



Article

# Bond Issuance as Reputational Signal: Debunking the Negative Perception of Additional Liability

Dachen Sheng <sup>1,2,\*</sup> and Heather A. Montgomery <sup>2</sup>

<sup>1</sup> International College of Liberal Arts, Yamanashi Gakuin University, 2-4-5 Sakaori, Kofu 400-8575, Yamanashi, Japan

<sup>2</sup> Department of Business & Economics, International Christian University, 3-10-2 Osawa, Mitaka 181-8585, Tokyo, Japan; montgomery@icu.ac.jp

\* Correspondence: sheng.dachen@c2c.ac.jp

**Abstract:** This paper examines the determinants of bond issuance in the Chinese market and the influence of capital structure—in particular direct debt finance—on firm performance and the cost of debt. The results reveal that institutional factors in the Chinese market, in particular the involvement of the financial authority permission process during bond issuance, enhance the credibility of firms that are able to successfully issue bonds. Empirical analysis of Chinese listed manufacturing firms over the period from 2010 to 2021 demonstrates that firms with higher outstanding levels of bonds perform better and face lower costs of both bond and nonbond direct finance. We interpret this as bond issuance approval serving as a signal to markets of an implicit government guarantee on firms that are approved to issue bonds. The agency problem is analyzed using propensity-score matching and Logit analysis, revealing a trade-off between the principal–agent conflict and conflicts of interest among different shareholders when power is very concentrated through CEO duality: the CEO simultaneously serves as the chairman of the board. In large firms, as measured by total assets, the cost-reducing effect of the principal–agent problem being mitigated by CEO duality outweighs the agency costs arising from conflicts of interest between large and small shareholders, leading to an increased likelihood of successful bond issuance. However, in large firms, as measured by market capitalization, where share ownership is likely more diversified, this effect diminishes. In conclusion, this paper posits that policymakers ought to investigate strategies for granting preferential treatment to high-growth, small to mid-sized enterprises, enabling them to secure funding through direct debt financing.

**Keywords:** direct finance; bond; agency theorem; information asymmetry; capital structure



**Citation:** Sheng, Dachen, and Heather A. Montgomery. 2023. Bond Issuance as Reputational Signal: Debunking the Negative Perception of Additional Liability. *International Journal of Financial Studies* 11: 126. <https://doi.org/10.3390/ijfs11040126>

Academic Editors: Zied Ftiti and Vassilios Papavassiliou

Received: 11 August 2023

Revised: 14 October 2023

Accepted: 20 October 2023

Published: 30 October 2023



**Copyright:** © 2023 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

## 1. Introduction

Adequate access to corporate finance is crucial to the investment, business development, production, and growth of firms. Managers face complicated, yet important decisions about whether to finance firm investment through retained earnings, debt capital, or equity capital. For firms with high corporate savings, retained earnings are usually the least expensive source of corporate finance, but when firms realize profits, managers face a trade-off between distributing more frequent and larger dividends to shareholders versus accumulating retained earnings to meet financial goals or finance future investments. Firms that, for whatever reason, do not have adequate retained earnings to finance investment projects must turn to debt or equity financing. The characteristics of the firm, in particular, whether it is a privately held firm or publicly listed firm, often influence this decision. Private firms face higher equity costs and, therefore, often rely on debt finance (Brav 2009), especially smaller private firms (Berger and Udell 1995). Publicly listed firms may issue additional equity to alleviate the burden of issuing additional liabilities, but debt financing is a common source of financing, even for publicly listed firms.

Debt financing includes direct finance through bond issuance or indirect finance through financial intermediaries such as banks. Here again, large, publicly listed firms have more options. Large publicly held firms can opt for public external debt borrowing through bond issuance or, like many private firms who do not really have a realistic option to issue new bonds, they can borrow from a financial intermediary. Both debt-financing options, bonds and loans, have advantages and disadvantages. Borrowing publicly by issuing bonds is usually less costly than taking out a bank loan. This is especially true for smaller firms. Small firms seeking debt from banks may be required to provide extensive collateral, which can be challenging for startups. Moreover, banks tend to charge higher interest rates for riskier firms as compensation for risk-taking. In addition to the advantage of being less costly, bonds also usually have longer durations, eliminating the need to roll over the debt periodically and the risk of having a request to roll over the debt denied. However, contractual obligations associated with bonds may limit firms from certain activities or taking excessive risks. To issue bonds in the first place and to attract investors to purchase the issued bonds, firms must make detailed information publicly available and have strong financial standing. Given the pros and cons of the two kinds of debt financing, there may exist a simultaneous substitutional and complementary effect between bond and bank borrowing, with firms choosing the optimal option based on the money-supply market (Leary 2009).

In addition to choosing the appropriate form of debt financing, the appropriate level of debt financing is of critical importance. Managers, bond investors, and banks need to consider the capital structure of firms in making such decisions. Excessive liability levels make it difficult for firms to access debt financing in the future, discouraging investment (Borensztein and Ye 2021), while too little liability prevents the firm from enjoying the tax shield benefits from debt interest (Miller and Modigliani 1961). An appropriate debt level can enhance firm profitability (Ko and Yoon 2011).

This study investigates three research questions related to the effects of capital structure on firm performance and the effects of firm characteristics on the likelihood of bond issuance among publicly listed firms in China. First, this study empirically estimates the relationship between the level of outstanding bond debt and firm profitability. Theoretical explanations for the existence of indirect bank financing suggest that “good” firms tend to rely more on direct debt financing (see, for example, seminal papers by Diamond 1991; Rajan 1992). The empirical evidence on this question is far from settled, and China is an interesting environment in which to explore them since investors’ perceptions about the appropriate capital structure for firms may differ across emerging and developed markets.

Second, this study empirically estimates the relationship between the level of outstanding bond debt and the cost of debt financing. Conventional wisdom holds that there are significant “agency costs of debt” (Jensen and Meckling 1976) that outweigh the tax advantages of debt. Although doubts have been raised concerning the severity of the effect of a higher leverage ratio on agency costs (Gavish and Kalay 1983), more recent research also supports the theoretical finding that higher levels of debt aggravate shareholders’ incentives to take risks (Green and Talmor 1986). This should result in higher credit risk and, therefore, higher costs for debt capital. However, the unique institutions in China make us interested in exploring this question further using Chinese data. To issue a corporate bond, Chinese firms must obtain permission from a regulatory agency, currently the China Securities Regulatory Commission (CSRC). This process requires reporting on the proposed investment project and the planned use of any potential capital raised for the project through bond issuance to the regulatory agency. If approval by the regulatory agency provides a signal to market participants that the firm is too big to fail and/or that there is an implicit government guarantee, then even heavily indebted firms may face low costs of capital if they have successfully obtained the stamp of approval from their regulator to issue bonds.

The unique characteristics of Chinese capital markets also lead us to the third research question explored in this study: the relationship between firm size and the likelihood

of bond issuance. Although the theoretical underpinnings are generally not explicitly articulated, it has become conventional wisdom in empirical work to assume a relationship between capital structure and firm size (see, for example, [Berger and Udell 1995](#); [Dewi and Fachrurrozie 2021](#)). In developed countries at least, it is well established that large firms tend to be more heavily leveraged. In China, any underlying positive relationship between firm size and the likelihood of bond issuance is likely exacerbated by the regulatory agency permission required to issue corporate bonds and the heavy presence of large state-owned enterprises (SOEs) in China's capital markets. Firm size and whether a company is state-owned—something that is in itself correlated with firm size—are both factors that the regulating agency reportedly takes into account in deciding whether or not to grant permission to issue bonds.

The Chinese market provides a compelling context for evaluating the cost of capital, particularly in cases where market dynamics do not exert complete influence over funding decisions. China stands out due to the significant presence of state-owned enterprises (SOEs), which exhibit distinct behaviors compared to typical private firms. In these enterprises, the largest dominant shareholder typically assumes control over both board and management levels. Frequently, the same individual serves as both the chair of the board and the top manager, a phenomenon referred to as “duality.” This duality has discernible effects on the performance of both SOEs and family-owned businesses ([Peng et al. 2010](#)). Empirical evidence from previous studies supports the notion that the advantages of duality, such as enhanced operational efficiency, often outweigh the disadvantages, which may manifest as potentially higher agency costs ([Peng et al. 2007](#)). Furthermore, obtaining permission from regulatory authorities is a prerequisite for publicly issuing bonds in China, a factor that introduces a level of control into the issuance process and consequently distorts the cost of capital ([Ge et al. 2020](#)).

Our empirical findings confirm theories that better firms prefer direct finance through bond issuance ([Diamond 1991](#)): firms with higher levels of outstanding debt tend to perform better, as measured by ROA and ROE. However, our empirical results on the relationship between leverage and the costs of debt financing contradict theories that there exist significant agency costs of debt ([Jensen and Meckling 1976](#); [Green and Talmor 1986](#)). Among the listed firms in China, firms with higher levels of outstanding debt face lower costs of both bond and nonbond debt financing. This suggests that the regulatory approval to issue bonds serves as a signal of an implicit government guarantee, even for firms that are highly leveraged. Finally, the empirical evidence on firm size and likelihood of bond issuance confirms that size is an important factor taken into account by regulators in granting permission to issue bonds. Whether firm size is measured by total assets or total market capitalization, larger firms among listed firms in China are more likely to issue corporate bonds.

This research makes noteworthy contributions to the current academic landscape in the following aspects. First, while there are certainly discussions about the agency costs associated with state-owned enterprises (SOEs) in the extant literature, our study advances the field by empirically demonstrating the potential implicit government support, which can exert a significant signaling effect, ultimately yielding substantial benefits to these firms and diminishing agency costs. Second, the majority of studies investigating ownership structures in the Chinese market tend to concentrate on performance and profitability as the primary focal points. In contrast, our research extends beyond these conventional boundaries, linking management ownership structures to theories related to banking and borrowing, and subsequently shedding light on behaviors evident in financial costs. This broader perspective enriches our understanding of the intricacies within the Chinese market context.

The rest of this paper is organized as follows. Section 2 presents the theoretical framework and research hypotheses. Section 3 discusses sample collection and data merging and explains the regression models. Section 4 provides the analysis results and

is a discussion of those results. Section 5 concludes and presents some directions for future research.

## 2. Literature Review and Hypotheses

All three of the research questions explored in this study relate to the capital structure of firms, the question of how firms finance their investments. The pecking-order theory proposed by Myers (1984), suggests that firms initially utilize funds with the lowest cost and gradually move towards higher-cost resources. In thinking about the lowest-cost source of funds, managers might first think of retained earnings. However, if retained earnings are not used to finance investment projects, they can be distributed as dividends to shareholders and reinvested to generate returns (Sohn 2012). Thus, the cost of using retained earnings of course depends upon the opportunity costs borne by shareholders when retained earnings are used instead to finance investment projects (Shapiro 1978).

While the decision of whether to use retained earnings to finance investment projects or whether to distribute them as dividends is an important question, the capital structure usually refers to the allocation of assets financed by debt versus equity. In choosing the capital structure of the firm, managers must carefully consider the advantages and disadvantages of issuing debt and accumulating debt. Excessive debt levels can lead to a debt overhang problem and increased borrowing costs. Conversely, lower-than-optimal debt levels can negatively impact a firm's profitability. The capital-structure trade-off theorem, proposed by Kraus and Litzenberger (1973), emphasizes the existence of an optimal capital structure. When debt is too low, firms should increase it to take advantage of tax shields (Wrightman 1978). However, if debt exceeds the optimal level, additional debt increases the risk of bankruptcy and elevates the cost of capital (Castanias 1983). The capital structure of the firm presumably involves not only deciding upon the optimal level of debt but also, within the debt-financing category, the allocation to indirect debt financing—usually a bank loan—versus direct debt financing—corporate bond issues.

Within the Chinese market context, a substantial proportion of firms predominantly depend on indirect financing facilitated by banks. In this landscape, the government's implicit guarantee, coupled with the authorization to issue bonds, has the potential to yield a noteworthy reduction in financial costs. It is worth noting that the information asymmetry challenge, which tends to inflate borrowing costs for private firms, does not exert a comparable influence on the financial costs incurred by state-owned enterprises (SOEs) (Zhou et al. 2017).

Another characteristic of the Chinese market context is that Chinese firms typically adhere closely to the guidelines set forth by government policies when determining their capital structure (Jiang et al. 2021). Furthermore, the size and profitability of these firms play pivotal roles in shaping their corporate capital structures within the Chinese market (Kyissima et al. 2020).

### 2.1. Capital Structure and Firm Performance

Our first research question empirically estimates the relationship between the level of outstanding bond debt and firm profitability. In the theoretical literature explaining the coexistence of both direct debt financing through the bond market and indirect debt financing through financial institutions, theory suggests that the choice of direct debt financing signals better firm performance in the future. Diamond's (1991) seminal paper on this question posits that when profitability is high, "good" firms with high credit ratings can overcome moral hazard through reputational effects. These good firms do not require monitoring to overcome moral hazard and so prefer direct debt financing. In Diamond's (1991) model, banks exist precisely to provide indirect financing to those firms that cannot access direct financing. Firms benefit from indirect financing, as they use it to build a reputation, eventually enabling them to access direct debt finance. Rajan (1992) built upon Diamond's (1991) model but focused on the costs of indirect financing through financial intermediaries rather than the benefits. For our purposes, the implications as to the types of

projects financed by direct debt finance are the same: both [Diamond \(1991\)](#) and [Rajan \(1992\)](#) argue that “good” firms following a riskless strategy with “good” investment projects with a high success rate will gravitate toward direct debt finance.

Our first hypothesis is about the relationship between the level of outstanding direct debt financing and firm profitability. Grounding our hypothesis in the theoretical work of [Diamond \(1991\)](#), [Rajan \(1992\)](#), and others ([Grossman and Hart 1986](#); [Sharpe 1990](#)), we propose the following:

**H1a.** *Since high-quality firms finance investments through bond issuance, firms with higher outstanding bond debt levels will tend to be more profitable, as measured by return on assets (ROA).*

**H1b.** *Since high-quality firms finance through bond issuance, firms with higher outstanding bond debt levels will tend to be more profitable, as measured by return on equity (ROE).*

## 2.2. Capital Structure and the Cost of Debt Financing

Our second research question turns to the relationship between the level of outstanding bond debt and the cost of debt financing.

The theoretical literature on the coexistence of direct and indirect debt financing reviewed above also has implications for the costs of debt financing. In theories about both the benefits ([Diamond 1991](#)) and costs ([Rajan 1992](#)) of indirect debt financing, the cost of direct debt financing—corporate bonds—should theoretically be lower than the cost of indirect debt financing—monitored debt contracts through financial intermediaries, e.g., bank loans. The privately held, proprietary information that banks gather about firms through their screening and monitoring means that banks charge higher rates of interest than do direct debt markets. Empirical research on the hold-up costs of indirect debt finance modeled in theoretical work, such as [Sharpe \(1990\)](#) and [Rajan \(1992\)](#), supports the theory. As banks accumulate insider information on their clients, gaining what in the literature is sometimes called informational lock-in, they start to ratchet up the interest rates charged to those clients ([Ioannidou and Ongena 2010](#)). This informational lock-in means that firms often face high switching costs when considering changing banks, as the problems of asymmetric information may be more severe at a new bank than their existing lender ([Brush et al. 2012](#)). This leaves firms vulnerable to bank liquidity shocks, and, indeed, there is evidence that trade credit extension can mitigate firms’ reliance on banks in case of short-term funding shortages ([Restrepo et al. 2019](#)).

The concentrations of the banking sector and the market power of banks affect the cost of indirect finance and access to credit. Interest rates are higher when banks possess greater market power and face less competition ([Berger 1995](#)), and bank market power is positively correlated with loan spreads charged to individual firms ([Hasan et al. 2017](#)). Looking at the market power of banks in a more positive light, [Delis et al. \(2017\)](#) find that bank market power can facilitate access to credit by poorly performing firms, yet, at the same time, also boosts the performance of the firms that obtain credit. On the firm side, the presence of loan collateral affects loan spreads. Firms that are able to pledge collateral pay substantially lower spreads for indirect debt financing through financial institutions ([Booth and Booth 2006](#)). These interactions affect the transmission of monetary policy ([Wang et al. 2022](#)).

[Santos and Winton \(2008\)](#) build on the literature with the observations that the hold-up costs of indirect debt financing for firms that also have access to direct debt finance should be lower than the hold-up costs of the bank-dependent borrowers in the models of [Sharpe \(1990\)](#) and [Rajan \(1992\)](#). Comparing the pricing of loans for bank-dependent borrowers with the pricing of loans for borrowers with access to public debt markets, [Santos and Winton \(2008\)](#) find empirical evidence that firms with public debt market access pay lower spreads on loans.

But while the cost of direct debt financing through corporate bonds should theoretically be lower than the cost of intermediated debt financing through bank loans and having access to direct debt finance may even lower the cost of indirect debt finance as well,



it remains likely that higher levels of debt would make it more costly to finance debt through either direct or indirect means. More highly leveraged firms face a higher risk of bankruptcy, bringing about what is sometimes called in the literature the agency costs of debt. Agency theory addresses the issue of managers prioritizing their own interests over those of shareholders. The agency problem, initially introduced by Ross (1973) as the principal–agent problem, arises when the agent is inclined to act in their own self-interest rather than fulfill their obligations to the principal. If the cost of the agent disregarding their entrusted obligations is low and the potential rewards of such actions are high, there is a significant risk of agents maximizing self-interest at the expense of shareholders. Managers, who may not share in the benefits of positive net-present value generated by successful projects but may lose their jobs if unsuccessful projects result in losses, may tend to underinvest (Fluck 1999). The firm value-maximizing level of debt, chosen by the manager-agents, may be lower than the profit-maximizing level of debt, that would have been chosen by the shareholder-principals (Leland 1998).

Event risk covenants in bond contracts can lower the agency costs of debt (Bae et al. 1994), but, nonetheless, the concept of debt overhang is well-established in the literature and has been demonstrated to exist even when firms have the flexibility of choosing both the timing and the size of investments (Nishihara et al. 2019). There is even evidence that noneconomic pressures influence managerial strategies rather than value-enhancing goals (Wright and Ferris 1997). There are ways to mitigate agency costs, such as compensating managers with firm shares or stock options (Jensen and Meckling 1979), implementing internal financial controls (Qi et al. 2017), and incorporating CSR-contingent executive compensation (Li and Thibodeau 2019). Nonetheless, it has been demonstrated that these agency conflicts impact corporate governance (Renders and Gaeremynck 2012), which impacts the financial performance of firms (Paniagua et al. 2018) and their dividend policies (Dewenter and Warther 1998). Most relevant to the present study, there is evidence that agency problems lead to higher bank interest spreads (Mensah and Abor 2014).

However, in China's unique institutional framework, the relationship between capital structure and the costs of debt finance may be different. As explained above, firms in China must obtain permission from their regulator, currently the China Securities Regulatory Commission (CSRC), to issue bonds. Approval involves the investigation of the proposed investment project and the planned use of any potential capital raised for the project through a bond. In the Chinese context, the existence of an implicit government guarantee has been shown to raise the credit ratings of bond issuers (Bradford et al. 2019) and has a positive impact on the value of a bond offering to shareholders (Klein and Weill 2018). If approval by the regulatory agency to issue a bond is interpreted by market participants as an implicit government guarantee, then even heavily indebted firms may face low costs of capital.

**H2a.** *In China's institutional environment, higher outstanding bond debt levels signal an implicit government guarantee, which lowers the agency costs of debt. Therefore, firms with higher outstanding bond debt levels will enjoy lower costs of "non-bond" indirect debt financing (bank loans).*

**H2b.** *In China's institutional environment, higher outstanding bond debt levels signal an implicit government guarantee, which lowers the agency costs of debt. Therefore, firms with higher outstanding bond debt levels will enjoy lower costs of direct bond financing (corporate bonds).*

### 2.3. Capital Structure and Firm Size

Our third research question empirically estimates the relationship between firm size and the likelihood of bond issuance.

There is a well-established empirical relationship between firm size and capital structure: large firms tend to have higher leverage ratios than smaller ones (see, for example, Titman and Wessels 1988; Rajan and Zingales 1995; Fama and French 2002). Firm size is now a routine control variable in empirical corporate finance studies, and some studies

have investigated firm size as a moderating variable of the effect of firm characteristics on capital structure (Dewi and Fachrurrozie 2021).

What are the theoretical underpinnings for this relationship between firm size and capital structure? Returning to some of the seminal theoretical literature on the coexistence of direct debt financing through the bond market and indirect debt financing through financial institutions, the information asymmetries between insiders—financial institutions with the informational lock-in discussed above—and outsiders—capital markets—may be lower for larger firms (Rajan 1992). Using a dynamic capital-structure model, Kurshev and Strebulaev (2015) find the theoretical driving force to be the presence of fixed costs of external financing that lead to infrequent restructuring and create a wedge between small and large firms.

However, developing countries, which have different institutional structures, may be different (Mayer 1990). More recent empirical works using firm-level data, such as Booth et al. (2001), analyze the capital-structure choices made by companies from developing countries and find that, in general, decisions about capital structure are affected by the same variables in developing countries as they are in developed countries. However, these existing studies do not include China.

To our knowledge, the existing cross-sectional studies on this question do not include China, presumably because Chinese firms have such unique institutional structures that they do not fit neatly into the categories of either capital-market-driven “Anglo-Saxon” institutions or bank-driven “German-Japanese” institutions popular in the existing literature. Thus, empirical evidence on the relationship between firm size and capital structure is important and fills a gap in the existing empirical literature on this question. Building on the existing empirical evidence and the theoretical underpinnings of the relationship between capital structure and firm size, we propose the following hypotheses regarding our third research question:

**H3a.** *Larger firms, as measured by total assets, are more likely to issue bonds.*

**H3b.** *Larger firms, as measured by market capitalization (with presumably more diversified ownership), are more likely to issue bonds.*

### 3. Data and Methodology

#### 3.1. Data

To empirically evaluate the hypotheses formulated earlier, we compiled financial data encompassing the entire spectrum of manufacturing firms listed on a Chinese stock exchange spanning the years from 2010 to 2021, covering a total duration of 12 years. To ensure the data’s reliability, we excluded firms that had received an ST warning due to consecutive years of net losses. We merged the dataset containing financial information, identified by firm names, with data pertaining to corporate bond issuances within the Chinese market over the same 12-year timeframe. All financial data for the firms were sourced from the Choice database, while information related to bond issuances, including issuance details and coupon rates, was extracted from the China Stock Market and Accounting Research Database (CSMAR).

The selection of the sample period takes into account the evolution of the Chinese bond market. Before 2010, the Chinese bond market was relatively small, with a predominant presence of nonprivate firms as issuers. In instances where a firm issued multiple bonds in a single year, we weighted the coupon rate and borrowing duration of each bond by the borrowing principal, ensuring that each firm was represented by a single-entry bond issuance in the final dataset. One limitation of this study is its exclusive focus on manufacturing firms. While the real estate and banking sectors actively participate in bond markets, their distinct accounting practices and capital structures differentiate them from manufacturing firms. Consequently, the research excludes real estate and banking firms from its scope.

The resulting dataset is segmented into three distinct samples. The first sample encompasses a comprehensive panel of 1264 listed firms, observed over the entire 12-year period, resulting in a total of 14,283 winsorized firm-year observations. The second sample is a subset that exclusively includes firm-year observations during which firms held outstanding bond debt. Lastly, the third sample is a more restricted subset containing data solely from the year in which a firm issued bonds. Out of the total sample of 1264 listed firms, fewer than 20%, precisely 247 firms, issued bonds at some point during the 12-year study period, mirroring the number of firms that held outstanding bond debt during the same period.

Table 1 presents the definition of the variables, outlining their calculation or estimation methods, along with the corresponding abbreviations used in the modeling. Table 2 presents summary statistics for the overall all-inclusive sample. In the raw data, the number of outliers on the return on equity (ROE) was quite large, much larger than the number of outliers on the return on assets (ROA). This could be attributed to variations in accounting treatments permitted by accounting rules. One possible explanation for this phenomenon is that, when a firm experiences a sudden significant loss, it may decrease equity more suddenly and sharply than assets and result in more extreme negative values for ROE. Conversely, nonbond interest (INT) for the full sample shows a mean that exceeds the third quartile, indicating a right bias. To address these biases, we winsorize the data, limiting the impact of outliers for both the returns on equity and nonbond interest. Specifically, we winsorized the data by five percent on both sides.

**Table 1.** Variable Definitions.

Variable	Abbreviation	Variable Treatment
Bond Coupon Rate	BONDINT	Principal weighted if there is more than one bond issuance for the same firm within the same year
Duration of bonds, if there is more than one issue within the same year, it is principal weighted.	DURATION	The bond principal outstanding weighted duration
Total bond principal outstanding	BOND	Accumulated bond principal outstanding
Return on equity	ROE	Net profit/Equity Book Value
Return on asset	ROA	Net profit/Total Asset
Leverage ratio	LIAB	Liability/Total Asset
The Board chairman and CEO are the same person	DUAL	binary, if the board chairman is also CEO, DUAL = 1, otherwise = 0.
Nonbond interest rate	INT	Nonbond interest expense divided by total interest-bearing liability excluding bond principal.
Current ratio	CURRENT	(cash + cash equivalent + inventory)/Total asset
Total asset	ASSET	Natural logarithm treated total asset
Total market capitalization	CAP	Natural logarithm treated total market capitalization
Bond issue	BONDISSUE	Binary, if the firm has any bond issue in the year, BONDISSUE = 1. Otherwise, 0.

Table 3 presents summary statistics of the subsample consisting of firms with outstanding bond debts during the sample period. In this subsample, we note that the asset size (ASSET) and market capitalization (CAP) are significantly larger in the summary statistics for the full sample presented in Table 2. This finding supports the hypothesis that firms with outstanding bond debts tend to have a larger average size.

Table 4 displays the summary statistics for a more specific subsample, focusing exclusively on the firm-year information related to bond issuance. A comparison between



Tables 2 and 4 and Table 3 reveals significantly higher profitability indicators. Moreover, both the mean asset size and capitalization are noticeably larger in Table 4. This observation further piques our interest as it suggests that, at the time of bond issuance, the firms exhibit robust profitability and, on average, possess a larger scale.

**Table 2.** General Statistics, Overall Sample.

Variable	Unit	Observation	Mean	Standard Deviation	PCTL (25%)	PCTL (75%)
ROE	Percentage	14,283	4.910	152.837	2.423	12.210
ROA	Percentage	14,283	5.999	22.230	2.601	9.027
LIAB	Percentage	14,283	44.309	45.870	27.536	57.887
INT	Percentage	14,283	7.093	12.065	2.346	5.813
CURRENT	Percentage	14,283	2.402	4.087	1.107	2.519
DUAL	Binary	14,283	0.235	0.424	0	0
ASSET	Natural logarithm treated	14,283	3.827	1.243	2.985	4.512
CAP	Natural logarithm treated	14,283	3.922	1.088	3.187	4.527

**Table 3.** Summary Statistics, Bond Debt Outstanding Sample.

Variable	Unit	Observation	Mean	Standard Deviation	PCTL (25%)	PCTL (75%)
BOND	100 million Yuan	1402	17.186	24.681	5	19
ROE	Percentage	1402	5.119	31.928	2.193	11.330
ROA	Percentage	1402	5.093	6.994	2.922	7.804
LIAB	Percentage	1402	54.696	16.041	44.032	66.075
INT	Percentage	1402	4.491	1.883	3.248	5.723
CURRENT	Percentage	1402	1.525	1.228	0.882	1.755
DUAL	Binary	1402	0.253	0.435	0	1
ASSET	Natural logarithm treated	1402	4.980	1.173	4.095	5.729
CAP	Natural logarithm treated	1402	4.569	1.044	3.818	5.156

**Table 4.** Summary Statistics, Bond Issuance Year Sample.

Variable	Unit	Observation	Mean	Standard Deviation	PCTL (25%)	PCTL (75%)
BONDINT	Percentage	395	5.500	1.282	4.655	6.500
DURATION	Numerical	395	4.749	1.324	4.0	5.0
BOND	100 million Yuan	395	24.484	35.865	6.0	28.0
ROE	Percentage	395	7.701	10.338	3.155	11.483
ROA	Percentage	395	5.725	5.038	3.154	7.786
LIAB	Percentage	395	55.098	12.690	46.189	66.221
INT	Percentage	395	3.607	1.972	2.091	4.974
CURRENT	Percentage	395	1.634	1.245	0.945	1.876
DUAL	Binary	395	0.263	0.441	0	1
ASSET	Natural logarithm treated	395	5.176	1.353	4.104	6.099
CAP	Natural logarithm treated	395	4.618	1.160	3.835	5.438

### 3.2. Empirical Methodology

#### 3.2.1. Capital Structure and Firm Performance: Baseline Model

To empirically test Hypotheses 1a and 1b about the relationship between the level of outstanding bond debt and firm profitability, we estimate the relationship between a given firm's outstanding accumulated bond principal and profitability, as measured by the firm's return on assets and return on equity. This specification serves as our baseline model, Equations (1) and (2):

$$ROA_{i,t} = \beta_0 + \beta_1 BOND_{i,t} + \beta_2 LIAB_{i,t} + \beta_3 CURRENT_{i,t} + \beta_4 DUAL_{i,t} + \sum IND + \sum YEAR + \varepsilon_{i,t} \quad (1)$$

$$ROE_{i,t} = \beta_0 + \beta_1 BOND_{i,t} + \beta_2 LIAB_{i,t} + \beta_3 CURRENT_{i,t} + \beta_4 DUAL_{i,t} + \sum IND + \sum YEAR + \varepsilon_{i,t} \quad (2)$$

where all variables are as defined above in Table 4. In addition to other firm-specific factors, we include dummy variables for each of the 29 subindustries within the manufacturing sector in China, *IND*, and a fixed time effect, *YEAR*, to help isolate the variations in firm profitability that are due to firm characteristics such as the capital structure.

If economic theory suggests that “good” firms that are able to access bond financing are then able to finance higher net-present value investment with that financing, enjoying higher profitability, as measured by ROA and ROE, then we expect that the coefficient estimate  $\beta_1$  in Equations (1) and (2) above will be positive and statistically significant in support of Hypotheses 1a and 1b.

### 3.2.2. Capital Structure and the Cost of Debt Financing: The Cost of Debt Financing

After empirically estimating our baseline model and exploring the relationship between capital structure and firm profitability, we next turn to an examination of the relationship between capital structure and the cost of debt financing. As discussed above, the concept of debt overhang is well-established in the existing empirical literature. Therefore, we might expect firms with higher levels of outstanding bond debt to pay higher costs of debt and nondebt financing. However, most of the existing empirical research is based on data from developed financial markets. Institutional details in China’s financial markets lead us to posit that bond issuance in the Chinese market serves as a signal of an implicit government guarantee. Thus, we expect Chinese firms with higher levels of outstanding bond debt may pay *lower* costs of both bond and nonbond debt financing, as stated in Hypotheses 2a and 2b.

Our empirical model examines the relationship between outstanding bond debt and both bond coupon rates, Equation (3), the interest rate firms pay for nonbond debt, and Equation (4), after controlling for various firm-level characteristics, subindustry level fixed effects, *IND*, and time fixed effects, *YEAR*.

$$BONDINT_{i,t} = \beta_0 + \beta_1 BOND_{i,t} + \beta_2 DURATION_{i,t} + \beta_3 LIAB_{i,t} + \beta_4 CURRENT_{i,t} + \beta_5 DUAL_{i,t} + \sum IND + \sum YEAR + \varepsilon_{i,t} \quad (3)$$

$$INT_{i,t} = \beta_0 + \beta_1 BOND_{i,t} + \beta_2 LIAB_{i,t} + \beta_3 CURRENT_{i,t} + \beta_4 DUAL_{i,t} + \sum IND + \sum YEAR + \varepsilon_{i,t} \quad (4)$$

where, again, all variables are as defined above in Table 4, above, and *IND* and *YEAR* represent dummy variables that control for subindustry and time fixed effects that may influence the cost of debt financing across firms.

If our hypotheses about the relationship between accumulated bond principal outstanding and the costs of debt financing, both direct debt financing through bonds and indirect debt financing through intermediaries, are correct, then we expect that empirical estimation of Equations (3) and (4), above, will yield negative, statistically significant coefficient estimates of  $\beta_1$ .

### 3.2.3. Capital Structure and Firm Size: The Likelihood of Bond Issuance

Our final set of hypotheses focuses on the relationship between firm size and capital structure, a question that remains relatively unexplored in China. Our empirical analysis focuses on the likelihood of bond issuance and various firm characteristics, including our main parameter of interest, firm size, as measured by total assets and total market capitalization. The existing theoretical literature suggests that larger firms are more likely to issue bonds because of lower information asymmetries and fixed costs of external finance, implying that larger firms are more likely to issue bonds. We expect that this positive relationship between firm size and the likelihood of bond issuance is exacerbated by institutional factors in Chinese financial markets that may lead market participants to interpret permission to issue bonds by the regulatory agency as an implicit government guarantee.

It is important to note that the two measures of firm size employed here, total assets and market capitalization, are not equivalent. Some firms with a high price-to-book value and full listing status may be relatively large by the measure of market capitalization, but not be considered as large by the measure of total assets. Conversely, some firms that are very large, as measured by total assets, may not look as large according to total market capitalization. In China, the differences between firm sizes, as measured by total assets versus total market capitalization, are further complicated by the large presence of state-owned enterprises (SOEs). SOEs are typically quite large by nearly every measure. Many SOEs are listed firms, but some percentage of the total shares will be state owned and, therefore, not listed on any public exchange. This results in a very concentrated shareholder base for SOEs, which may manifest itself as a small market capitalization, despite their substantial assets. On the other hand, the shareholder base of publicly held firms with a large market capitalization is typically quite diversified.

Aside from whether firms are state-owned or publicly held, the relationship between firm size and the likelihood of bond issuance may vary across different forms of corporate governance. To examine one measure of this, we include an indicator of highly concentrated managerial power, *DUAL*, a dummy variable that takes the value of one when the chair of the board and the chief executive officer (CEO) are the same individual.

To test Hypotheses H3a and H3b, that larger firms, as measured by total assets or market capitalization, are more likely to issue bonds, we employ a Logit regression model based upon Equations (5)–(8) below.

$$BONDISSUE_{i,t} = \beta_0 + \beta_1 ROA_{i,t} + \beta_2 LIAB_{i,t} + \beta_3 CURRENT_{i,t} + \beta_4 DUAL_{i,t} + \beta_5 ASSET_{i,t} + \sum IND + \sum YEAR + \varepsilon_{i,t} \quad (5)$$

$$BONDISSUE_{i,t} = \beta_0 + \beta_1 ROE_{i,t} + \beta_2 LIAB_{i,t} + \beta_3 CURRENT_{i,t} + \beta_4 DUAL_{i,t} + \beta_5 ASSET_{i,t} + \sum IND + \sum YEAR + \varepsilon_{i,t} \quad (6)$$

$$BONDISSUE_{i,t} = \beta_0 + \beta_1 ROA_{i,t} + \beta_2 LIAB_{i,t} + \beta_3 CURRENT_{i,t} + \beta_4 DUAL_{i,t} + \beta_5 CAP_{i,t} + \sum IND + \sum YEAR + \varepsilon_{i,t} \quad (7)$$

$$BONDISSUE_{i,t} = \beta_0 + \beta_1 ROE_{i,t} + \beta_2 LIAB_{i,t} + \beta_3 CURRENT_{i,t} + \beta_4 DUAL_{i,t} + \beta_5 CAP_{i,t} + \sum IND + \sum YEAR + \varepsilon_{i,t} \quad (8)$$

where, again, all variables are as defined above in Table 4, above, and *IND* and *YEAR* represent dummy variables that control for subindustry and time fixed effects that may influence the likelihood of bond issuance across firms.

If our hypotheses about the relationship between firm size and the likelihood of bond issuance are correct, then we expect that empirical estimation of Equations (5)–(8), above, will yield positive, statistically significant coefficient estimates of  $\beta_5$ , the coefficient estimate on firm size, as measured by firm total assets or market capitalization.

#### 3.2.4. Robustness Check: Propensity-Scores Matching

We acknowledge the possibility of endogeneity, the correlation between the dependent variables, in particular the dummy variable “*DUAL*” indicating highly concentrated power within the firm and the error term in Equations (5)–(8) above. Simultaneity in the determination of bond issuance and the explanatory variable “*DUAL*”, or omitted variables in the control variables included in Equations (5)–(8), may lead to biased estimates of the coefficients. As a robustness check on our initial empirical analysis, we also investigate the relationship between heavily concentrated managerial power within the firm and the likelihood of bond issuance using propensity-scores matching (PSM). As readers may know, propensity-scores matching is a quasi-experimental statistical technique that aims to estimate the effect of an intervention by accounting for the covariates that predict receiving treatment.

In this case, an artificial control group is constructed by matching each “treated” firm—in this case, firms in which managerial power is heavily concentrated because the CEO is simultaneously serving as the board chair, our dummy variable “*DUAL*” = 1—with a “non-treated” firm—in this case firms in which managerial power is *not* heavily concentrated, “*DUAL*” = 0—with similar characteristics. The matching characteristic used here is firm size: total assets and market capitalization.

Again, we note that the two measures of firm size employed here, total assets and market capitalization, are not equivalent. In the total asset-matched control group, many large firms may also have a high concentration of managerial authority in large shareholders, especially if they are state-owned enterprises (SOEs). In the market-capitalization-matched control group, the managerial authority of the largest shareholders may be less, and large firms as defined by market capitalization may not be as dominated by SOEs.

Propensity-scores matching techniques allow us to verify the robustness of our initial results. In addition, by exploring these dynamics, we also aim to gain a deeper understanding of the interplay between managerial authority, shareholder structure, and bond issuance. This further analysis will contribute to the existing literature on corporate governance and provide valuable insights into the complexities of the Chinese market.

#### 4. Results and Discussion

##### 4.1. Capital Structure and Firm Performance

Table 5 presents the results of the empirical analysis of our baseline models, Equations (1) and (2), which estimate the relationship between outstanding levels of bond debt and two measures of firm performance: return on assets (ROA) and return on equity (ROE). Columns one and two of Table 5 reveal a positive and statistically significant coefficient estimate on bond debt outstanding, indicating that firms with larger current levels of outstanding bond debt tend to be more profitable, as measured by either ROA or ROE.

**Table 5.** Capital Structure and Firm Performance.

	ROA	ROE
	(1)	(2)
BOND	0.012 *	0.021 **
	(0.007)	(0.010)
LIAB	−0.235 ***	−0.160 ***
	(0.013)	(0.019)
CURRENT	−0.404 ***	0.108
	(0.170)	(0.237)
DUAL	−0.149	−0.248
	(0.423)	(0.590)
Constant	19.035 ***	14.355 ***
	(3.076)	(4.284)
Subindustry Control	Y	Y
Year Control	Y	Y
Observations	1402	1402
R <sup>2</sup>	0.297	0.190
Adjusted R <sup>2</sup>	0.277	0.167
Residual Std. Error	5.948(df = 1361)	8.283(df = 1361)
F Statistic	14.405 ***(df = 40;1361)	8.006 ***(df = 40;1361)

Note: \*\*\*, \*\*, and \* denote the statistical significance at the 1%, 5%, and 10% levels; standard errors are shown in parentheses.

This finding aligns with the theoretical literature suggesting that better firms prefer direct finance. Therefore, firms with relatively higher levels of outstanding bond debt typically utilize bonds to finance investment projects with positive net-present value, yielding positive returns, as measured by ROA or ROE. Thus, our results support Hypotheses H1a and H1b that firms with higher outstanding bond debt levels will tend to be more profitable, as measured by return on assets or return on equity.

Our findings deviate from prior research, which suggested that the pecking-order theory elucidates the financial behavior of Chinese firms and posits a negative correlation between profitability and leverage (Tong and Green 2005). The distinctive features of the Chinese market exert substantial influence on firms when they formulate their capital-structure decisions within the Chinese economic context (Chen 2004).

#### 4.2. Capital Structure and the Cost of Debt Financing

Our analysis next turns to the relationship between current outstanding bond debt and the cost of bond debt—coupon rates—and nonbond debt: an empirical analysis of Equations (3) and (4), above. Conventionally, higher levels of outstanding bond debt would be expected to result in higher coupon rates and higher interest rates on nonbond debt such as bank loans. However, contrary to conventional wisdom, the coefficient estimates on current outstanding bond debt in columns one and two of Table 6 are statistically significantly negative.

**Table 6.** Capital Structure and the Cost of Debt Financing.

	BONDINT	INT
	(1)	(2)
BOND	−0.009 *** (0.001)	−0.008 *** (0.002)
DURATION	0.009 (0.039)	
LIAB	0.011 ** (0.005)	0.004 (0.004)
CURRENT	0.065 (0.047)	−0.067 (0.051)
DUAL	0.251 ** (0.111)	−0.032 (0.127)
Constant	5.568 *** (0.665)	3.253 *** (0.922)
Subindustry Control	Y	Y
Year Control	Y	Y
Observations	395	1402
R <sup>2</sup>	0.637	0.130
Adjusted R <sup>2</sup>	0.594	0.105
Residual Std. Error	0.817(df = 353)	1.782(df = 1361)
F Statistic	15.083 ***(df = 41;353)	5.103 ***(df = 40;1361)

Note: \*\*\*, \*\*, and \* denote the statistical significance at the 1%, 5%, and 10% levels; standard errors are shown in parentheses.

Another interesting empirical result observed in Table 6 is the positive and statistically significant coefficient estimate of the variable “DUAL”, a dummy variable that takes the value of one when the company CEO simultaneously serves as the chairman of the board. This indicates that heavily concentrated managerial power at firms increases the cost of debt financing for those firms. While CEO duality can minimize the principal–agent problem between shareholders and managers at the firm, it may exacerbate agency costs between different kinds of shareholders, in particular between large and small shareholders. We interpret the positive coefficient estimate on the dummy variable for CEO duality as an indication that the market charges a premium to those firms for the agency costs between large and small shareholders inherent in the lack of separation of power between the board and the CEO.

In summary, the main takeaway from Table 6 is the observed negative relationship between the current outstanding bond debt levels and the bond coupon rate in column one and the interest on nonbond debt in column two. This indicates that, in the Chinese market, higher levels of currently outstanding debt levels correspond to *lower* costs of debt financing: both bond financing and nonbond debt financing such as loans from financial institutions. While this empirical result contradicts conventional wisdom, it provides empirical support for our stated Hypotheses H2a and H2b, which we interpret as evidence that, due to unique institutions in China’s financial markets, bond issuance in China serves as a signal to markets of an implicit government guarantee on firms that issue bonds.

Prior research has centered on the impact of monetary policy on the financial costs of firms in the Chinese market, proposing that, in times of policy uncertainty, the cost of debt



financing can markedly increase (Xiang and Li 2022). Our findings align with this analysis. The regulatory nature of corporate bond issuance signifies a degree of policy guidance certainty, with such official confirmation serving to mitigate policy uncertainties.

#### 4.3. Capital Structure and Firm Size

Table 7 presents our analysis of the likelihood of bond issuance, specifically focusing on the question of whether large firms, as defined by asset size or market capitalization, are more likely to issue bonds.

**Table 7.** Capital Structure and Firm Size.

	<i>Dependent Variable:</i>			
	<b>BONDISSUE</b>			
	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>
ROA	0.0002 (0.004)		−0.001 (0.003)	
ROE		−0.00004 (0.001)		−0.00003 (0.0004)
LIAB	0.002 ** (0.001)	0.002 *** (0.001)	0.001 * (0.001)	0.001 *** (0.001)
CURRENT	−0.018 (0.031)	−0.018 (0.031)	−0.218 *** (0.048)	−0.218 *** (0.048)
DUAL	0.139 (0.125)	0.139 (0.125)	0.075 (0.123)	0.075 (0.122)
ASSET	0.731 *** (0.038)	0.731 *** (0.037)		
CAP			0.501 *** (0.041)	0.500 *** (0.041)
Constant	−6.901 *** (0.229)	−6.899 *** (0.225)	−5.357 *** (0.218)	−5.360 *** (0.218)
Observations	14,283	14,283	14,283	14,283

Note: \*\*\*, \*\*, and \* denote the statistical significance at the 1%, 5%, and 10% levels; standard errors are shown in parentheses.

The results reported in Table 7 indicate that the coefficient estimates on firm size, as measured by total assets in columns one and two, are positive and statistically significantly different from zero at standard confidence levels. Similarly, in columns three and four, the coefficient estimates on firm size, as measured by market capitalization, are also positive and statistically significant at standard confidence intervals. The result that large firms are more likely to issue bonds is consistent whether we control for firm performance by including firms' return on assets in columns one and three or firms' return on equity in columns two and four.

In summary, the findings reported in Table 7 indicate that large firms—firms with large total assets or large market capitalization—are more likely to issue bonds. These findings provide support for Hypotheses 3a and 3b. The negative coefficients for the “current ratio” terms suggest limited cash reserves among firms.

Previous research has focused on the influence of monetary policy on the financial costs incurred by firms in the Chinese market. It has been posited that, during periods of policy uncertainty, the expenses associated with debt financing can experience a substantial upswing (Xiang and Li 2022). Our results corroborate this analysis. The regulatory framework governing corporate bond issuance signals a certain level of policy guidance assurance, and this official endorsement plays a role in alleviating policy ambiguities.

#### 4.4. Robustness Check—Propensity-Score Matching

In the examination of the relationship between firm size and capital structure above, we found that large firms are more likely to issue bond debt.

As a robustness check to address possible simultaneity in the determination of bond issuance and the explanatory variable “DUAL”, the indicator of highly concentrated power within the firm, we use a technique called propensity-score matching (PSM). PSM aims to estimate the effect of an intervention or treatment—in this case heavily concentrated managerial power—by accounting for the covariates that predict receiving treatment—in this case, the indicators of firm size: total assets and total market capitalization. A control group is formed through one-to-one nearest matching based on the covariates used to predict treatment, in this case, total assets and total market capitalization. Table 8 provides the predicted probability matrix, demonstrating an approximate 60 percent correct prediction rate when PSM matching is based on assets. The correct probability is slightly higher when the PSM matching is based on market capitalization, at around 70 percent.

**Table 8.** PSM–Logit Overall Sample Percent Correct Prediction, Total Sample = 790, Predict Probability Threshold Level = 0.5.

PSM Overall Sample, Table 9 Column 1	Actual $y = 1$	Actual $y = 0$
Predicted $\hat{y} = 1$	209	172
Predicted $\hat{y} = 0$	186	223
PSM Overall Sample, Table 9 Column 2	Actual $y = 1$	Actual $y = 0$
Predicted $\hat{y} = 1$	211	173
Predicted $\hat{y} = 0$	184	222
PSM Overall Sample, Table 9 Column 3	Actual $y = 1$	Actual $y = 0$
Predicted $\hat{y} = 1$	265	139
Predicted $\hat{y} = 0$	130	256
PSM Overall Sample, Table 9 Column 4	Actual $y = 1$	Actual $y = 0$
Predicted $\hat{y} = 1$	267	139
Predicted $\hat{y} = 0$	128	256

**Table 9.** Bond Issuance Firm Characteristics, PSM–Logit.

	Dependent Variable BONDISSUE			
	PSM ASSET (1)	PSM ASSET (2)	PSM CAP (3)	PSM CAP (4)
ROA	0.007 (0.013)		0.012 (0.013)	
ROE		0.002 (0.002)		0.010 * (0.006)
LIAB	0.029 *** (0.007)	0.029 *** (0.006)	0.067 *** (0.007)	0.068 *** (0.007)
CURRENT	0.148 ** (0.075)	0.153 ** (0.076)	0.262 *** (0.070)	0.269 *** (0.071)
DUAL	0.513 *** (0.179)	0.506 *** (0.179)	0.010 (0.176)	−0.002 (0.177)
ASSET	−0.094 (0.060)	−0.098 (0.060)		
CAP			−0.079 (0.071)	−0.089 (0.070)
Constant	−1.427 *** (0.503)	−1.395 *** (0.477)	−3.516 *** (0.550)	−3.535 *** (0.544)
Observations	790	790	790	790

Note: \*\*\*, \*\*, and \* denote the statistical significance at the 1%, 5%, and 10% levels; standard errors are shown in parentheses.

The results of a logit estimation of Equations (5)–(8), above, on the PSM-matched sample are reported in Table 9. When PSM matching was based on total assets, the results reported in columns one and two of Table 9, we note a statistically significant positive coefficient estimate for the DUAL term, our measure of highly concentrated managerial power. This suggests that, when the principal–agent conflict between shareholders and managers is minimized by aligning the interests of the CEO and large shareholders, firms are more likely to issue bonds, or, put differently, firms are more successful in funding their capital needs through direct bond finance.

However, when the PSM control group was formed by matching market capitalization, more heavily concentrated managerial power does not increase the likelihood of bond issuance. In columns three and four, both coefficients of the DUAL term, the dummy variable for firms with heavily concentrated managerial power, were statistically insignificantly different from zero.

The two measures of firm size used to match the control group, total assets, and market capitalization, are not equivalent, and this point may help us to understand the difference in the results in columns one and two of Table 9 and in columns three and four of Table 9. In the total asset-matched control group (columns one and two), many large firms may also have a high concentration of managerial authority in large shareholders, especially if they are state-owned enterprises (SOEs). In the market-capitalization-matched control group (columns three and four), shareholders may be more diversified. Thus, the managerial authority of the largest shareholders may be less, and large firms, as defined by market capitalization, may not be as dominated by SOEs.

When large shareholders already enjoy extreme dominance, as in the case of the total asset-matched groups (columns one and two), concentrating managerial power by having the CEO simultaneously chair the board of directors aligns the interests of the manager/CEO with those of large shareholders/the board. Since large shareholders dominate, this reduction in the principal–agent conflict between shareholders in general and management becomes significant. Thus, for the total asset-matched treatment and control groups, we get the result that highly concentrated managerial power (“DUAL” = 1) is more likely to issue bonds.

However, when shareholders have a more equal distribution of power without dominant large shareholders, as in the market-capitalization-matched groups (columns three and four), concentrating managerial power by having the CEO simultaneously chair the board of directors aligns the interests of the manager/CEO with those of large shareholders/the board, but there continue to be significant conflicts of interest between small versus large shareholders. Thus, for the market-capitalization-matched treatment and control groups, we get the result that highly concentrated managerial power (“DUAL” = 1) does not significantly influence the likelihood of bond issuance.

Although not the main variable of interest, the coefficient estimates on the current ratio are also interesting in the logit regression results of the PSM-matched samples. When PSM matching is based on both total asset size and market capitalization, the coefficient estimates for the current ratio are no longer negative, as reported above; instead, they are statistically significantly positive. Firms with more cash equivalent assets and a presumably higher ability to pay off debts are more likely to issue bonds in the PSM analysis in which the control and treatment groups are matched based on firm size. We speculate that this may be because smaller firms rely more on bank borrowing, which poses a higher rollover risk and requires shorter-term financing compared to bond finance. Thus, smaller firms need to maintain larger cash reserves. In contrast, larger firms may have access to more diversified sources of capital and, therefore, be able to allocate their resources towards investment projects. Even while maintaining lower cash reserves, large firms may be able to relatively swiftly finance projects using different capital sources, if needed. This resembles a Matthew effect of accumulated advantage, further enhancing the profitability of larger firms in the Chinese market.

## 5. Conclusions

This paper demonstrates that the conventional wisdom that additional liability generally poses a higher risk of bankruptcy and, therefore, impairs firm performance, raises the cost of debt finance, and makes it less likely that firms can issue bonds, does not hold in all institutional settings. This study finds that, on the contrary, in China, where bond issuance requires approval from financial regulatory authorities, successful bond issuance serves as a reputational signal to markets; firms with higher outstanding bond debt levels are more profitable, as measured by both return on assets and return on equity, and face lower costs of future debt financing for both bond and nonbond debt. Thus, this study suggests that successful bond issuance in China may serve as a signal to markets of an implicit government guarantee on firms that issue bonds. The results also suggest that there are important benefits to Chinese firms from successful issuance of direct debt finance: issuing bonds provides a stable, long-term, cost-effective source of capital.

This study next turns to the question of which types of firms are more likely to successfully issue bonds. We find that, in China, larger firms, as measured by either total assets or market capitalization, have a higher likelihood of successful bond issuance. This is presumably because larger firms are generally considered safer and have more reputational recognition from the financial regulatory agency tasked with approving requests to issue bonds.

By exploring questions related to agency theory, however, we find the evidence to be more nuanced. Among large firms with substantial assets, firms in which managerial power is heavily concentrated through CEO duality, a situation in which the board chair also holds the top managerial position in the firm, there is a greater likelihood of successful bond issuance. In contrast, among large firms with high market capitalization, which typically implies a larger number of shareholders and, therefore, a more complex, diversified shareholder structure, the influence of managers representing large shareholders on corporate governance diminishes. As a result, the significance of concentrated managerial power through CEO duality on the likelihood of successful bond issuance fades away.

One of the key considerations for decision-makers is addressing the financing challenges faced by smaller yet high-potential firms in the current economic landscape. Obtaining permission to secure capital directly from the financial market can often entail exorbitant costs for these enterprises. Typically, high-growth firms fall within the small to mid-size category and possess a limited history in the capital market. The question arises: Is it feasible to discern and support the right high-growth firms by offering them direct financing opportunities? Overcoming such hurdles could have a profound impact on the capital structure of these high-growth, asset-light firms, ultimately fostering local economic growth.

**Author Contributions:** Conceptualization—D.S. and H.A.M.; Methodology—D.S. and H.A.M.; Formal Analysis—D.S. and H.A.M.; Resources—D.S. and H.A.M.; Writing Original Draft—D.S. and H.A.M.; Writing—Review & Editing—D.S. and H.A.M. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research received no external funding.

**Informed Consent Statement:** Not applicable.

**Data Availability Statement:** Data are available at China Stock Market and Accounting Research Database (CSMAR), and Choice Eastmoney upon subscription.

**Conflicts of Interest:** The authors declare no conflict of interest.

## References

- Bae, Sung C., Daniel P. Klein, and Raj Padmaraj. 1994. Event risk bond covenants, agency costs of debt and equity, and stockholder wealth. *Financial Management* 23: 28–41. Available online: <https://www.jstor.org/stable/3666081> (accessed on 5 July 2023).
- Berger, Allen N. 1995. The profit-structure relationship in banking--tests of market-power and efficient-structure hypotheses. *Journal of Money, Credit and Banking* 27: 404–31. [CrossRef]

- Berger, Allen N., and Gregory F. Udell. 1995. Relationship lending and lines of credit in small firm finance. *Journal of Business* 68: 351–81. Available online: <https://www.jstor.org/stable/2353332> (accessed on 5 July 2023). [CrossRef]
- Booth, James R., and Lena Chua Booth. 2006. Loan collateral decisions and corporate borrowing costs. *Journal of Money, Credit and Banking* 38: 67–90. Available online: <https://www.jstor.org/stable/3839069> (accessed on 5 July 2023). [CrossRef]
- Booth, Laurence, Varouj Aivazian, Asli Demircug-Kunt, and Vojislav Maksimovic. 2001. Capital structures in developing countries. *The Journal of Finance* 56: 87–130. [CrossRef]
- Borensztein, Eduardo, and Lei Sandy Ye. 2021. Corporate debt overhang and investment in emerging economies: Firm-level evidence. *International Finance* 24: 18–39. [CrossRef]
- Bradford, William, Chao Chen, and Yang Zhao. 2019. The effect of corporate governance on credit ratings: Evidence from China's bond market. *Journal of International Financial Management & Accounting* 30: 113–44. [CrossRef]
- Brav, Omer. 2009. Access to capital, capital structure, and the funding of the firm. *The Journal of Finance* 64: 263–308. [CrossRef]
- Brush, Thomas H., Ramesh Dangol, and Jonathan P. O'Brien. 2012. Customer capabilities, switching costs, and bank performance. *Strategic Management Journal* 33: 1499–515. [CrossRef]
- Castanias, Richard. 1983. Bankruptcy risk and optimal capital structure. *The Journal of Finance* 38: 1617–35. [CrossRef]
- Chen, Jean J. 2004. Determinants of capital structure of Chinese-listed companies. *Journal of Business Research* 57: 1341–51. [CrossRef]
- Delis, Manthos D., Sotirios Kokas, and Steven Ongena. 2017. Bank market power and firm performance. *Review of Finance* 21: 299–326. [CrossRef]
- Dewenter, Kathryn L., and Vincent A. Warther. 1998. Dividends, asymmetric information, and agency conflicts: Evidence from a comparison of the dividend policies of Japanese and US firms. *The Journal of Finance* 53: 879–904. [CrossRef]
- Dewi, Cicilia Ratna, and Fachrurrozie Fachrurrozie. 2021. The Effect of Profitability, Liquidity, and Asset Structure on Capital Structure with Firm Size as Moderating Variable. *Accounting Analysis Journal* 10: 32–38. [CrossRef]
- Diamond, Douglas W. 1991. Monitoring and reputation: The choice between bank loans and directly placed debt. *Journal of Political Economy* 99: 689–721. [CrossRef]
- Fama, Eugene F., and Kenneth R. French. 2002. Testing trade-off and pecking order predictions about dividends and debt. *Review of Financial Studies* 15: 1–33. Available online: <https://www.jstor.org/stable/2696797> (accessed on 5 July 2023). [CrossRef]
- Fluck, Zsuzsanna. 1999. The dynamics of the management-shareholder conflict. *The Review of Financial Studies* 12: 379–404. [CrossRef]
- Gavish, Bezalel, and Avner Kalay. 1983. On the asset substitution problem. *Journal of Financial and Quantitative Analysis* 18: 21–30. [CrossRef]
- Ge, Yao, Yangshu Liu, Zheng Qiao, and Zhe Shen. 2020. State ownership and the cost of debt: Evidence from corporate bond issuances in China. *Research in International Business and Finance* 52: 101164. [CrossRef]
- Green, Richard C., and Eli Talmor. 1986. Asset substitution and the agency costs of debt financing. *Journal of Banking & Finance* 10: 391–99. [CrossRef]
- Grossman, Sanford J., and Oliver D. Hart. 1986. The costs and benefits of ownership: A theory of vertical and lateral integration. *Journal of Political Economy* 94: 691–719. [CrossRef]
- Hasan, Iftexhar, Liuling Liu, Haizhi Wang, and Xinting Zhen. 2017. Bank market power and loan contracts: Empirical evidence. *Economic Notes: Review of Banking, Finance and Monetary Economics* 46: 649–76. [CrossRef]
- Ioannidou, Vasso, and Steven Ongena. 2010. "Time for a change": Loan conditions and bank behavior when firms switch banks. *The Journal of Finance* 65: 1847–77. [CrossRef]
- Jensen, Michael C., and William H. Meckling. 1976. Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure. *Journal of Financial Economics* 3: 305–60. [CrossRef]
- Jensen, Michael C., and William H. Meckling. 1979. Rights and production functions: An application to labor-managed firms and codetermination. *Journal of Business* 52: 469–506. Available online: <https://www.jstor.org/stable/2352442> (accessed on 5 July 2023). [CrossRef]
- Jiang, Xiaochen, Jim Huangnan Shen, Chien-Chiang Lee, and Chong Chen. 2021. Supply-side structural reform and dynamic capital structure adjustment: Evidence from Chinese-listed firms. *Pacific-Basin Finance Journal* 65: 101482. [CrossRef]
- Klein, Paul-Olivier, and Laurent Weill. 2018. Bond offerings in China: The role of ownership. *Economics of Transition* 26: 363–99. [CrossRef]
- Ko, Jong Kwon, and Sung-Soo Yoon. 2011. Tax benefits of debt and debt financing in Korea. *Asia-Pacific Journal of Financial Studies* 40: 824–55. [CrossRef]
- Kraus, Alan, and Robert H. Litzenberger. 1973. A state-preference model of optimal financial leverage. *The journal of finance* 28: 911–22. [CrossRef]
- Kurshev, Alexander, and Ilya A. Strebulaev. 2015. Firm size and capital structure. *Quarterly Journal of Finance* 5: 1550008. [CrossRef]
- Kyissima, Kelvin Henry, Gong Zhang Xue, Thales Pacific Yapatake Kossele, and Ahmed Ramadhan Abeid. 2020. Analysis of capital structure stability of listed firms in China. *China Finance Review International* 10: 213–28. [CrossRef]
- Leary, Mark T. 2009. Bank loan supply, lender choice, and corporate capital structure. *The Journal of Finance* 64: 1143–85. [CrossRef]
- Leland, Hayne E. 1998. Agency costs, risk management, and capital structure. *The Journal of Finance* 53: 1213–43. [CrossRef]
- Li, Zhichuan, and Caleb Thibodeau. 2019. CSR-contingent executive compensation incentive and earnings management. *Sustainability* 11: 3421. [CrossRef]



- Mayer, Colin. 1990. Financial systems, corporate finance, and economic development. In *Asymmetric Information, Corporate Finance, and Investment*. Chicago: University of Chicago Press, pp. 307–32. Available online: <https://www.nber.org/system/files/chapters/c11477> (accessed on 5 July 2023).
- Mensah, Sam, and Joshua Yindenaba Abor. 2014. Agency conflict and bank interest spreads in Ghana. *African Development Review* 26: 549–60. [CrossRef]
- Miller, Merton H., and Franco Modigliani. 1961. Dividend policy, growth, and the valuation of shares. *The Journal of Business* 34: 411–33. Available online: <https://www.jstor.org/stable/2351143> (accessed on 5 July 2023). [CrossRef]
- Myers, Stewart C. 1984. The Capital Structure Puzzle. *Journal of Finance* 39: 574–92. [CrossRef]
- Nishihara, Michi, Sudipto Sarkar, and Chuanqian Zhang. 2019. Agency cost of debt overhang with optimal investment timing and size. *Journal of Business Finance & Accounting* 46: 784–809. [CrossRef]
- Paniagua, Jordi, Rafael Rivelles, and Juan Sapena. 2018. Corporate governance and financial performance: The role of ownership and board structure. *Journal of Business Research* 89: 229–34. [CrossRef]
- Peng, Mike W., Shujun Zhang, and Xinchun Li. 2007. CEO duality and firm performance during China's institutional transitions. *Management and Organization Review* 3: 205–25. [CrossRef]
- Peng, Mike W., Yuan Li, En Xie, and Zhongfeng Su. 2010. CEO duality, organizational slack, and firm performance in China. *Asia Pacific Journal of Management* 27: 611–24. [CrossRef]
- Qi, Baolei, Liuchuang Li, Qing Zhou, and Jinghui Sun. 2017. Does internal control over financial reporting really alleviate agency conflicts? *Accounting & Finance* 57: 1101–25. [CrossRef]
- Rajan, Raghuram G. 1992. Insiders and outsiders: The choice between informed and arm's-length debt. *The Journal of Finance* 47: 1367–400. [CrossRef]
- Rajan, Raghuram G., and Luigi Zingales. 1995. What do we know about capital structure? Some evidence from international data. *The Journal of Finance* 50: 1421–60. [CrossRef]
- Renders, Annelies, and Ann Gaeremynck. 2012. Corporate governance, principal-principal agency conflicts, and firm value in European listed companies. *Corporate Governance: An International Review* 20: 125–43. [CrossRef]
- Restrepo, Felipe, Lina Cardona-Sosa, and Philip E. Strahan. 2019. Funding liquidity without banks: Evidence from a shock to the cost of very short-term debt. *The Journal of Finance* 74: 2875–914. [CrossRef]
- Ross, Stephen A. 1973. The economic theory of agency: The principal's problem. *The American Economic Review* 63: 134–39. Available online: <https://www.jstor.org/stable/1817064> (accessed on 5 July 2023).
- Santos, Joao AC, and Andrew Winton. 2008. Bank loans, bonds, and information monopolies across the business cycle. *The Journal of Finance* 63: 1315–59. [CrossRef]
- Shapiro, Alan C. 1978. Financial structure and cost of capital in the multinational corporation. *Journal of Financial and Quantitative Analysis* 13: 211–26. [CrossRef]
- Sharpe, Steven A. 1990. Asymmetric information, bank lending, and implicit contracts: A stylized model of customer relationships. *The Journal of Finance* 45: 1069–87. [CrossRef]
- Sohn, Byungcherl Charlie. 2012. Equity value, implied cost of equity and shareholders' real options. *Accounting & Finance* 52: 519–41. [CrossRef]
- Titman, Sheridan, and Roberto Wessels. 1988. The determinants of capital structure choice. *The Journal of Finance* 43: 1–19. [CrossRef]
- Tong, Guanqun, and Christopher J. Green. 2005. Pecking order or trade-off hypothesis? Evidence on the capital structure of Chinese companies. *Applied Economics* 37: 2179–89. [CrossRef]
- Wang, Yifei, Toni M. Whited, Yufeng Wu, and Kairong Xiao. 2022. Bank market power and monetary policy transmission: Evidence from a structural estimation. *The Journal of Finance* 77: 2093–141. [CrossRef]
- Wright, Peter, and Stephen P. Ferris. 1997. Agency conflict and corporate strategy: The effect of divestment on corporate value. *Strategic Management Journal* 18: 77–83. [CrossRef]
- Wrightman, Dwayne. 1978. Tax shield valuation and the capital structure decision. *The Journal of Finance* 33: 650–56. [CrossRef]
- Xiang, Jingjie, and Li Li. 2022. Monetary policy uncertainty, debt financing cost and real economic activities: Evidence from China. *International Review of Economics & Finance* 80: 1025–44. [CrossRef]
- Zhou, Hong, Chang Zhou, Wanfa Lin, and Guoping Li. 2017. Corporate governance and credit spreads on corporate bonds: An empirical study in the context of China. *China Journal of Accounting Studies* 5: 50–72. [CrossRef]

**Disclaimer/Publisher's Note:** The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.