if the borrower is controlled by a local province; 0 otherwise (%)	63.29 (48.29)	47.02 (50.06)	42.72 (49.59)
Private Owned	Dummy variable equal to 1 if the borrower is controlled by private shareholders; 0 otherwise (%)	17.83 (38.35)	11.31 (31.77)	20.39 (40.39)
Distance	"Crow fly" physical distance between Beijing and the borrower headquarter in miles	715.72 (402.48)	506.40 (433.89)	579.86 (421.82)
Firm Size	Logarithm of total assets in million USD	9.26 (0.83)	10.04 (1.78)	9.66 (0.98)
Long Term Debt	Long term debt to total debt (%)	28.73 (22.27)	37.27 (28.06)	45.94 (22.86)
ROA	Profit after tax to total assets (%)	5.14 (9.15)	4.51 (4.57)	5.69 (4.62)
Market To Book	Market value of equity to balance sheet value of equity (%)	2.18 (2.19)	2.15 (1.83)	2.20 (1.78)
Leverage	Total debt to total assets (%)	36.39 (14.76)	33.13 (17.08)	37.36 (12.14)
Fixed Assets	Fixed assets to total assets (%)	47.59 (20.52)	51.24 (24.53)	48.81 (22.86)
Current Ratio	Current assets to current liabilities (%)	103.31 (54.34)	90.04 (43.76)	123.12 (70.24)
GDP Growth	Average real growth of GDP per province on the sample period (%)	13.61 (1.96)	14.51 (2.72)	13.70 (2.53)
Number of observations		286	168	206
Number of firms		66	106	48

Table 2 Descriptive statistics by ownership type

The table below provides the mean values with standard deviations in brackets for the dependent and independent variables used in the estimations.

Variable	Description	Private Owned	Local State Owned	Central State Owned
Bond	Dummy variable equal to 1 if the firm issued a bond in year t; 0 if it issued a syndicated loan (%)	21.43 (41.22)	29.02 (45.45)	44.00 (49.76)
Distance	"Crow fly distance" physical distance between Beijing and the borrower headquarter in miles	865.21 (284.28)	671.86 (413.48)	392.57 (406.56)
Firm Size	Logarithm of total assets in million USD	8.87 (0.75)	9.43 (0.77)	10.25 (1.68)
Long Term Debt	Long term debt to total debt (%)	32.83 (22.33)	33.64 (25.18)	42.79 (25.36)
ROA	Profit after tax to total assets (%)	8.12 (10.15)	4.47 (5.74)	4.68 (6.26)
Market to Book	Market value of equity to balance sheet value of equity (%)	2.52 (1.94)	2.06 (1.89)	2.18 (2.12)
Leverage	Total debt to total assets (%)	31.99 (10.08)	35.34 (14.00)	38.95 (17.33)
Fixed Assets	Fixed assets to total assets (%)	30.05 (15.59)	51.39 (20.01)	55.12 (23.87)
Current Ratio	Current assets to current liabilities (%)	143.32 (53.77)	95.90 (48.48)	102.91 (69.04)
GDP Growth	Average real growth of GDP per province on the sample period (%)	13.54 (1.90)	13.69 (2.06)	14.36 (03.00)
Number of observations		112	348	200
Number of firms		39	117	64

Table 3 Correlation matrix

	Bond	Central State Owned	Local State Owned	Private Owned	Distance	Firm Size	Long Term Debt	ROA	Market To Book	Leverage	Fixed Assets	Current Ratio	GDP Growth
Bond	1												
Central State Owned	0.17	1											
Local State Owned	-0.07	-0.70	1										
Private Owned	-0.10	-0.30	-0.48	1									
Distance	-0.15	-0.35	0.13	0.26	1								
Firm Size	0.26	0.36	-0.13	-0.26	-0.34	1							
Long Term Debt	0.09	0.17	-0.11	-0.06	-0.13	0.28	1						
ROA	-0.04	-0.04	-0.10	0.19	-0.04	-0.18	-0.04	1					
Market To Book	-0.00	0.00	-0.06	0.08	0.07	-0.19	-0.15	0.47	1				
Leverage	-0.09	0.14	-0.04	-0.12	0.01	0.07	0.23	-0.47	-0.26	1			
Fixed Assets	0.08	0.18	0.12	-0.38	-0.25	0.25	0.28	-0.12	-0.11	0.30	1		
Current Ratio	-0.15	-0.04	-0.18	0.29	0.13	-0.26	0.08	0.29	0.09	-0.33	-0.50	1	
GDP Growth		0.14	-0.08	-0.06	-0.33	0.35	0.08	0.02	-0.05	-0.09	0.12	-0.09	1

Table 4 Model 1: Borrowers using only one debt instrument over the period

Logit regressions with random effects at the firm level. The dependent variable is a dummy variable equal to one if the used instrument is a bond and zero if the used instrument is a syndicated loan. Definitions of variables appear in Table 1. This table reports coefficients with standard errors in brackets. *, ** and *** denote an estimate significantly different from 0 at the 10%, 5% or 1% level. Dummy variables for industry and year are included in the regressions, but not reported.

	Regressions	
Explanatory variables	(1)	(2)
Intercept	-4.648***	-2.422
	(1.92)	(2.10)
Central State-Owned	0.676*	1.867***
	(0.39)	(0.65)
Privately-Owned	0.128	0.088
	(0.48)	(0.48)
Distance	-	-0.001
		(0.01)
Central State	-	-0.003***
Owned*Distance		(0.01)
Firm Size	0.359**	0.265*
	(0.15)	(0.15)
Long Term Debt	1.125*	1.092
	(0.67)	(0.68)
ROA	-0.008	-0.009
	(0.03)	(0.03)
Market to Book	0.075	0.030
	(0.09)	(0.09)
Leverage	-0.042***	-0.039***
	(0.01)	(0.01)
Fixed Assets	0.639	0.853
	(0.91)	(0.92)
Current Ratio	-0.748	-0.752
	(0.51)	(0.53)
GDP Growth	4.093	-4.587
	(7.11)	(7.71)
N	454	454
Log Likelihood	1196.40	1226.05
Prob > khi²	<0.001	<0.001

Table 5 Model 2: Borrowers using only one debt instrument for a given year

Logit regressions with random effects at the firm level. The dependent variable is a dummy variable equal to one if the used instrument is a bond, and zero otherwise. Definitions of variables appear in Table 1. This table reports coefficients with standard errors in brackets. *, ** and *** denote an estimate significantly different from 0 at the 10%, 5% or 1% level. Dummy variables for industry and year are included in the regressions, but not reported.

	Regressions	
Explanatory variables	(1)	(2)
Intercept	-4.799***	-4.341***
	(1.61)	(1.70)
Central State Owned	0.570*	0.807*
	(0.31)	(0.47)
Privately-Owned	-0.001	-0.020
	(0.38)	(0.38)
Distance		-0.0001
		(0.0004)
Central State Owned*Distance		-0.001
		(0.001)
Firm Size	0.437***	0.423***
	(0.12)	(0.12)
Long Term Debt	0.125	0.094
	(0.55)	(0.55)
ROA	-0.011	-0.012
	(0.02)	(0.03)
Market to Book	0.101	0.099
	(0.076)	(0.08)
Leverage	-0.034***	-0.033***
	(0.01)	(0.01)
Fixed Assets	0.058	0.071
	(0.74)	(0.75)
Current Ratio	-0.521	-0.503
	(0.33)	(0.33)
GDP Growth	1.242	-0.750
	(5.44)	(5.77)
N	634	634
Log Likelihood	1632.06	1648.25
Prob > khi²	<0.001	<0.001

Table 6 Model 3: the choice between one debt instrument and both types of debt instruments

Logit regressions with random effects at the firm level. The dependent variable is a dummy variable equal to one if the firm has used bond and syndicated loan during the period, and to zero if the firm has only used bonds for the first estimation and syndicated loans for the second estimation respectively, over the period. Definitions of variables appear in Table 1. This table reports coefficients with standard errors in brackets. *, ** and *** denote an estimate significantly different from 0 at the 10%, 5% or 1% level. Dummy variables for industry and year are included in the regressions, but not reported.

	Regressions	
Explanatory variables	(1) Alternative between bond and both debt types	(2) Alternative between syndicated loan and both debt types
Intercept	-2.8624	-8.2871***
	(2.2500)	(2.1103)
Central State Owned	-1.3301**	1.3579***
	(0.5696)	(0.4850)
Privately-Owned	0.7384	0.6401*
	(0.4949)	(0.3590)
Distance	-0.0005	-0.0006*
	(0.0005)	(0.0003)
Central State	0.0019**	-0.0011
Owned*Distance	(0.0009)	(0.0007)
Firm Size	0.0329	0.5797***
	(0.1520)	(0.1723)
Long Term Debt	2.0829***	3.2210***
	(0.7137)	(0.6255)
ROA	0.0643	0.0149
	(0.0449)	(0.0194)
Market to Book	-0.0366	-0.0461
	(0.1398)	(0.0765)
Leverage	0.0456***	0.0009
	(0.0142)	(0.0116)
Fixed Assets	-0.2531	-0.1372
	(0.8983)	(0.8557)
Current Ratio	0.7287*	0.6795**
	(0.3793)	(0.2772)
GDP Growth	2.4333	-3.4733
	(6.8716)	(5.5608)
N	374	492
Log Likelihood	925.95	1174.78
Prob > khi²	<0.001	<0.001

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Bank of Finland
BOFIT – Institute for Economies in Transition
PO Box 160
FIN-00101 Helsinki

☎ + 358 10 831 2268
bofit@bof.fi
http://www.bof.fi/bofit