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Ownership Structure and the Cost of Debt: Evidence from the Chinese Corporate Bond Market

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Abstract

Drawing upon evidence from the Chinese corporate bond market, we study how ownership structure affects the cost of debt for firms. Our results show that state, institutional and foreign ownership formats reduce the cost of debt for firms. The benefits of state ownership are accentuated when the issuer is headquartered in a province with highly developed market institutions, operates in an industry less dominated by the state or during the period after the 2012 anti-corruption reforms. Institutional ownership provides the most benefits in environments with lower levels of marketization, especially for firms with low credit quality. Our evidence sheds light on the nexus of ownership and debt cost in a political economy where state-owned enterprises (SOEs) and non-SOEs face productivity and credit frictions. It is also illustrative of how the market environment interacts with corporate ownership in affecting the cost of bond issuance.

Keywords: Government ownership, institutional holding, credit spreads, market forces

JEL Code: G12, G18, G32, G34

1. Introduction

The nexus between corporate ownership and the cost of debt has been investigated extensively from both theoretical and empirical perspectives. Ownership and control frame agency conflicts, determine borrowing costs on debt markets, and affect firm value. Earlier cross-country studies establish that a firm's ownership identity and its institutional environment matter with respect to borrowing costs. For example, government equity ownership of a publicly traded firm is associated with higher cost of debt due to state-induced distortions, but a lower cost of debt during financial crisis or when the firm otherwise faces financial distress (Borisova et al., 2015). In the case of partial privatizations, the reduction in government ownership boosts the cost of debt, revealing the cost of reduced government guarantees (Borisova and Megginson, 2011). While institutional ownership helps reduce the cost of debt through improved monitoring and governance, highly concentrated outside institutional ownership may use undue influence for its own benefit in ways that increase the cost of debt (Bhojraj and Sengupta, 2003). Finally, in environments with strong legal and market institutional settings, lenders are more willing to provide credit at favorable terms in private debt market (Qian and Strahan, 2007).

This paper advances the discussion of the nexus of ownership and debt cost on two fronts. First, we provide an empirical assessment of the Chinese bond market as to how corporate ownership structure affects the cost of debt in a political economy where heterogeneous firms face productivity and credit frictions. The endogeneity of home-country institutions constitutes a major empirical challenge for cross-country studies of corporate ownership and the cost of debt. We alleviate this concern by focusing solely on firms in China, where the state-owned sector of the world's largest emerging economy still dominates, but role of privately owned firms in the economic growth model has increased in recent decades. State-owned enterprises (SOEs) and non-SOEs in China differ in two important respects: productivity and access to external capital. SOEs have lower productivity but enjoy better access to external credit. Non-SOEs, on the other hand, experience higher productivity but face financial challenges that force them to rely on retained earnings to finance operation and investment (Song, Storesletten and Zilibotti, 2011). China's capital market has been greatly vitalized in recent decades through regulatory reforms such as privatization of SOEs, the unlocking of restricted state-owned shares and improvements in market access for domestic and

foreign institutional investors (Carpenter, Lu and Whitelaw, 2015).[1]

Second, we investigate how the market environment in which firms operate affects the identified dynamics of the nexus of ownership and debt cost. The extent to which a more sophisticated market environment, characterized by strong rule of law and vibrant market competition, imposes discipline on managers is well studied. We consider the less-explored issue of the market environment's *net* impact on lender evaluation of firms with heterogeneous ownership structures. China provides an ideal natural laboratory for such as study as it offers heterogeneous market-supporting institutions across 31 provinces and different levels of state control across many industries.

This allows us to consider empirically how bond investors respond to government, institutional and foreign ownership, as well as the degree of response varies with issuers operating in markets with differing levels of sophistication. We focus on the corporate bond market because bond issuers are publicly traded companies, and thus required by the law to disclose their ownership structures and changes. Bonds also contain multi-dimensional contractual features such as rating score, call options and collateral requirements not found in the private loan market. Changes in these features help in study of bondholder reactions to ownership structure changes.

The impact of state ownership on the cost of debt depends on how lenders value the costs and benefits of state ownership with respect to a firm's credit risk (Borisova et al., 2015). On one hand, having the state as residual claimer may provide an implicit guarantee to debtholders against default on repayment, especially in a crisis. This lowers the cost of debt (Borisova and Megginson, 2011). On the other hand, government ownership is often associated with state-induced distortion and inefficiencies (Aharoni, 1986; La Porta and Lopez-de-Silanes, 1999; Toninelli, 2000) that can affect performance, and thereby increase the firm's cost of debt. Moreover, moral hazard issues associated with state ownership can reward managers to risky behavior (Boubakri, Cosset and Saffar, 2013) or encourage managers to pursue personal political objectives at the expense of debtholders. This increases the cost of debt. The net impact of government ownership on the cost of debt is thus also an empirical question.

The impact of institutional ownership on the cost of debt warrants deliberation.

[1] For domestic institutional investors, we consider insurance firms, financial firms, supplementary pensions, securities firms, social insurance funds, trust firms and mutual funds. This approach is consistent with prior studies (e.g. Jiang and Kim, 2015).

Recent literature suggests that firms that attract a larger number of institutional equity investors have better credit ratings and narrower credit spreads. This is likely due to the fact that institutional investors have stronger incentive and better skills with which to monitor management and develop corporate governance (e.g., Ashbaugh et al., 2006). The other channel for institutional ownership to reduce the cost of debt is through improved information environment of the firm. For example, active trading by institutional (including foreign) investors may expedite information revelation, thereby reducing information asymmetry between firm and lender (Wang and Zhang, 2009). However, the strength of institutional investor governance depends on the size of their equity holding and monitoring capabilities. This correlates with the firm's ownership structure (Barclay and Holderness, 1989; Bhojraj and Sengupta, 2003).

The market environment in which firms operate has a profound impact on their cost of debt. As Qian and Strahan (2007) show, in the presence of robust legal and market institutions, lenders are better positioned to force repayment or take control of a firm in the event of default, and therefore more willing to provide credit at favorable terms (lower spreads, longer maturities) ex ante. In this paper, we ask how the market environment affects the role of state and institutional ownership on the firm's cost of debt. A highly developed market environment can both discipline state-induced inefficiencies and reduce the value of the state's implicit guarantee. However, as theoretical prediction of which effect dominates is difficult, we consider the matter from an empirical standpoint. We expect the market environment to affect lender evaluations of the roles played by institutional investors. A high level of marketization helps disciplining managers, thus reducing lender's reliance on institutional monitoring.

We investigate these questions using a complete dataset that cover all the corporate bonds issued by listed firms since the launch of Chinese exchange bond market in 2007 to the end of 2015. We then match bond data with ownership structure data and other characteristics of bond issuers. To explore the role of marketization levels, we separate issuers into those headquartered regions with high levels of marketization (high-marketized) and low levels of marketization (low-marketized) based on the Chinese provincial level marketization index developed by Fan et al. (2011, 2017). We also separate those operating in highly competitive (high competition) and low competition environments based on the level of state-owned assets in their respective industries.

Our investigation shows that higher levels of state ownership are strongly

associated with lower credit spreads. *Ceteris paribus*, the credit spreads of the bonds issued by SOEs are 23.4% lower than those of non-SOEs. This result is consistent with the productivity-credit frictions in a growth model of political economy. Existing studies show state ownership matters for the cost of debt through bank loans or shadow banking (e.g., Qian et al., 2015; Allen et al., 2019). Our finding suggests lenders consider the benefit of state implicit guarantee to outweigh the cost of state-induced inefficiencies in the bond market. Further evidence shows the *strength* of state ownership matters. Issuers owned by the *central* government or with a larger government-owned stake have even narrower credit spreads

We find foreign and institutional ownership help in lowering the issuer's bond cost. *Ceteris paribus*, cross-listing in both domestic (A-share) and Hong Kong (H-share) markets translates into a 9.2% decrease in the bond cost. A 10% increase in institutional ownership reduces bond spreads by about 1.6%. Consistent with the institutional monitoring hypothesis, the impact of institutional in lowering bond spreads is more pronounced for issuers with lower bond ratings.

The effect of state ownership on cost of bond issuance also relies on the strength of market institutions. On one hand, stronger market institutions improve market efficiency and law/contract enforcement. In the case of bond default, stronger market institutions help enforce the debt contract and liquidate assets, which reduces the values of government implicit guarantees. On the other hand, in a highly marketized and less government dominant region, the expectation of government implicit guarantees can be lower. To empirically test how the market environment affects the role of state ownership on the cost of debt, we assume that lenders consider the value of the market environment in disciplining state-induced inefficiencies to outweigh the cost of reduction in the state's implicit guarantee. If so, we should find the negative effect of state ownership on spreads to be more pronounced in environments with high levels of marketization. Three pieces of evidence support this hypothesis. First, the negative association between state ownership and spread is more pronounced for firms headquartered in highly marketized provinces. Second, the negative association between state ownership and spread is more pronounced for firms whose industries are less dominated by state assets. Third, treating the launch of the Communist Party of China's 2012 anti-corruption initiative (based on the *Eight-Point* Regulation adopted by the Politburo in December 2012) as an exogenous shock, we show the cost of debt

for SOEs fell significantly in the post-regulation period, especially in highly marketized regions. Taken together, our results suggest lenders consider the market environment as a factor in reducing the cost of debt of SOEs more than that of non-SOEs.

To see how market environment affects the role of institutional ownership, we examine the issuers headquartered in high- or low-marketized provinces. We find the effect of institutional ownership in lowering spread is more pronounced for issuers headquartered in low-marketized provinces. The result is consistent with lenders considering the governance role of institutional investors to be important when the market environment for firms is weak.

This paper contributes to the literature on ownership structure and cost of debt. Prior work tends to focus on a single type of ownership structure such as ownership concentration, divergence between control and cash-flow rights, or identity of the controlling shareholder. For example, Aslan and Kumar (2012) analyze theoretically and empirically the endogeneity of corporate control concentration and the cost of debt. Using cross-country data, Lin et al. (2011) document that the cost of debt is significantly higher for companies with a higher wedge of the largest ultimate owners' control rights and cash-flow rights created by potential tunneling and moral hazard issues. Using evidence from privatization, Borisova and Meggionson (2011) document a quadratic relationship between credit spreads and government ownership that they attribute to four mechanisms: government guarantee, better performance, ownership uncertainty surrounding privatization and bond-shareholder conflicts. Furthermore, Boisova et al. (2015), using a sample of bond credit spreads from 43 countries, find that government ownership is generally associated with a higher cost of debt during normal periods, but a lower cost of debt during periods of crisis. We add to this literature the first empirical evidence from Chinese corporate bond market. We show in an environment where heterogeneous ownership structure firms face productivity and credit frictions, strength of government ownership, institutional equity holdings and foreign listing all help reduce firms' cost of debt.

More importantly, we shed light on how the market environment interacts with the role of state and institutional ownership on the cost of debt for firms. We show that highly marketized environments in the home province of the issuer and higher product market competition *complement* the role of state ownership but *substitute* the role of institutional ownership, in reducing the cost of debt. This evidence suggests lenders see

the benefits of the market environment in reducing state-induced inefficiencies as outweighing the cost of a reduced state implicit guarantee. Similarly, the governance role of institutional ownership in reducing credit risk matters more in low-marketized environments.

The rest of the paper is organized as follows. Section 2 introduces the institutional background of Chinese corporate bond market, as well as recent trends in the Chinese stock market. Section 3 describes our sample and variables. Section 4 presents the empirical results. Section 5 concludes.

2. Institutional background

While the emergence of China's private bond market began decades ago, its growth only took off in the late 2000s with the launch of an exchange-based corporate bond market supervised by the Chinese Securities Regulatory Commission (CSRC). World Bank statistics show that China's corporate bond issuance volume as a percentage of GDP was 6.1% in 2014 and 5.5% in 2015, making China first in the world by this measure, beating out both the US and the UK (Figure 1). At the end of 2016, the capitalization of China's domestic bond market climbed to RMB 50.8 trillion ($7.65 trillion), outstripping the value of the domestic equity market, which was RMB 44.3 trillion ($6.67 trillion).[2] Amstad and He (2019) review the development of Chinese bond market and interbank market.

Like its US counterpart, China's bond market has several major bond categories: government bonds, central bank bills, financial institution bonds, commercial paper and non-financial corporate bonds. The non-financial corporate bonds have a section for enterprise bonds traded on the interbank bond market and a section for corporate bonds traded in the exchange market. These two markets have long been subject to their own distinct regulatory systems. The issuance of enterprise bonds, predominantly by state-owned enterprises, is approved by the National Development and Reform Commission (NDRC) and the People's Bank of China, while corporate bonds are approved and regulated by the CSRC. The procedure for issuing corporate bonds in China is similar to that of an IPO. The 2007 pilot rules for issuance of corporate bonds (CSRC Order No. 49) require each corporate bond obtain a relatively high credit rating (AA- or above)

[2] Here we use the 2016 annual average RMB exchange rate of 6.64.

from an approved rating agency such as China Credit Rating. Before 2015, only listed A-share firms were allowed to publicly issue corporate bonds in the exchange market. The corporate bond issuance reform at the beginning of 2015 changed the situation, allowing unlisted firms with high credit ratings to issue bonds in this market.

We focus on corporate bonds issued by listed firms operating in the exchange market for two reasons. First, while the interbank bond market is dominated by SOEs and unlisted firms, both SOEs and non-SOEs participate in this market. Second, corporate bonds issued by listed firms allows us to trace the evolution of ownership structures, including the institutional and foreign ownership of issuers.

The institutional participation in China's stock market increased steadily over the past decade. Moreover, since China's entry to WTO in 2001, the mutual fund industry has blossomed. The Qualified Foreign Institutional Investor (QFII) Act announced in 2002 allows the foreign investors to invest in Chinese securities, with the intention of introducing sophisticated foreign investors to the Chinese market with the hope that their presence would improve market efficiency and corporate governance for the listed companies. The first fund managed by a qualified foreign institutional investor (QFII), regulated by the State Administration of Foreign Exchange (SAFE), was set up in 2002. In the initial stage of development from 2002 to 2006, the participation of QFII in A-shares was limited due to a strictly regulated QFII quota. In August 2006, the CSRC revised the QFII rules, increasing the quota significantly. The aggregate quota granted to all QFIIs was raised from $10 billion in 2003 to $150 billion in 2015.

Chinese listed companies also gain foreign owners through cross-listing in a foreign stock market. Since the 1990s, Hong Kong has become an important fund-raising platform for Chinese firms (Sun, Tong and Wu, 2013). As of 2015, 194 Chinese enterprises had listed their H-shares on the Hong Kong Stock Exchange. Unlike domestic firms, cross-listed firms must comply with the regulatory requirements of both their home and host markets. This can affect the firm's information environment and corporate governance, especially if the foreign market has stronger legal and financial institutions (Reese and Weisback, 2002; Doidge et al., 2004).

3. Data and variables

3.1 Our sample

We begin our sample construction process with the combined datasets on Chinese

corporate bonds and bond issuers from two of China's leading financial market research databases, Wind and iFind. Wind contains detailed information on bond issuance such as yield, maturity, volume, rating, collateral and other factors. We then match bond issuance data with ownership characteristics and financial information of bond issuers, extracted from iFind. The bond issuance data in year *t* are matched with firm's financial data in year *t-1*. We only keep corporate bonds issued by listed companies as such bonds include detailed information on ownership structure. Bonds issued by financial and utility firms are excluded from our sample.

While most issues in our sample have only issued one bond, some have issued multiple bonds. Following the literature (e.g. Klein and Zur, 2011), we do not aggregate the multiple bonds together at the firm level, but treat each bond as an observation. As some firms issuing multiple bonds have different levels of institutional holding, we can use this setting to examine the effect of institutional holding on the cost of bond financing of the same issuer. An aggregated firm-level approach, in contrast, would not permit us to examine the effect of the institutional holding on bond properties of the same issuers before and after changes of institutional ownership. In this way, we end up with a bond-level samples with detailed ownership structure information that covers 630 corporate bonds issued by 136 listed firms from 2007 to 2015.

3.2 Bond characteristics

Our main dependent variable is *At-issue bond yield spread*, defined as the difference between the at-issue bond yield and a 5-year treasury bond yield matched to the month of corporate bond issuance.[3] (See Appendix A for a detailed description of all the variables.) The summary statistics for our bond sample presented in Table 1 indicates substantial heterogeneity. *At-issue bond yield* ranges from 3.30% to 9.20%, with a sample mean of 6.05%. Subtracting the monthly averaged 5-year treasury bond yield, the *bond spread* ranges from 0.31% to 5.83% with a sample mean of 2.75% and a standard deviation of 1.13%.

We also consider other bond characteristics, including bond rating, bond maturity, issuance volume, call options and collateral. *Maturity* ranges from 1.0 year to 15.0 years, with a sample mean of 5.42 years and a standard deviation of 1.86 years. *Issuance vol.*

[3] We match the corporate bond yield at issuance with a five-year treasury bond yield as the average maturity of corporate bond in our sample is 5.4 years.

ranges from 0.05bn RMB to 16.0bn RMB, with a sample mean of 1.30bn RMB. *Callable*, which equals one if the bond is callable and zero otherwise, has a sample mean of 0.73, indicating that majority corporate bonds have call options. *Collateral* equals one if the bond has collaterals at issuance or zero otherwise, with a sample mean of 0.40. *Bond rating score* is the numeric score of the bond rating at issuance, e.g. 6 for AAA+, 5 for AAA and so on. *Issuer rating score* is the numeric score of the issuer rating at issuance, e.g., 6 for AAA+, 5 for AAA and so on. *Bond rating score* ranges from 3.0 to 6.0 and Issuer rating score ranges from 1.0 to 6.0.

3.3 Bond issuer characteristics

At the bond-issuer level, we examine the ownership structure and consider an assortment of firm characteristics. *Institutional_holding_perc* is the percentage ratio of the institutional equity ownership ranging from 0 to 98%, with a sample mean of 49% and a standard deviation of 24%. *HA* is a dummy that equals one if the bond issuer is listed both on the H-share (Hong Kong) and A-share (mainland China) markets. The sample mean of HA is 0.10, suggesting that 10% of corporate bonds are issued by the firms listed both in Hong Kong and mainland China. *QFII_dummy* equals one if the firm has foreign ownership. It has a sample mean of 0.13, indicating that only a small fraction of corporate bonds is issued by firms with foreign ownership. As the RMB is not completely convertible, stocks traded on the A-share market can only be bought or sold by foreign investors approved by the CSRS (i.e. qualified foreign institutional investors (QFIIs) subject to a quota.

We use different variables to measure government ownership. *SOE* equals one if the government is the controlling shareholder of the firm and zero otherwise. *CentralSOE* equals one if the central government is the controlling shareholder and zero otherwise. *LocalSOE* equals one if the local government is the controlling shareholder and zero otherwise. *MajorSOE* equals one if the percentage of state-ownership is above the median level for SOEs. *MinorSOE* equals one if the percentage of state-ownership is below the median level for SOEs.[4] 48% of corporate bonds in our sample are issued by SOEs (15% by central SOEs and 33% by local SOEs).

[4] To estimate firms' state ownership, we use and aggregate the state ownership from the largest ten shareholders for each firm in our sample. The largest ten shareholders and their holding information are disclosed in firms' financial reports. To identify whether the shareholders are state or non-state owned firms, we use the existing list of SOEs among the public firms, and then manually check the rest of the shareholders when such information is not available. Among all the SOEs in our sample, the median of state ownership is 63.6%.

We also control for other firm-level traits. *Firmage*, the logarithm of the number of years since establishment, ranges from 0.69 to 3.47. *Profitability*, the ratio of net profit to total assets, ranges from -0.10 to 0.27. To measure firm risk, we apply a modified Altman's (1968) Zscore, sum of weighted working capital, retained earnings, EBIT and total sales. The variable *Zscore* ranges from -0.02 to 6.28, with a sample mean of 1.22 and a standard deviation of 0.71.

3.4 Regional and industrial traits

To measure the strength of market supporting institutions, we use the provincial-level marketization index and retrieve the information from the survey constructed by the National Economic Research Institute (NERI). Provincial-level municipalities, including Beijing, Shanghai, Tianjin and Chongqing, are counted as provinces in this dataset (see Fan et al., 2011 and 2017). The original marketization index, which ranges from zero to ten in our base year 2001, is constructed from official statistics and a selection of household and enterprise surveys. Fan et al. (2017) update the index in the base year 2008, so we merge the indices after adjusting the base year to get an index running from 1997 to 2015. This index is widely used as a meaningful measure of the progress of pro-market reforms in China. It covers multiple dimensions of marketization, the government versus market force, the development of non-state-owned economy, the development of element market, as well as the growth of market intermediation and legal environment. Each dimension includes further sub-indices based on surveys. For example, in the dimension of government versus market force, the sub-indices include the role of the market in allocating resources, the role of government in intervening corporate governance in certain situations, the size of the governments at different levels. Therefore, this index, overall, captures the role of government versus market as well as the strength of market institutions that is related to enforcement and legal environment. A higher value indicates greater progress towards a market economy (e.g. Lin et al, 2016). We also consider the economic development of the bond-issuer provinces using the log of GDP.

In order to measure the state dominance in a particular industry, we use the ratio of total assets owned by SOEs over the total assets in the industry from 2007 to 2015. Based on this, we define the variable *High_statedom* as one if the value of state-dominance exceeds the median and zero otherwise. In this way, we are able to identify

industries with high or low levels of government involvement.

4. Methodology, results and robustness tests

4.1 Methodology and baseline results

We examine the effect of ownership structure on the at-issue bond yield spread with the following baseline model, controlling for the firm-, bond- and region-specific measures defined above.

$$Spread_{i,t} = \beta_0 + \beta_1 \cdot (Ownership\ variables)_{i,t} + \beta_2 \cdot (Bond\ characteristics)_{i,t} + \beta_3 \cdot (Firm\ characteristics)_{i,t} + \beta_4 \cdot (Region\ characteristics)_{i,t} + \beta_5 \cdot (Year\ Dumm)_{i,t} + \beta_6 \cdot (Ind\ dumm)_{i,t} + \varepsilon \quad (1)$$

where bond characteristics include collateral, callable and bond rating score, as well as ownership traits such as state ownership, institutional ownership, foreign ownership, and whether the bond issuer is listed on multiple markets. Other firm characteristics include firm age, Zscore and profitability. Regional traits such as log of GDP are also considered. *Year dumm* and *ind dumm* represent for year and industry fixed effects. We use Ordinary Least Square (OLS) method to estimate the model.

Table 2 presents our baseline results. We introduce the ownership variables on state ownership, institutional holding, foreign ownership and whether the bond issuer is listed on multiple markets individually in columns (1) to (4), and together in column (5). The results show that *SOE*, *institutional_holding_perc* and *HA* all enter significantly and negatively. *QFII_dummy* enters negatively, but less significantly, in all the regressions, suggesting that government and institutional ownership significantly reduce the cost of capital through issuing corporate bonds, and if the bond issuer is listed on multiple markets rather than just one market (A-share or H-share), the cost of bond financing is lower. The estimated coefficients suggest that this relationship is economically meaningful. Taking column (5) as an example, *ceteris paribus*, if the bonds are issued by SOEs, then the yield spreads would be 23.4% (0.645/2.75) lower.[5] If the bonds are issued by a firm also listed on the H-share market, the spreads would be 9.2% (0.254/2.75) lower than that of a firm only listed on the A-share market. Moreover, a 10% increase in the institutional ownership reduces bond spreads by about

[5] Here, 23.4% is calculated by the coefficient estimate of SOEs in Table 2 (0.645) divided by the sample mean of bond yield spreads (2.75%) reported in the summary statistics in Table 1. We calculate the precent change in a consistent way throughout the paper.

1.6% (0.0448/2.75). As expected, the spread is negatively associated with *bond rating score*, *firm age* and *profitability*. *Collateral* enters with a significant and positive sign because only riskier firms are required to provide collateral. Less riskier firms (e.g. firms with an implicit guarantee from the government) do not.

Next, we examine how the effect of ownership structure on bond spreads varies among bonds with different ratings, size and maturity. Recent literature documents a link between institutional equity ownership and cost of debt through a corporate governance mechanism that could mitigate agency conflicts and reduce information asymmetry. Monitoring through institutional investors can mitigate the tendency of management to focus on their own interests rather than enhancing shareholder value. Moreover, firms with low credit quality face stronger agency conflicts between managers and shareholders than companies with impeccable credit quality (e.g. Jensen and Meckling, 1976; Myers, 1977). Hence, we expect that the effect of institutional holding would be stronger in firms with stronger agency conflicts and accordingly lower credit ratings. Similarly, we expect that the effect would be stronger for bonds with smaller issuance volumes and shorter maturities as their issuers are more likely to be of lower credit quality.

Table 3 Panel A presents the results. In column (1) we introduce the dummy variable *Low rating*, which is defined based on the median of bond rating score in our sample, as well as its interaction with *SOE*, *institution_holding_perc*, *HA*, and *QFII_dummy* respectively. The coefficients for *SOE* and *SOE*Low rating* show that the effect of state ownership is negative and significant for both high- and low-rated issuers, while the economic impact of state ownership for high-rated and low-rated issuers is quite similar. The coefficients for *Institution_holding_perc* and *Institution_holding_perc** *Low rating* show that the effect of institutional holding is negative and significant for low-rated issuers, but not significant for high-rated issuers. This finding is consistent with our expectation. The coefficients of *HA* and *HA*Low rating* are both negative and significant, suggesting that listing on both Hong Kong and A-share markets can reduce the cost of bond financing and such effect is more pronounced for low-rated issuers. This result also confirms that the cross listing has a larger economic impact for the firms with more severe agency conflicts.

In column (2), we introduce the dummy variable, *Small issue*, defined by the median size of the bond issuance in our sample, as well as its interactions with our main

ownership variables. Similarly, in column (3) we introduce the dummy variable, *Short maturity*, defined by the median of the bond maturity in our sample, as well as its interactions with our main ownership variables. Adding the interactions does not change our main results, that the coefficients of *SOE*, *institution_holding_perc* and *HA* are significantly negative. However, the coefficients of the interactions, *SOE*Small issue*, *Institution_holding_perc*Small issue* are insignificant, meaning that both the state and institutional ownership reduce the cost of bond financing for small issuers, but the economic impact does not vary significantly between small and large issuers. The coefficient of *HA*Small issue* is significant and negative, meaning that the effect of cross listing on bond spreads is more pronounced for small issuers than for large issuers. Column (3) suggests similar results, that state and institutional ownership reduce significantly the bond spreads on average, and the effect of state ownership and cross listing is more pronounced for issues with shorter maturity. Overall, the results are consistent with our expectation that the effect of institutional ownership or cross-listing is stronger for issuers with lower credit quality, where the need for institutional monitoring is stronger.

To further explore the role of institutional ownership on the cost of bond financing, we exploit a sub-sample that contains firms with multiple bonds and varying institutional ownership across time.[6] Focusing on these issuers allows us to isolate fully the effect of cross-firm differences that may bias our results. It also reduces our sample to 238 observations, however. We use a dummy *Institution_holding_increase* equal to 1 if the issuer has higher institutional holding for the current issue that its previous issue of corporate bonds, and 0 otherwise. The change in bond-yield spreads is calculated as the difference of bond-yield spreads between the current issue and previous issue. The sample mean value of *Institution_holding_increase* is 0.126 with a standard deviation of 0.333. There are 30 bonds in our sample issued by the same firm with increased institutional ownership. The mean value of the bond spread change is -0.521%. There are 208 bonds issued by the same firm that have seen no change or a decline institutional ownership. The mean value of bond spread change is -0.105% (see Figure 2). Table 3 Panel B presents the results of regressions that further confirm the finding from the descriptive statistics. In the regressions, we use the change in ownership variables (*Institutional_holding_increaese* and *QFII_dummy_change*) as well as the change in

[6] Dropping issuers with single bond reduces our full sample to 400 bonds issued by 162 firms.

firm characteristics instead of the level variables. Controlling for these variables further reduce our sample from 238 to 175 observations. The coefficient estimates of the *Institutional_holding_increase* in both Column (1) and (2) show that an increase in institutional ownership is negatively associated with the change in at-issue bond spreads.

4.2 State ownership and cost of bond financing (market environment impact)

4.2.1 Impact of market environment

Our baseline result, that SOEs have lower cost of bond financing than non-SOEs, is in line with large literature that documents the productivity-credit friction faced by SOEs and non-SOEs in a growth model of political economy (Allen, Qian, and Qian 2005; Song, Storesletten, and Zilibotti, 2011). To tease out differences in how the market environment affects the cost of debt for SOEs and non-SOEs, we examine two dimensions: whether the bond issuer is headquartered in high-marketized province, and whether the bond issuer operates in an industry dominated by state assets.

Table 4 shows the results for the impact of regional market development. We introduce *MarketIndx* in column (1), the interaction of *SOE* and *MarketIndx* in column (2), the interaction of *CentralSOE* and *MarketIndx*, *LocalSOE* and *MarketIndx* in column (4), and the interaction of *MajorSOE* and *MarketIndx* as well as *MinorSOE* and *MarketIndx* in column (6). The results in columns (1) and (2) suggest that the effect of market development on the cost of bond financing is not significant on average. However, when we add the interaction terms into the regression, the coefficient of dummy *SOE* is no longer significant (although still negative) but the interaction term enters negatively and significantly, indicating that the effect of state ownership in reducing the cost of bond financing is more significant in provinces with more developed market-supporting institutions.

Columns (3) to (6) present results for central and local SOEs, as well as major and minor SOEs. Central SOEs, by definition, have a higher level of political connection and face softer external budget constraints than local SOEs. Therefore, the effect of central government ownership is stronger than that of local government ownership in reducing bond spread coefficients (-1.089 versus -1.016). Similarly, major SOEs have a higher ratio of state ownership, and thus lower cost of debt coefficients than minor SOEs (-1.298 versus -0.792). We also test the difference between the coefficients of

CentralSOE versus *LocalSOE* in column (3) and of *MajorSOE* versus *MinorSOE* in column (5) and report the *Chi-sq* tests. The results show that the economic impact of central and local government ownership is not significantly different while the economic impact of major SOEs is larger than that of minor SOEs. The impact of stronger market institutions on heterogeneous SOEs is shown in columns (4) and (6). We find the effect of the local market environment in reducing the cost of debt is slightly larger for central SOEs than local SOEs, and larger for major SOEs than minor SOEs. However, the *Chi-sq* tests show that the difference between the economic impact of the interaction terms in column (4) and (6) is not statistically significant, suggesting that both central and local (or, both major and minor) government ownership have stronger negative effect in higher marketized regions, although the economic impacts are quite similar between them. Taken together, our results suggest that lenders see environments with higher levels of marketization as favoring the SOEs over non-SOEs, especially those with high levels of state control.

Next, we compare the issuers in with higher and lower levels of state dominance. The results are given in Table 5. First, we see that state dominance by industry increases bond spreads, i.e. lower competition raises the cost of bond financing. For example, in column (1) the coefficient of *High_statedom* suggests that the issuers in higher state-dominant industry have on average 14.9% (0.410/2.75) higher bond-yield spreads than their counterparts in industries with low state dominance. Second, the coefficient of the interaction term (*High_statedom*SOE*) suggests that, compared to the SOEs in industries with lower state dominance, SOEs in industries with higher state dominance have on average a statistically significant 11.5% (0.316/2.75) higher bond-yield spread, while on average SOEs have statistically significant lower bond spreads.

Columns (3) to (6) replicate the regressions with interaction of *CentralSOE*, *LocalSOE, MajorSOE,* or *MinorSOE* and *High_statedom*. We find state dominance in an industry has little impact on central SOEs, but significantly increases the cost of debt for local SOEs. We explain this result as a local SOE, unlike a central SOE, is likely to be left to fend for itself in the marketplace, making it more sensitive to market competition. On the other hand, state dominance has larger impact for major SOEs than minor SOEs as lenders see market competition as disciplining firms with stronger state-induced inefficiencies. Similarly, the *Chi-sq* tests show that the economic impact of the interactions (*CentralSOE*High_statedom* versus *LocalSOE*High_statedom*) and that

of *CentralSOE* versus *LocalSOE* does not seem to be different significantly. Additionally, the economic impact of *MajorSOE* is found to be more pronounced than that of *MinorSOE*.

Taken together, the results of Tabled 4 and 5 are consistent with the interpretation that a higher level of marketization in the issuer's home province and industry helps to reduce the cost of debt for SOEs more than private firms, particularly for SOEs subject to higher government control or market exposure. This evidence suggests that lenders consider the benefits of the market environment in disciplining state-induced distortion or inefficiencies as outweighing the costs of any possible reduction in the state's implicit guarantee. In the following section, we propose a test to verify this proposition.

4.2.2 The 2012 anti-corruption reform

On December 4, 2012, less than three weeks after President Xi Jinping assumed power, the Politburo announced a set of major policy reforms summarized in a document known as the *Eight-Point* Regulation. It explicitly directed cadres to forego conspicuous perks and obtrusive behavior.[7] The release of the *Eight-Point* Regulation is widely seen as marking the launch of China's largest anti-corruption campaign in recent history. To date, over 1.3 million people have been punished for corruption, including six national leaders and hundreds of high-ranking party cadres in the political, military and business sectors (§ Griffin, Liu and Shu, 2021).

It is important to note that the *Eight-Point* Regulation target executives of SOEs, but not executives of non-SOEs.[8] To the extent that the *Eight-Point* Regulation reduces state-induced distortions, we expect lenders to grant lower credit spreads to SOEs in the post-regulation period relative to non-SOEs. Moreover, there is little reason to believe that the *Eight-Point* Regulation affects the level of implicit state guarantee on SOEs. The effect of the reform in reducing cost of finance may rely on the market environment, for the following two possible reasons. The enforcement of the reform

[7] The *Eight-Point* Regulation requires leaders, among other things, to improve their work methods and maintain close contact with the grassroots, improve the efficiency of meetings and major events, reduce formalities, unnecessary greetings, and official letter issuance, practice thrift and strictly follow relevant regulations on meals, accommodation and cars. A *Forbes* article describes how the Eight-Point Regulation hurt a luxury Chinese liquor company due to negative shocks to demand: https://www.forbes.com/sites/hengshao/2013/09/03/tumbling-stock-of-luxury-chinese-liquor-company-reflects-strength-of-corruption-clamp-down/#4f51c28256e0.

[8] This statement is consistent Ke, Liu and Tang (2020) in which the authors construct a sample of 62 investigated firms during the campaign and find that 92% of investigated firms are SOE.

could be stronger in an environment stronger market institutions, and hence, we should expect the effect of the reform to be stronger in regions with higher marketization level. Meanwhile, the existing distortion could also affect the effect of the reform. In regions with lower marketization level, firms could have had greater distortion before the reform, and therefore, after the reform, the reduction in distortion could be larger in these regions which leads to stronger effect in cost reduction in bond issuance.

Table 6 reports the empirical results in testing these hypothese. We introduce a new variable *after8point*, which equals one if the bond was issued in the post *Eight-Point* Regulation period. In column (2), the interaction term enters negatively and significantly. This suggests that the effect of state ownership in reducing bond spreads was stronger after the anti-corruption reform, which is consistent with our expectation. In column (3), we further introduce the interaction term, *SOE*After8point*High marketized*, to examine whether the effect varies in high-marketized and low-marketized regions. After incorporating the triple interaction, the double interaction, *SOE* After8point* becomes statistically insignificant, although still negative. However, the coefficient of the triple interaction is negative and significant at the 10% level. These suggest that the effect of state ownership on bond spreads after anti-corruption regulation is more pronounced for issuers in high-marketized provinces. This evidence is consistent with the hypothesis that the effect of the regulation relies more on the enforcement. High market institutions help enforce the rules as well as discipline state-induced efficiency, after the announcement of the *Eight-Point* Regulation.

4.3 Institutional ownership and cost of bond financing (market environment impact)

We then further examine how the market environment affects the relationship between institutional holding/cross listing and bond spreads. Table 7 reports the results. In column (1) we incorporate the interaction between institutional holding and high-marketized region dummy. The coefficient of *Institution_holding_perc* is still negative and significant, while the interaction *Institution_holding_perc*High marketized* is positive and significant at the 10% level. The results show that in low-marketized provinces, the effect of institutional ownership is economically larger in lowering spread, while such effect is mitigated in high-marketized provinces. In column (2) we incorporate the interaction between cross listing and high-marketized region dummy,

and the positive (though insignificant) coefficient suggests that the mitigated effect of cross listing is not significant in highly marketized regions. In column (3) we include both interaction terms and the results still hold. Overall, the results suggest that the effect of institutional holding is more pronounced when the market force is stronger. Apparently, lenders place high value on the corporate governance role of institutional investors in alleviating information asymmetries and agency conflicts when the issuer's home institutional environment lacks strong legal institutions and market discipline.

5. Conclusions

How lenders evaluate heterogeneous ownership firms is an important, yet poorly understood, question. Using novel evidence from China's corporate bond market, we consider empirically whether bondholders respond to the ownership of government, institutional investors and foreign investors, and, if so, how responses vary with issuers under heterogeneous market development conditions.

We show in China's political economy, SOEs enjoy significantly lower bond costs than non-SOEs, especially firms owned by the central government or firms with a significant state equity stake. This finding suggests that lenders consider the benefit of an implicit state guarantee as outweighing the costs of any state-induced inefficiencies. Consistent with the corporate governance role played by institutional investors, we find institutional and foreign ownership helps reduce the cost of debt for firms, especially those with lower credit quality.

We also present evidence on how the market environment affects the role of state and institutional ownership on firms' cost of debt. The effect of state ownership is more pronounced if the issuer is headquartered in a province with a higher level of marketization, operates in industries less dominant by state assets, or in the period following the Communist Party's anti-corruption campaign launched in 2012. Institutional ownership, in contrast, matters more in low-marketized environment. This evidence suggests lenders consider more highly developed market environments as better at disciplining inefficiencies of SOEs than non-SOEs, and that the governance role of institutional ownership matters more for firms in low-marketized environments. Against the background of China's ongoing privatization and capital market reforms, our findings highlight the importance of both ownership structure and market environment, as well as their interactions, on the cost of debt for firms.

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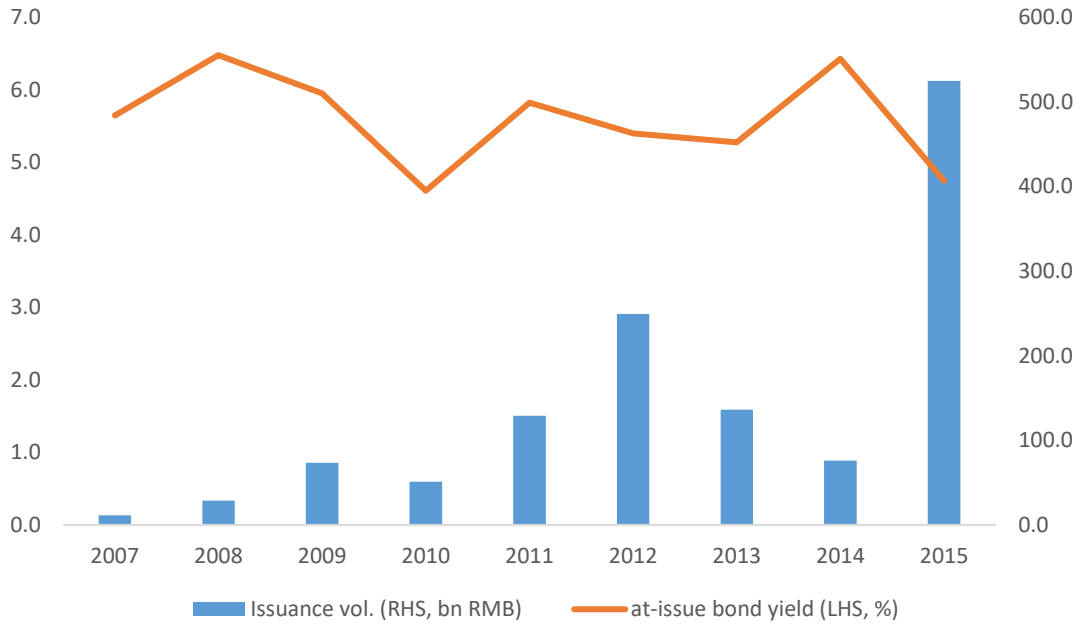

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Figure 1. Development of the Chinese corporate bond market.

This figure plots the growth of Chinese corporate bond market (regulated by the stock exchanges and CSRC) since it was launched in 2007.

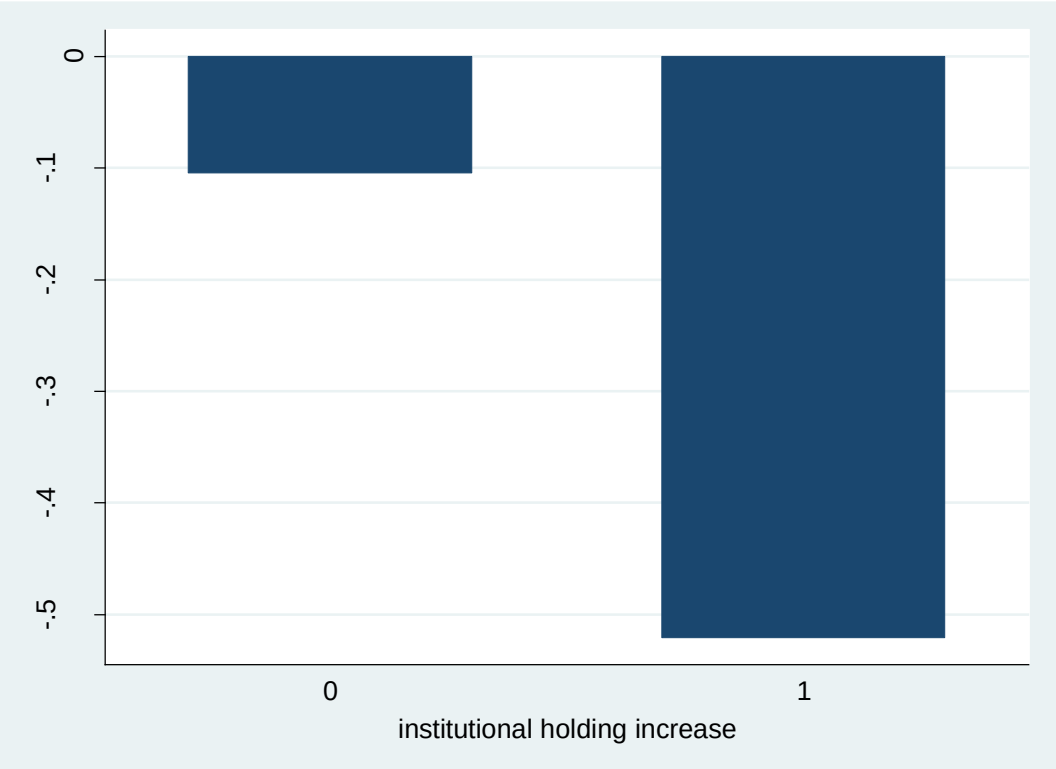

Figure 2. Average change of bond spread by the same issuers.

This figure plots the average change of bond spread by the same bond issuer by group of issuers with/without increase of institutional holding (percentage). The x-axis equals 1 if the issuers have an increase in institutional ownership and 0 otherwise. In our sample, there are 30 bonds issued by the same issuers that have increase in institutional ownership, with the mean value of bond spread change at -0.521% and 208 bonds issued by the same issuers that do not have changes in institutional ownership with the mean value of bond spread change at -0.105%.

Appendix A. Variables and definitions

Variable	Definition
Bond characteristics	
Issuance vol.	issuance volume of bonds
At-issue bond yield	at-issue yield of bond
Bond spread	difference between at-issue yield of the bond and 5-year treasury bond yield at date of issuance
Maturity (years)	maturity of bond in years
Callable	1 if issue is callable on a pre-determined schedule, 0 otherwise
Collateral	1 if issue is based on collateral, 0 otherwise
Bond rating score	numeric score of the bond rating, e.g. 6 for AAA+, 5 for AAA, etc.
Issuer characteristics	
Insitution_holding_perc	percentage of institutional holding
HA	1 if listed on both H share and A share, 0 otherwise
QFII_dummy	1 if Qualified Foreign Institutional Investors (QFII) have invested in the equity
SOE	1 if firm is a state-owned enterprise (SOE), 0 otherwise
CentralSOE	1 if firm is central SOE, 0 otherwise
LocalSOE	1 if firm is local SOE, 0 otherwise
MajorSOE	1 if state ownership is above median for SOEs, 0 otherwise
MinorSOE	1 if state ownership is below median for SOEs, 0 otherwise
Firm age	natural logarithm of the difference between the issuance/trading year and the firm's establishment year
Profitability	ratio of net profit to total assets.
Zscore	sum of 1.2*working capital, 1.4*retained earnings, 3.3*EBIT, and 0.999*sales, divided by total assets.
Regional and industry characteristics	
High_statedom	1 if the value of state-dominance is above its median, 0 otherwise.
MarketIndx	provincial level index measuring strength of market forces (institutions), from Fan et al. (2011, 2017).
High_marketized	1 if the value of MarketIndx is above its median, 0 otherwise.
Log_GDP	natural logarithm of provincial GDP

Table 1. Summary statistics

This table presents the summary statistics of the characteristics of bonds and bond issuers in our sample. This cross-section bond sample includes a total of 630 bonds, issued from 2007 to 2015.

Variable	Obs.	Mean	Std. Dev.	Min.	Max.
Bond characteristics					
at-issue bond yield (%)	630	6.05	1.17	3.30	9.20
Bond spread (%)	630	2.75	1.13	0.31	5.83
Issuance vol (bn RMB)	630	1.30	1.62	0.05	16.00
Maturity(year)	630	5.42	1.86	1.00	15.00
Collateral	630	0.40	0.49	0.00	1.00
Callable	630	0.73	0.45	0.00	1.00
Bond rating score	601	4.66	0.85	3.00	6.00
Firm characteristics					
Institution_holding_perc	620	0.49	0.24	0.00	0.98
HA	630	0.10	0.30	0.00	1.00
QFII_dummy	630	0.13	0.34	0.00	1.00
Firm age	630	2.74	0.38	0.69	3.47
Profitability	628	0.08	0.04	-0.10	0.27
Zscore	624	1.22	0.71	-0.02	6.28
SOE	630	0.48	0.50	0.00	1.00
CentralSOE	630	0.15	0.36	0.00	1.00
LocalSOE	630	0.33	0.47	0.00	1.00
MajorSOE	630	0.24	0.43	0.00	1.00
MinorSOE	630	0.24	0.43	0.00	1.00
MarketIndx	630	7.98	1.89	0.62	11.8

Table 2. Ownership structure and cost of bond financing: baseline tests

This table reports the results of the regressions examining the determinants of the cost of bond financing (measured by the difference between at-issue bond yield spread and the 5-year treasury bond yield) using the full bond-level sample. The dependent variable is the at-issue bond yield spread. We control for both bond characteristics and bond-issuer characteristics in the regressions. Robust standard errors are reported in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Dep. Var.	**At-issue bond spread**				
	(1)	(2)	(3)	(4)	(5)
Collateral	0.363***	0.300***	0.279***	0.277***	0.354***
	(0.0748)	(0.0794)	(0.0801)	(0.0802)	(0.0740)
Callable	-0.0844	-0.103	-0.118	-0.0888	-0.149*
	(0.0884)	(0.0915)	(0.0934)	(0.0931)	(0.0897)
Bond rating score	-0.671***	-0.802***	-0.801***	-0.821***	-0.625***
	(0.0543)	(0.0527)	(0.0548)	(0.0531)	(0.0561)
SOE	-0.691***				-0.645***
	(0.0828)				(0.0859)
Institution_holding_perc		-0.587***			-0.448***
		(0.172)			(0.164)
HA			-0.325***		-0.254***
			(0.0912)		(0.0981)
QFII_dummy				-0.176*	-0.0499
				(0.0946)	(0.0962)
Firm age	-0.198**	-0.177*	-0.221**	-0.213**	-0.199**
	(0.0888)	(0.0934)	(0.0969)	(0.0949)	(0.0904)
Zscore	-0.0637	-0.0181	-0.0379	-0.0292	-0.0550
	(0.0418)	(0.0436)	(0.0446)	(0.0449)	(0.0424)
Profitability	-3.576***	-3.348***	-3.700***	-3.589***	-3.342***
	(0.733)	(0.719)	(0.724)	(0.711)	(0.747)
Log_GDP	-0.0627	-0.00723	0.0175	0.00532	-0.0487
	(0.0547)	(0.0554)	(0.0543)	(0.0542)	(0.0562)
_cons	7.745***	7.635***	7.427***	7.518***	7.665***
	(0.702)	(0.731)	(0.722)	(0.719)	(0.727)
Year FE	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES
N	593	586	593	593	586
adj. R-sq	0.522	0.474	0.463	0.460	0.532

Table 3. Ownership structure and cost of bond financing

Panel A: Effects of rating, issue size and maturity

This table reports the results of the regressions examining the effect of ownership structure on the cost of bond financing (measured by the difference between at-issue bond yield spread and the 5-year treasury bond yield) for different bonds (high vs. low rating, large vs. small issue, and long vs. short maturity). The dependent variable is the at-issue bond yield spreads. We control for both bond characteristics and bond-issuer characteristics in the regressions. Robust standard errors are reported in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Dep. Var.	At-issue bond spread		
	(1)	(2)	(3)
SOE	-0.862***	-1.125***	-0.820***
	(0.159)	(0.136)	(0.0883)
Institution_holding_perc	-0.0468	-0.451*	-0.737***
	(0.232)	(0.240)	(0.181)
HA	-0.203*	-0.348***	-0.438***
	(0.104)	(0.127)	(0.105)
QFII_dummy	-0.0651	-0.0708	-0.107
	(0.155)	(0.151)	(0.119)
Low rating	1.070***		
	(0.191)		
SOE* Low rating	-0.00961		
	(0.184)		
Institution_holding_perc* Low rating	-0.490*		
	(0.282)		
HA* Low rating	-0.901***		
	(0.345)		
QFII_dummy*Low rating	0.0582		
	(0.214)		
Small issue		0.401**	
		(0.199)	
SOE* Small issue		0.220	
		(0.166)	
Institution_holding_perc*Small issue		-0.283	
		(0.332)	
HA* Small issue		-0.786***	
		(0.208)	
QFII_dummy*Small issue		-0.0839	
		(0.245)	
Short maturity			1.073***
			(0.297)
SOE* Short maturity			-0.688**
			(0.272)
Institution_holding_perc* Short maturity			-0.0799
			(0.497)
HA* Short maturity			-1.694***
			(0.378)
QFII_dummy* Short maturity			-0.174
			(0.414)
Other controls	YES	YES	YES
Cons.	YES	YES	YES
Year FE	YES	YES	YES
Industry FE	YES	YES	YES
N	616	616	616
Adj. R-sq	0.475	0.421	0.461

Panel B. Effect of increased institutional holdings

This table reports the results of the regressions examining the impact of institutional holding increase of the same bond issuers on the cost of bond financing. The dependent variable is the at-issue bond yield spread. Given the relatively small sample of bonds with an increase of institutional ownership for the bond issuers, we control for *QFII_change*, defined as the change in QFII ownership, changes in other issuer characteristics of the same issuers, as well as other bond characteristics in the regressions. Notice that the variables *SOE* and *HA* are time-invariant in the sample of issuers with a change in institutional holding. Robust standard errors are reported in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Dep Var	**Change in at-issue bond spread**	
	(1)	(2)
Collateral	-0.173	-0.170
	(0.130)	(0.132)
Callable	-0.279	-0.280
	(0.179)	(0.179)
Institution_holding_increase	-0.454***	-0.455***
	(0.172)	(0.172)
QFII_dummy_change		-0.0663
		(0.103)
Profitability_change	-1.837	-1.788
	(4.439)	(4.431)
Zscore_change	0.460	0.463
	(0.492)	(0.486)
_cons	0.543**	0.537**
	(0.264)	(0.269)
Year FE	YES	YES
Industry FE	YES	YES
N	175	175
adj. R-sq	0.016	0.010

Table 4. State-ownership and cost of bond financing: impact of regional market development

This table reports the results of the regressions examining the impact of regional market institutions on the association between state-ownership and the cost of bond financing. The dependent variable is the at-issue bond yield spread. We control for both bond characteristics and bond-issuer characteristics in the regressions. We report the *Chi-sq* test results for the coefficients of CentralSOE vs. LocalSOE in column (3); the coefficients of CentralSOE*MarketIndx vs. LocalSOE* MarketIndx in column (4); the coefficients of MajorSOE vs. MinorSOE in column (5); and the coefficients of MajorSOE* MarketIndx vs. MinorSOE* MarketIndx in column (6). Robust standard errors are reported in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Dep. Var.	At-issue bond spread					
	(1)	(2)	(3)	(4)	(5)	(6)
SOE	-1.034***	-0.197				
	(0.0898)	(0.347)				
MarketIndx	-0.00748	0.0550	-0.00682	0.0550	-0.00585	0.0647
	(0.0336)	(0.0449)	(0.0339)	(0.0449)	(0.0324)	(0.0441)
SOE*MarketIndx		-0.114**				
		(0.0465)				
CentralSOE			-1.089***	-0.0666		
			(0.128)	(0.587)		
LocalSOE			-1.016***	-0.243		
			(0.0928)	(0.357)		
CentralSOE*MarketIndx				-0.137*		
				(0.0800)		
LocalSOE*MarketIndx				-0.107**		
				(0.0479)		
MajorSOE					-1.298***	-0.294
					(0.0995)	(0.401)
MinorSOE					-0.792***	0.170
					(0.101)	(0.385)
MajorSOE*MarketIndx						-0.135***
						(0.0519)
MinorSOE*MarketIndx						-0.132**
						(0.0523)
Institution_holding_perc	-0.639***	-0.645***	-0.630***	-0.635***	-0.604***	-0.610***
	(0.176)	(0.175)	(0.177)	(0.177)	(0.174)	(0.173)
HA	-0.578***	-0.539***	-0.563***	-0.521***	-0.579***	-0.536***
	(0.114)	(0.119)	(0.118)	(0.126)	(0.115)	(0.119)
QFII_dummy	-0.114	-0.123	-0.109	-0.118	-0.187	-0.194
	(0.121)	(0.120)	(0.122)	(0.122)	(0.121)	(0.120)
Chi-sq			0.40	0.16	28.27***	0.00
(P value)			(0.5256)	(0.6894)	(0.0000)	(0.9519)
Other controls	YES	YES	YES	YES	YES	YES
Cons.	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
N	616	616	616	616	616	616
adj. R-sq	0.403	0.409	0.402	0.408	0.415	0.424

Table 5. Ownership structure and at-issue bond yield spread: impact of government dominance by industry

This table reports the results of the regressions examining the impact of government dominance in the affiliated industry of bond issuers on the association between state-ownership and the cost of bond financing. The dependent variable is the at-issue bond yield spread. We control for both bond characteristics and bond-issuer characteristics in the regressions. We report the Chi-sq test results for the coefficients of CentralSOE vs. LocalSOE in column (3); the coefficients of CentralSOE*High_statedom vs. LocalSOE*High_statedom in column (4); the coefficients of MajorSOE vs. MinorSOE in column (5); and the coefficients of MajorSOE*High_statedom vs. MinorSOE*High_statedom in column (6). Robust standard errors are reported in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Dep. Var.	At-issue bond spread					
	(1)	(2)	(3)	(4)	(5)	(6)
SOE	-1.051***	-1.196***				
	(0.0886)	(0.121)				
High_statedom	0.410***	0.268*	0.407***	0.268*	0.405***	0.295*
	(0.139)	(0.159)	(0.139)	(0.160)	(0.134)	(0.155)
SOE*High_statedom		0.316**				
		(0.159)				
CentralSOE			-1.093***	-1.181***		
			(0.127)	(0.201)		
LocalSOE			-1.037***	-1.108***		
			(0.0912)	(0.138)		
CentralSOE*High_statedom				0.224		
				(0.246)		
LocalSOE*High_statedom				0.352**		
				(0.174)		
MajorSOE					-1.316***	-1.532***
					(0.0991)	(0.135)
MinorSOE					-0.805***	-0.852***
					(0.0997)	(0.153)
MajorSOE*High_statedom						0.413**
						(0.182)
MinorSOE*High_statedom						0.137
						(0.191)
Institution_holding_perc	-0.679***	-0.686***	-0.672***	-0.669***	-0.644***	-0.620***
	(0.169)	(0.169)	(0.170)	(0.174)	(0.168)	(0.171)
HA	-0.563***	-0.586***	-0.551***	-0.563***	-0.564***	-0.584***
	(0.109)	(0.109)	(0.114)	(0.112)	(0.111)	(0.112)
QFII_dummy	-0.111	-0.102	-0.107	-0.101	-0.185	-0.168
	(0.122)	(0.122)	(0.123)	(0.124)	(0.121)	(0.123)
Chi-sq			0.25	0.24	29.11***	1.94
(P value)			(0.6203)	(0.6212)	(0.0000)	(0.1646)
Other controls	YES	YES	YES	YES	YES	YES
Cons.	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
N	616	616	616	616	616	616
adj. R-sq	0.411	0.414	0.410	0.412	0.423	0.426

Table 6. Effects of the anti-corruption reform: the *Eight-Point* Regulation

This table reports the results of the regressions examining the impact of the 2012 anti-corruption Reform (the *Eight-Point* Regulation announced in December 2012) on the association between state ownership and the cost of bond financing. The dependent variable is the at-issue bond yield spread. We control for both bond characteristics and bond-issuer characteristics in the regressions. Robust standard errors are reported in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Dep. Var.	**At-issue bond spread**		
	(1)	(2)	(3)
SOE	-0.742***	-0.795***	-0.798***
	(0.118)	(0.117)	(0.122)
SOE*After8point	-0.458***	-0.345**	-0.0532
	(0.137)	(0.142)	(0.192)
After8point		-0.513***	-0.635***
		(0.112)	(0.153)
SOE*After8point*High marketized			-0.484*
			(0.260)
SOE* High marketized			-0.00797
			(0.159)
After8point* High marketized			0.168
			(0.161)
Institution_holding_perc	-0.656***	-0.645***	-0.634***
	(0.172)	(0.173)	(0.172)
HA	-0.595***	-0.646***	-0.599***
	(0.111)	(0.108)	(0.115)
QFII_dummy	-0.120	-0.104	-0.109
	(0.118)	(0.118)	(0.117)
Other controls	YES	YES	YES
Cons.	YES	YES	YES
Year FE	YES	NO	NO
Industry FE	YES	YES	YES
N	616	616	616
Adj. R-sq	0.413	0.400	0.404

Table 7. Ownership structure and cost of bond financing: the role of institutional ownership

This table reports the results of the regressions examining the role of institutional ownership in reducing cost of bond financing in regions with different marketization level. The dependent variable is the at-issue bond yield spread. We control for both bond characteristics and bond-issuer characteristics in the regressions. Robust standard errors are reported in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Dep. Var.	**At-issue bond spread**		
	(1)	(2)	(3)
SOE	-1.032***	-1.034***	-1.031***
	(0.0900)	(0.0900)	(0.0901)
Institution_holding_perc	-0.782***	-0.646***	-0.782***
	(0.231)	(0.180)	(0.231)
Institution_holding_perc*High marketized	0.278*		0.272*
	(0.134)		(0.130)
HA*High marketized		0.0636	0.0333
		(0.187)	(0.192)
High marketized	-0.148	-0.0183	-0.149
	(0.199)	(0.101)	(0.199)
HA	-0.599***	-0.618***	-0.619***
	(0.113)	(0.122)	(0.126)
QFII_dummy	-0.125	-0.114	-0.124
	(0.122)	(0.122)	(0.122)
Other controls	YES	YES	YES
Cons.	YES	YES	YES
Year FE	YES	YES	YES
Industry FE	YES	YES	YES
N	616	616	616
Adj. R-sq	0.408	0.408	0.409