# Do initial public offerings reduce the cost of debt? Evidence from China

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## Abstract

**Purpose** – The purpose of this study is to examine whether initial public offerings (IPOs) can reduce the cost of debt for small and medium-sized enterprises (SMEs).

**Design/methodology/approach** – This study uses a sample of 5,770 firm-year observations, with 44.51% (55.49%) of them obtained from listed (unlisted) firms in China, for regression analyses. In addition, the authors construct an instrumental variable (IV) based on the change in the IPO approval rate over time, which is largely affected by political factors and considered exogenous to corporate management, to demonstrate the causal effect of IPOs on the cost of debt.

**Findings** – The results of baseline regressions suggest that IPOs reduce the cost of debt by 16.2162%. Additional analyses show that IPOs have positive effects on the number of corporate employees, R&D expenses and the ratio of employees with bachelor's or postgraduate degrees, which is consistent with the notion that IPOs alleviate firms' financial constraints by reducing the cost of debt.

**Originality/value** – This study makes three important contributions. First, the authors use a sample containing unlisted firms and conduct IV analyses to address potential selection bias and endogeneity issues and by doing so, demonstrate the negative effect of IPOs on the cost of debt. Second, the authors lend support to agency theory in explaining the cost of debt. Third, the authors highlight that the reduced cost of debt after the IPO provides a new perspective in explaining why firms are willing to accept puzzlingly high IPO underpricing.

**Keywords** China, SMEs, IPOs, Cost of debt, Agency costs

**Paper type** Research paper

## 1. Introduction

Small and medium-sized enterprises (SMEs) are indispensable to the economic fabric of any country and their contribution spans across job creation, corporate innovation, economic growth and social stability (Beck *et al.*, 2005a; Cravo *et al.*, 2012; Varum and Rocha, 2013; de Wit and de Kok, 2014; Bartz and Winkler, 2016; Manzoor *et al.*, 2021). Financial constraints present one of the greatest challenges for SMEs' development (Berger and Udell, 2002; Beck *et al.*, 2005b; Beck *et al.*, 2008). However, as the primary source for SMEs to obtain external capital, debt is considerably expensive for SMEs due to information asymmetry and agency conflicts (Jensen and Meckling, 1976; Titman and Wessels, 1988;



**JEL classification** – G32, J31

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Cantor and Packer, 1996; Bessler and Seim, 2012). Given that initial public offerings (IPOs) reduce the information asymmetry between firms and investors, we hypothesize that IPOs have a negative effect on the cost of debt.

However, potential selection bias and endogeneity present empirical challenges to test this hypothesis. First, unlisted firms are subject to low disclosure requirements, so the data on these firms' accounting and financial performance is generally unavailable, raising concerns of potential selection bias in regression analyses. The second challenge is associated with endogeneity. Higher firm quality leads to both a higher rate of IPO success and a lower cost of debt, which generates an observation that the cost of debt in a firm decreases after its IPO; however, this observation does not necessarily mean that IPOs have a negative effect on the cost of debt. Fortunately, the data availability and institution structure in the Chinese market provide a unique opportunity to address the above challenges. First, we collect data for listed and unlisted firms from the China Stock Market and Accounting Research Database (CSMAR) and the Chinese Industrial Enterprises Database (CIED), respectively, to mitigate the selection bias concern. Second, we construct an instrumental variable (IV) based on the change in the IPO approval rate over time, which is largely affected by political factors and considered exogenous to corporate management, to address the endogeneity issue.

Empirically, we use a sample of 5,770 firm-year observations, with 44.51% (55.49%) of them obtained from listed (unlisted) firms, for regression analyses. The regression results suggest that the IPO reduces the cost of debt by 16.2162% for a firm with a median level of the cost of debt. Moreover, we follow prior research to construct an IV based on the IPO approval rate (Long and Zhang, 2021). Specifically, when a firm is unlisted, the IV is equal to the IPO approval rate in the year of observation; on the other hand, when a firm has been listed, the IV is equal to the IPO approval rate in the year of its IPO. In the IV regressions, the negative association between the IPO event and the cost of debt remains statistically significant, confirming that IPOs negatively affect the cost of debt. In additional analyses, we show that IPOs have positive effects on the number of corporate employees, R&D expenses and the ratio of employees with bachelor's or postgraduate degrees, which is consistent with the notion that IPOs alleviate firms' financial constraints by reducing the cost of debt.

Our study contributes to the literature in three important ways. First, we extend the literature on the development of SMEs. While SMEs play an important role in economic growth and social stability, their development is usually subject to financial constraints (Berger and Udell, 1998; Carpenter and Petersen, 2002; Cassar, 2004; Paul *et al.*, 2007). High borrowing costs reduces their ability to invest in growth and innovation, eventually increasing their failure rates. We demonstrate that IPOs are an effective method for SMEs to reduce the cost of debt and alleviate financial constraints.

Second, we add to the research on the cost of debt. One crucial determinant of the cost of debt is information asymmetry, which in turn leads to agency conflicts, affects the terms and increases the cost associated with borrowing (Jensen and Meckling, 1976). Numerous studies have provided empirical evidence for the agency cost of debt (e.g., Cantor and Packer, 1996; Anderson *et al.*, 2004; Ashbaugh-Skaife *et al.*, 2006; Almeida and Campello, 2007). Our finding that a firm's IPO has a negative effect on its cost of debt lends support to agency conflicts in explaining the cost of debt.

Third, we also contribute to the literature on IPO underpricing. Underpricing means firms and their initial shareholders are essentially "leaving money on the table" during IPOs, which presents a puzzle under the principles of market efficiency and rational investor behavior. Prior research has investigated this puzzle from various perspectives, such as asymmetric information (Rock, 1986; Field and Hanka, 2001; Loughran and Ritter, 2004; Brau *et al.*, 2005), irrational behaviors (Derrien, 2005; Ljungqvist *et al.*, 2006; Fjesme *et al.*, 2023) and

ownership and control (Zingales, 1995; Brennan and Franks, 1997; Arugaslan *et al.*, 2004). Our results suggest that the reduced cost of debt after the IPO might be another reason for firms to accept puzzlingly high underpricing during the IPO.

The remainder of this paper is organized as follows: Section 2 presents the hypothesis development; Section 3 explains the institutional background, research design and data and sample; Section 4 discusses the empirical results; and Section 5 concludes the paper.

## 2. Hypothesis development

### *2.1 Development of SMEs*

SMEs play a crucial role in the economic landscape of countries worldwide. They are often the backbone of both developed and developing economies due to their significant contributions to employment, innovation, economic growth and social stability (Beck *et al.*, 2005a; Cravo *et al.*, 2012; Varum and Rocha, 2013; de Wit and de Kok, 2014; Bartz and Winkler, 2016; Manzoor *et al.*, 2021). Meanwhile, SMEs also face a myriad of challenges that can impede their development and sustainability, such as financial constraints (Berger and Udell, 1998; Carpenter and Petersen, 2002; Cassar, 2004; Paul *et al.*, 2007), regulatory obstacles (Djankov *et al.*, 2002; van Stel *et al.*, 2007; Zhu *et al.*, 2012; Wu and Deng, 2020; Kasema, 2023), market competition (Patel and Cardon, 2010; Chryssochoidis *et al.*, 2016; Upson and Green, 2020; Zhou *et al.*, 2025) and technological adoption and innovation (Nieto and Fernández, 2005; Ritchie and Brindley, 2005; Hlasny, 2023).

Prior research suggests that financial constraints are one of the greatest challenges for SMEs. For example, Berger and Udell (1998) examine the economics of small business finance, highlighting that SMEs often face higher interest rates compared to larger firms. The high cost of borrowing reduces their ability to invest in growth and innovation. Carpenter and Petersen (2002) explore how capital market imperfections influence SME investment decisions. They find that high costs and restrictive lending conditions inhibit the ability of SMEs to raise external funds, which is crucial for their expansion and modernization efforts. Cassar (2004) finds that start-ups and early-stage SMEs often struggle to secure venture capital or bank loans, as lenders are wary of the high failure rates among new enterprises. Beck *et al.* (2005b) provides a comprehensive analysis of financing obstacles faced by SMEs, emphasizing that limited access to external financing is a common issue globally. They suggest that SMEs often have difficulties obtaining bank loans due to their perceived high risk and lack of collateral. Beck and Demirguc-Kunt (2006) argues that financial constraints significantly limit the growth potential of SMEs. Restricted access to external finance hampers their ability to invest in new projects, expand operations and enter new markets. Nichter and Goldmark (2009) analyze how financial constraints contribute to the high failure rates of SMEs, particularly in developing countries. They argue that inadequate financial resources prevent SMEs from weathering economic downturns and other external shocks. Ferrando and Ruggieri (2018) examine the cost of capital for SMEs in the European Union, revealing that SMEs face higher interest rates and stricter loan conditions compared to larger firms. This disparity limits SMEs' investment capacity. Bvirindi and Inalegwu (2024) find that SMEs experience lower declines in leverage relative to large firms during the global financial crisis and the European debt crisis. Saoula *et al.* (2025) focuses on entrepreneurial intentions, explicitly mentioning financial support as a driver. Moreover, SMEs experience steeper declines in debt maturity during these periods. Xu *et al.* (2022) find that SMEs turn to credit card debt as a substitute when they fail to obtain bank loans.

### *2.2 Initial public offerings*

One solution to relax financial constraints for SMEs is the IPO. One of the strongest and most consistent motivations for firms to go public is access to larger pools of capital. By issuing

shares to the public, firms can raise significant funds needed for expansion, research and development and other strategic initiatives. Kim and Weisbach (2008) argue that the immediate influx of capital from an IPO can be substantial, enabling firms to undertake projects that would be impossible in a private financing scenario. Brav (2009) highlights how public firms can build stronger financial buffers by virtue of their access to equity markets, improving their resilience. Hadlock and Pierce (2010) provide evidence that firms alleviate financial constraints significantly after an IPO, enabling smoother operational management and strategic maneuvering. Bessler and Seim (2012) find that access to public capital markets allows firms to diversify their funding sources and reduce dependence on expensive debt. Cao *et al.* (2023) find that Chinese firms with excess IPO funds have better post-IPO operating performance, especially those with limited financing channels. Larrain *et al.* (2025) isolate a positive causal effect of going public on profitability and also find a post-IPO expansion in sales per employee, subsidiaries and countries in which firms operate. Jiang *et al.* (2022) provide strong evidence that SMEs significantly accelerate the pace of establishing new foreign subsidiaries after going public and securing funding support.

Access to external capital is not a firm's only motive for the IPO. Other motives include liquidity supply, market valuation, corporate governance and talent acquisition. First, Cumming and MacIntosh (2003) show that the desire for an exit strategy is a significant driving factor. Key stakeholders such as promoters and private equity investors often seek partial or full exits through an IPO. IPOs provide these stakeholders with liquidity, which enables portfolio diversification and risk management. Second, Ritter and Welch (2002) emphasize how an IPO helps establish a credible valuation benchmark, reducing information asymmetry and increasing the firm's market worth. After the IPO, shares are traded in a transparent, regulated environment, facilitating price discovery and providing a realistic firm valuation. Third, an IPO can significantly enhance a firm's governance structure. Doidge *et al.* (2013) find that firms from countries with weaker governance frameworks opt for foreign IPOs to benefit from enhanced governance standards, thus improving their credibility and attractiveness to investors. Fourth, going public allows firms to offer stock options and shares as part of employee compensation packages. Equity compensation can serve as a powerful tool for attracting and retaining top talent. Core and Guay (2001) explain how stock-based compensation aligns the interests of employees with those of shareholders, promoting long-term value creation.

### *2.3 Cost of debt*

The cost of debt is a key variable in corporate finance, influencing a firm's capital structure and overall financial strategy. One crucial determinant of the cost of debt is information asymmetry, which arises when there is a disparity in the information available to insiders (e.g., firm managers) and outsiders (e.g., creditors and potential investors). Information asymmetry can lead to agency conflicts, thereby affecting the terms and cost associated with borrowing (Jensen and Meckling, 1976). Under asymmetric information, firms follow a hierarchy of financing preferences, with internal financing prioritized over debt and equity due to the higher cost of the latter two (Myers and Majluf, 1984).

Many studies have provided empirical evidence for the agency cost of debt. Cantor and Packer (1996) study how credit ratings, which are provided by agencies like Moody's and Standard and Poor's to reduce the information asymmetry between firms and investors, are pivotal in determining the cost of debt, with a better rating leading to lower cost. Anderson *et al.* (2004) find that those firms with strong governance practices, such as independent boards, face lower debt costs due to lessening agency risks. Ashbaugh-Skaife *et al.* (2006) show that stronger internal controls, as part of overall good governance, are associated with

lower borrowing costs. Almeida and Campello (2007) demonstrate that firms with higher asset tangibility face lower borrowing costs since tangible assets serve as effective collateral under asymmetric information.

In addition to the increased access to external capital, IPOs help firms with liquidity supply, market valuation, corporate governance and talent acquisition. All these improvements are expected to enhance the visibility of firms and alleviate the problems associated with the information asymmetry between them and their investors. Given that agency conflicts under asymmetric information are one of the most important factors affecting the cost of debt, we predict that firms' IPOs reduce their cost of debt due to the mitigation of agency conflicts. Formally, we propose the following hypothesis:

*H1*. IPOs have a negative effect on the cost of debt.

## 3. Empirical method

### *3.1 Institutional background on the IPO market in China*

China's IPO market was established in the early 1990s, following the country's transition from a planned economy toward a market-oriented economy, and this period saw the creation of the Shanghai and Shenzhen stock exchanges in 1990 and 1991, respectively (Tian, 2011). The establishment aimed to mobilize domestic capital for state-owned enterprises and foster economic development. The China Securities Regulatory Commission (CSRC) plays a pivotal role in overseeing the IPO process, and this centralized regulatory body ensures conformity with national economic goals and maintains stability in the financial system (Carpenter and Whitelaw, 2017).

There are three main stages in the development of China's IPO market. The first stage began in the early 1990s under an *approval-based system*. It was characterized by strict government control, with the regulatory authorities making key decisions about whether a company could proceed with an IPO. Second, introduced in the 2000s, the *verification-based system* aimed to infuse market mechanisms into the approval process, focusing more on companies' qualifications and financial health while still requiring CSRC approval. Third, currently being implemented, starting with the launch of the Shanghai Stock Exchange's Science and Technology Innovation Board (also known as the STAR Market) in 2019, the *registration-based system* represents a shift toward a more market-driven approach, granting exchanges the authority to approve listings [1].

The IPO under the *verification-based system* is a long and exhausting process. Table 1 summarizes key steps during the IPO process under the *verification-based system*. Most of the ten steps last a few weeks to several months. While Steps 8–10 are similar to the IPO process in the U.S. market, the application phase for Steps 3–7 is more complex in China than in the U.S., where the government body, CSRC, is heavily involved in each step. Especially in Step 7, in addition to firm quality, other factors such as political concerns play an important role in the CSRC's decision to approve an IPO application (Tian, 2011; Liu *et al*., 2013; Piotroski and Zhang, 2014). The approval rate, which is equal to the number of approved IPOs divided by the number of total IPO applications under the Review Committee evaluation (Step 6), varies significantly over time (see Figure 1). For example, in 2013 the Chinese Government suspended IPOs for the whole year, and the approval rate became zero.

The fact that the success of a firm's IPO application depends on factors beyond firm quality provides a unique opportunity to investigate the effect of IPOs on the cost of debt (Tian, 2011; Liu *et al*., 2013; Piotroski and Zhang, 2014). For example, a firm's IPO application under the Review Committee evaluation was most likely to be approved in 2012; however, the IPO application submitted by another firm sharing similar characteristics in

**Table 1.** Key steps during the IPO process

| Step | Main tasks | Timeline |
|---|---|---|
| 1. Application preparations | Financial auditing; legal compliance; internal review; compilation of application materials | Several months to over a year |
| 2. Submission of application | Submission of documents; information disclosure; assistance from intermediates | Several days to One or Two weeks (relatively short) |
| 3. Preliminary review and feedback | Document check; evaluation of corporate qualifications; feedback and revision; review cycle | A few weeks to several months |
| 4. Detailed review | Management interviews; verification of financial authenticity; business risk assessment | Several months |
| 5. Expert review | Collection of professional opinions; risk assessment; qualitative analysis | A few weeks |
| 6. Review committee evaluation | Listing conditions review; meeting discussion; constructive opinions; transparency and independence | A few weeks or more |
| 7. Filing and approval | Issuance of approval documents; publication of prospectus | A few weeks |
| 8. Enquiry and pricing | Roadshow activities; demand analysis; pricing strategy | A few weeks |
| 9. Issuance and listing | Stock issuance; listing ceremony | A few weeks |
| 10. Post-listing supervision | Information disclosure; compliance operation; investor relations management | As long as the company remains publicly listed |

**Note(s):** This table summarizes key steps during the IPO process under the verification-based system in China. Most of the 10 steps last a few weeks to several months

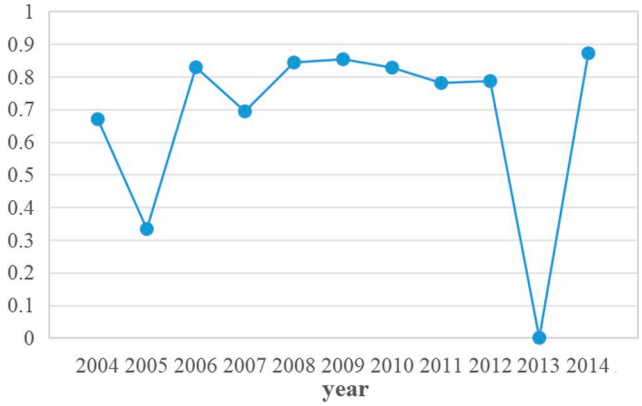


**Figure 1.** Annual IPO approval rate over time

**Note(s):** This figure depicts the annual IPO approval rate during the period of 2004–2014. The approval rate is equal to the number of approved IPOs divided by the number of total IPO applications under the Review Committee evaluation. The approval rate varies significantly over time. In 2013, the Chinese Government suspended IPOs for the whole year, and the approval rate becomes zero

2013 was definitely rejected. The difference in the changes of the cost of debt in these quality-comparable firms over time would reveal the effect of IPOs on the cost of debt.

### 3.2 Research design

To empirically evaluate the effect of a firm's IPO on its cost of debt, we estimate the following regression model:

$$CoD_{it} = \beta_0 + \beta_1 * IPO_{it} + \sum_{j=1}^{J} \gamma_j * Control_{jit} + \varepsilon_{it} \quad (1)$$

where $CoD_{it}$ refers to the cost of debt for the subject firm $i$ in year $t$. Following previous studies, we define it as the financing expense divided by the total liabilities, which includes interest expense, exchange loss and the associated service fees (Wei *et al.*, 2012). $IPO_{it}$ is a dummy variable equal to one if a firm is listed in the Chinese market. Additionally, we control for a range of firm characteristics that could affect the cost of debt: leverage (*Leverage*), firm size (*Size*), firm age (*Age*), current ratio (*Current Ratio*), return on assets (*ROA*), fixed assets (*Fixed Assets*) and state ownership (*SOE*). The detailed definitions of these variables are provided in Appendix Table A1.

### 3.3 Data and sample

Our initial sample comprises all firms that were subject to the Review Committee evaluation (Step 6) by the CSRC between 2004 and 2014 [2]. Our sample begins in 2004, when the CSRS began to provide the list of firms under the Review Committee evaluation, and ends in 2014 due to data availability in the CIED. For those firms whose IPO applications are eventually approved or rejected, we retrieve their financial data from the CSMAR or the CIED accordingly. It is noted that not all firms with rejected applications are covered by the CIED. As a result, our final sample contains 827 and 258 unique firms whose IPO applications are eventually approved and rejected, respectively. As shown in Table 2, the numbers of firm-year observations for these two groups of firms (i.e. treatment and control groups) are 4,750 and 1,020, respectively. In the treatment group, 2,182 (2,568) observations are from the pre-IPO (post-IPO) period. The total number of firm-year observations is 5,770 in our final sample.

Table 3 presents the descriptive statistics for a list of main variables used in our testing. *IPO* has a mean of 0.4451, which means that 44.51% of the observations in our sample are from the treated firms after they are listed. Publicly listed firms are subject to higher disclosure requirements for their financial data, marking their financial data more accessible. The means of *Size* and *Age* are 20.6056 and 2.2717, respectively, relatively smaller than those in the studies focusing on the firms covered in the CSMAR. While most of firms in the

**Table 2.** Sample summary

| Group | Unique firms | Firm-years | Pre-IPO | Post-IPO |
|---|---|---|---|---|
| Treatment | 827 | 4750 | 2182 | 2568 |
| Control | 258 | 1020 | 1020 | 0 |
| Full sample | 1085 | 5770 | 3202 | 2568 |

**Note(s):** This table provides a sample summary. The treatment (control) group comprises 4,750 (1,020) firm-year observations from 827 (258) unique firms

**Table 3.** Descriptive statistics

| Variable | Mean | SD | Min. | p25 | p50 | p75 | Max. |
|---|---|---|---|---|---|---|---|
| CoD | 0.0284 | 0.0187 | 0.0000 | 0.0145 | 0.0259 | 0.0390 | 0.1124 |
| IPO | 0.4451 | 0.4970 | 0.0000 | 0.0000 | 0.0000 | 1.0000 | 1.0000 |
| Leverage | 0.4668 | 0.2757 | 0.0126 | 0.3376 | 0.4647 | 0.5872 | 15.0055 |
| Size | 20.6056 | 1.2105 | 15.9434 | 19.7359 | 20.5366 | 21.3523 | 26.0191 |
| Age | 2.2717 | 0.6125 | 0.0000 | 1.9459 | 2.3979 | 2.6391 | 4.4886 |
| Current ratio | 1.9854 | 2.0560 | −0.3727 | 1.1226 | 1.4927 | 2.1416 | 49.8475 |
| ROA | 0.0844 | 0.0841 | −2.0084 | 0.0379 | 0.0718 | 0.1176 | 0.9842 |
| Fixed assets | 0.2571 | 0.1482 | −0.7174 | 0.1512 | 0.2396 | 0.3435 | 2.9049 |
| SOE | 0.1378 | 0.3447 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 1.0000 |

**Note(s):** This table presents the descriptive statistics for a list of main variables used in our testing. The variable definitions are provided in Appendix Table A1. Continuous variables are winsorized at the 1st and 99th percentiles. "SD", "p25", "p50" and "p75" represent "standard deviation", "25th percentile", "50th percentile" and "75th percentile", respectively

CSMAR are publicly listed, our sample contains more than 50% of firm-year observations with *IPO* = 0, and these firms are smaller and younger than listed firms. Table 4 presents the correlation matrix for these variables. The correlation between *CoD* and *IPO* is −0.0412 and statistically significant at the 1% level, providing initial evidence for our argument that the IPO has a negative effect on the cost of debt.

## 4. Empirical results

### *4.1 Baseline regressions*

Table 5 reports the regression results of estimating equation (1). In all columns, the dependent variable is *CoD*, and the independent variable of interest is *IPO*. In Column (1), we include only one independent variable, *IPO*, in the regression, and its coefficient is negative and statistically significant. In Column (2), when we add control variables to the regression, the *IPO* coefficient remains statistically significant at the 5% level. Moreover, the signs of the coefficients of control variables are consistent with intuitions and previous studies. For example, the significantly negative associations between *CoD* and both *Size* and *ROA* are consistent with Titman and Wessels (1988), who examines the determinants of capital structure, showing that firms' size and profitability are inversely related to the cost of debt.

In Column (3), we add the year and firm fixed effects to the regression, and the magnitude of the *CoD* coefficient is even greater, with its significance increasing to the 1% level [3]. Economically, the coefficient with a value of −0.0042 suggests that the IPO reduces the cost of debt by 16.2162% for a firm with its *CoD* equal to the median (0.0259). In summary, the regression results in all three columns of Table 5 show a negative association between *IPO* and *CoD* and lend support for the agency theory, which suggests that the success of a firm's IPO mitigates the information asymmetry problem between the firm and its investors and by doing so, reduces the firm's cost of debt.

### *4.2 Endogeneity*

We argue that the negative association between *IPO* and *CoD* documented in Table 5 indicates that IPOs have a negative effect on the cost of debt. However, this argument suffers from endogeneity issues. For example, high-quality firms are more likely to receive approvals for their IPO applications than low-quality firms; meanwhile, the cost of debt is lower among high-quality firms. Therefore, the negative association between *IPO* and *CoD* might not mean

**Table 4.** Correlations

| Variable | CoD | IPO | Leverage | Size | Age | Current ratio | ROA | Fixed assets |
|---|---|---|---|---|---|---|---|---|
| CoD | 1 | | | | | | | |
| IPO | −0.0412*** | 1 | | | | | | |
| Leverage | 0.0189 | −0.1959*** | 1 | | | | | |
| Size | −0.0663*** | 0.5874*** | 0.0437*** | 1 | | | | |
| Age | 0.0524*** | 0.1804*** | −0.0496*** | 0.1585*** | 1 | | | |
| Current ratio | 0.00280 | 0.1664*** | −0.3536*** | −0.0656*** | 0.0220* | 1 | | |
| ROA | −0.0660*** | −0.4344*** | −0.1058*** | −0.4096*** | −0.1717*** | 0.0803*** | 1 | |
| Fixed assets | 0.2408*** | 0.0116 | 0.0966*** | 0.0265** | 0.0115 | −0.2238*** | −0.0804*** | 1 |
| SOE | −0.0495*** | 0.0811*** | 0.0865*** | 0.2178*** | 0.00630 | −0.0535*** | −0.1437*** | 0.1289*** |

**Note(s):** This table presents the correlation matrix for a list of main variables used in our testing. The variable definitions are provided in Appendix Table A1. Continuous variables are winsorized at the 1st and 99th percentiles. ***, ** and * represent significance at the 1, 5 and 10% levels, respectively

**Table 5.** Baseline regressions

| Variable | (1) CoD | (2) CoD | (3) CoD |
|---|---|---|---|
| IPO | −0.0015** (−2.1930) | −0.0025** (−2.3752) | −0.0042*** (−4.5624) |
| Leverage | | 0.0005 (0.2335) | −0.0024*** (−3.0040) |
| Size | | −0.0010** (−2.4264) | −0.0031*** (−4.0235) |
| Age | | 0.0016** (2.3462) | 0.0013 (0.8303) |
| Current ratio | | 0.0007** (2.5257) | 0.0009*** (3.3687) |
| ROA | | −0.0240*** (−3.0348) | −0.0013 (−0.2033) |
| Fixed assets | | 0.0327*** (12.7519) | 0.0171*** (4.0040) |
| SOE | | −0.0041*** (−3.3386) | −0.0001 (−0.0231) |
| Constant | 0.0291*** (50.8618) | 0.0393*** (4.6515) | 0.0760*** (4.9565) |
| Year FE | No | No | Yes |
| Firm FE | No | No | Yes |
| *N* | 5770 | 5770 | 5770 |
| Adjusted $R^2$ | 0.0017 | 0.0836 | 0.1187 |

**Note(s):** This table reports the regression results of three ordinary least squares (OLS) models of the cost of debt. The variable definitions are provided in Appendix Table A1. Continuous variables are winsorized at the 1st and 99th percentiles. Standard errors are clustered at the firm level and associated *t*-statistics are reported in parentheses. *** and ** represent significance at the 1 and 5% levels, respectively

that IPOs have a negative effect on the cost of debt; it merely reflects that higher firm quality leads to a greater IPO approval rate and lower cost of debt. Unfortunately, it is an empirical challenge to construct variables to accurately control for firm quality, which raises an omitted variable issue in interpreting the regression results documented in Table 5 [4].

To address the above endogeneity concern, we follow prior research and exploit the change in the IPO approval rate over time to construct an IV for empirical analyses (Long and Zhang, 2021):

$$IPO\ Likelihood_{it} = \begin{cases} \text{Approval Rate in the year of observations if } IPO_{it} = 0 \\ \text{Approval Rate in the year of } IPO\ if\ IPO_{it} = 1 \end{cases} \quad (2)$$

where *IPO Likelihood* represents the likelihood that a firm receives approval for its IPO application. When a firm is unlisted, *IPO Likelihood* is equal to the IPO approval rate in the year of observation; however, when a firm is listed, *IPO Likelihood* is equal to the IPO approval rate in the year of its IPO. By definition, *IPO Likelihood* is expected to have a significantly positive effect on *IPO*; on the other hand, the IPO approval rate is largely affected by political concerns, so *IPO Likelihood* is supposed to be exogenous to corporate management and should not directly affect *CoD* [5].

Table 6 reports the regression results of IV analyses. Column (1) presents the first-stage regression results, with *IPO* and *IPO Likelihood* as the dependent variable and the key independent variable of interest, respectively. The coefficient of *IPO Likelihood* is significantly positive, which highlights that the politically driven IPO approval rate positively affects IPO success and suggests that *IPO Likelihood* meets the relevance condition as an IV. Column (2) presents the results of the second-stage regression, where the dependent variable and the key independent variable of interest are *CoD* and *IPO*, respectively, which are the same as in our baseline regressions. The *IPO* coefficient remains statistically negative, which confirms that a firm's IPO has a negative effect on its cost of debt. In Columns (3) and (4), we further include control variables in the regressions, and the

**Table 6.** Instrumental variable analyses

| Variable | (1) IPO | (2) CoD | (3) IPO | (4) CoD |
|---|---|---|---|---|
| IPO likelihood | 0.3308*** (16.6949) | | 0.2702*** (13.8955) | |
| IPO | | −0.0084** (−2.2679) | | −0.0109** (−2.4439) |
| Leverage | | | −0.1737 (−1.1896) | −0.0036*** (−3.0372) |
| Size | | | 0.2729*** (15.6596) | −0.0013 (−0.9391) |
| Age | | | 0.1302*** (4.8409) | 0.0022 (1.3034) |
| Current ratio | | | 0.0350*** (4.8166) | 0.0011*** (3.4580) |
| ROA | | | −0.7548*** (−4.1372) | −0.0064 (−0.7846) |
| Fixed assets | | | −0.0349 (−0.5468) | 0.0170*** (4.1534) |
| SOE | | | −0.0360 (−0.3974) | −0.0003 (−0.1232) |
| Constant | −0.5797*** (−22.4653) | 0.0209*** (11.8279) | −5.8291*** (−16.3347) | 0.0377 (1.3449) |
| Year FE | Yes | Yes | Yes | Yes |
| Firm FE | Yes | Yes | Yes | Yes |
| *N* | 5770 | 5770 | 5770 | 5770 |
| Adjusted $R^2$ | 0.5341 | 0.0835 | 0.6695 | 0.1028 |

**Note(s):** This table reports the regression results of instrumental variable (IV) analyses, with *IPO Likelihood* as the IV. *IPO Likelihood* represents the likelihood that a firm receives an approval for its IPO application. The variable definitions are provided in Appendix Table A1. Continuous variables are winsorized at the 1st and 99th percentiles. Standard errors are clustered at the firm level, and associated t-statistics are reported in parentheses. *** and ** represent significance at the 1 and 5% levels, respectively

regression results still demonstrate a positive effect of *IPO Likelihood* on *IPO* and a negative effect of *IPO* on *CoD* [6]. In summary, the regression results in Table 6 mitigate endogeneity concerns and underscore the negative effect that the IPO has on the cost of debt.

### *4.3 Economic consequences*

Having demonstrated the negative effect of IPOs on the cost of debt, we further examine the economic consequences of the reduced cost of debt following the IPO. First, we evaluate whether *IPO* leads to a greater size of corporate employment. Corporate employment is a cornerstone of the country's economic development and social stability. The swift industrialization and economic reforms over the past few decades have shifted the workforce landscape, making corporate employment increasingly significant (Baldwin and Lopez-Gonzalez, 2015). Since *IPO* reduces *CoD*, we predict that a firm will have a greater capacity to employ workers after the IPO. To test this prediction, we regress *Employee*, defined as the natural logarithm of the number of employees in a firm, on *IPO* and year and firm fixed effects, and report the regression results in Column (1) of Table 7 [7]. The *IPO* coefficient is 0.4814 and statistically significant with a *t*-statistic of 16.3851. When we add control variables to the regression, both the magnitude and t-statistic of the *IPO* coefficient decrease, but the coefficient remains statistically positive at the 1% significance level.

Second, we examine whether a firm increases its R&D expenses after IPO. Corporate innovation is the backbone of sustained competitive advantage and long-term business success in today's rapidly evolving global market. When *IPO* reduces *CoD*, a firm might increase its R&D expenses. Empirically, we define *R&D Expense* as the R&D expenses scaled by the total sales and regress it on *IPO*. In both Columns (2) and (5) of Table 7, the *IPO* coefficient is significantly positive at the 1% level, which suggests that the reduction in *CoD* through the IPO induces firms to increase their investments in R&D.

Third, we examine whether the composition of corporate employees changes after IPO. Specifically, we construct *Higher Education*, which is equal to the number of employees with bachelor's or postgraduate degrees scaled by the number of total employees. Employee education is a pivotal factor in fostering organizational learning, improving innovation performance and establishing competitive advantage (Ployhart and Moliterno, 2011; Gennaioli *et al.*, 2013). When a firm increases its employment and R&D expenses, it does not necessarily increase *Higher Education*; therefore, we further evaluate the change in *Higher Education* around the IPO. Column (3) of Table 7 indicates a negative association between *IPO* and *Higher Education*, but this association is not statistically different from zero. However, when we add control variables to the regression in Column (6), the regression results demonstrate that *IPO* has a significantly positive effect on *Higher Education*. In summary, the increases in *Employee*, *R&D Expense* and *Higher Education* after the IPO are consistent with the notion that IPOs reduce the cost of debt and alleviate financial constraints for SMEs.

## 5. Conclusion

This study demonstrates that an IPO serves as a critical mechanism for alleviating the pervasive financial constraints faced by SMEs, specifically by reducing the cost of debt by approximately 16.2%. Our primary methodological contribution is the use of a novel instrumental variable—the politically driven IPO approval rate in China—to robustly establish a causal relationship, effectively addressing the endogeneity concerns that have long challenged research in this area.

**Table 7.** Economic consequences

| Variable | (1) Employee | (2) R&D Expense | (3) Higher education | (4) Employee | (5) R&D Expense | (6) Higher education |
|---|---|---|---|---|---|---|
| IPO | 0.4814*** (16.3851) | 0.0227*** (17.7471) | −0.0011 (−0.3570) | 0.2964*** (6.9718) | 0.0181*** (9.2338) | 0.0153*** (2.9040) |
| Leverage | | | | −0.1036 (−0.8161) | −0.0072 (−1.2035) | 0.0216 (1.4089) |
| Size | | | | 0.4163*** (9.6356) | 0.0037** (2.3784) | −0.0231*** (−3.2719) |
| Age | | | | 0.0484 (0.7141) | −0.0028 (−1.1618) | 0.0011 (0.1443) |
| Current ratio | | | | −0.0067 (−1.3653) | 0.0001 (0.4998) | −0.0004 (−0.6441) |
| ROA | | | | 0.3186 (1.2922) | −0.0386 (−1.5695) | 0.0514 (1.5308) |
| Fixed assets | | | | 0.2006 (1.4270) | 0.0086 (1.5156) | −0.0337** (−2.0867) |
| SOE | | | | 0.1762 (1.5924) | −0.0263 (−1.1733) | 0.0215 (0.9883) |
| Constant | 6.5531*** (74.7564) | 0.0155*** (10.0658) | 0.1475*** (18.2539) | −1.6932** (−1.9792) | −0.0470 (−1.4037) | 0.5861*** (4.1038) |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes |
| *N* | 4712 | 4279 | 4750 | 4712 | 4279 | 4750 |
| Adjusted $R^2$ | 0.3525 | 0.4297 | 0.0352 | 0.4110 | 0.4440 | 0.0548 |

**Note(s):** This table reports the regression results of six OLS models, with *Employee*, *R&D Expense* and *Higher Education* as the dependent variables in Columns (1) and (4), Columns (2) and (5) and Columns (3) and (6), respectively. The variable definitions are provided in Appendix Table A1. Continuous variables are winsorized at the 1st and 99th percentiles. Standard errors are clustered at the firm level, and associated t-statistics are reported in parentheses. *** and ** represent significance at the 1 and 5% levels, respectively

Our findings offer a significant theoretical contribution by reframing the established puzzle of high IPO underpricing. We posit that firms may rationally accept significant initial underpricing as a strategic trade-off to secure the long-term, compounding benefit of a permanently lower cost of debt capital. Furthermore, we substantiate this financial channel with evidence of tangible real-economy outcomes, showing that the reduced cost of debt post-IPO enables SMEs to expand employment, intensify R&D investment and upgrade workforce education.

These results validate the importance of transparent public markets and rigorous disclosure in mitigating information asymmetry. They provide strong empirical support for regulatory reforms, such as China's shift toward a registration-based IPO system, that streamline market access for growth-oriented SMEs. While data limitations preclude a detailed examination of the precise channels—such as shifts in debt structure or investor composition—this study confirms the IPO as a transformative event that reduces financing frictions and unlocks sustainable growth potential for SMEs. Future research can build on this causal foundation to explore these underlying mechanisms in greater depth.

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**Notes**

[1.] In China, some researchers and practitioners categorizes the period of 2014-2019 as a transition stage from the *verification-based system* to the *registration-based system*. Based on their categorization, there are four main stages in the development of China's IPO market.

[2.] Existing literature regards IPO as a crucial developmental stage for SMEs to evolve into large enterprises (e.g., Heo *et al*. 2014; Velamuri and Liu 2017; Yang *et al*., 2020; Jiang *et al*. 2022).

[3.] In unreported robustness tests, we replace firm fixed effects with industry fixed effects or industry and province fixed effects, and all regression results remain qualitatively similar.

[4.] In unreported results, we analyze the impact threshold for a confounding variable (ITCV) and construct Oster identifiable sets to assess the omitted-variable(s) bias (Frank 2000; Larcker and Rusticus 2010; He *et al*. 2023). These results suggest that the effect of correlated-omitted variables on the inferences drawn from our baseline regression is minimal. However, an implicit assumption underlying the ITCV test and the Oster test is that the selection on observable variables is informative about the selection on unobservables (Altonji *et al*. 2005; Oster 2019). Therefore, omitted variables remain a concern in our baseline regression.

[5.] We acknowledge that IPO suspensions could be political decisions in response to broader economic conditions (e.g., market volatility or monetary policy). If so, *IPO Likelihood* would directly affect the cost of debt. To assess this possibility, we regress the cost of debt on *IPO Likelihood* and control variables in a sample of unlisted firms (unreported tests). The coefficient of *IPO Likelihood* is statistically insignificant, suggesting that *IPO Likelihood* affects the cost of debt primarily through the IPO channel.

[6.] In unreported tests, we also conduct two-stage treatment effect regression and propensity score matching-difference in differences (PSM-DID) regression. These regression results still identify a negative effect of *IPO* on *CoD*.

[7.] The number of observations in Table 7 is smaller than that in our baseline regression due to the limited availability of the data on corporate employees, R&D expenses and the ratio of employees with bachelor's or postgraduate degrees for firms in the control group.

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## Appendix

**Table A1.** Variable definitions

| Variable | Definition |
|---|---|
| CoD | The cost of debt, which is equal to the financing expense, including interest expense, exchange loss and service fees, divided by the total liabilities |
| IPO | A dummy variable equal to one if the firm has been listed |
| Leverage | Total liabilities divided by the total assets |
| Size | The natural logarithm of the total assets |
| Age | The natural logarithm of the firm age |
| Current ratio | Current assets divided by the total assets |
| ROA | Profit, scaled by the total assets |
| Fixed assets | Fixed assets, scaled by the total assets |
| SOE | A dummy variable equal to One if the firm is a state-owned enterprise |
| IPO likelihood | An instrumental variable reflecting the likelihood that that a firm receives approval for its IPO application, which is defined as: $IPO\ Likelihood_{it} = \begin{cases} \text{Approval Rate in the year of observations if } IPO_{it} = 0 \\ \text{Approval Rate in the year of } IPO_{it} = 1 \end{cases}$ |
| Employee | The natural logarithm of the number of employees |
| R&D expense | The R&D expense, scaled by the total sales |
| Higher education | The number of employees with bachelor's or postgraduate degrees, scaled by the number of total employees |

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