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Research Article

Understanding the Dynamics of IPO Underpricing and Its Effect on Bond Issuance Strategies

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Abstract:

Important milestones in a company's life cycle, IPOs are often marked by underpricing. The equities of high-tech enterprises on the China Scientific and Technological Innovation Board (STAR Markets) are significantly underpriced during IPOs. In this paper, we use the Two-tier Stochastic Frontier Models to break IPO underpricing down into its component parts—the pricing effect of the primary market while the transaction effect of the secondary market—and then we examine how these two markets differ in their effects on IPO underpricing. We do this from an investor behavior perspective in order to understand why STAR Market has such high IPO underpricing. Furthermore, company size has little bearing on the IPO underpricing. As a result, the STAR Market's IPO underpricing has historically been mostly influenced by secondary market investor activity. To investigate this, we used Ordinary Least Squares regression modeling to look at how underpricing affected the long-term success of IPOs. In China's STAR market, underpriced IPOs were associated with better long-term success, according to the regression results. We provide an evolving framework of a market for IPOs, where companies seek investment funds by becoming public. In making decisions about going public, raising and investing funds, and pricing the IPO, the initial shareholders have access to confidential information about the quality of their company's investment prospects. There are two categories of outside investors: those who are privy to the original shareholders' hidden financial motivations and those who learn about the IPO market only from publicly available IPO market data.

1. Introduction

As the "three anomalies" linked to IPOs, early underpricing, "hot issue" markets, along with long-term underperformance have long been commonplace in major stock markets worldwide [1,2], particularly in China's stock market. Among them, "IPO underpricing" is the situation in which the IPO price of a company's shares surges on its initial trading day, far exceeding the offering price. When compared to other nations, China's stock market has a much greater degree of IPO underpricing, which severely limits the efficacy of resource allocation. The high level of IPO underpricing in the market for shares has been attributed, in part, by some academics, to the limitations of China's stock issuing mechanism [3,4]. Reducing IPO Underpricing and other difficulties may be achieved by the implementation of a stock issuance registration process that primarily discloses issuer information, drawing on lessons learned from the stock markets of the US and Europe. The formal launch of STAR Market and the pilot program for user registration took place on June 13, 2019 [5,6]. Stock prices should ideally revert to their market value once a registration system is in place, at least in theory. However, when looking at the IPO statistics of companies listed on STAR Market, it becomes clear that underpricing of STAR Market IPOs is still common and far worse than on the Nasdaq stock market. This is due to the fact that the majority of the businesses included on STAR Market are involved in cutting-edge research and development, which helps advance national strategies and competes on a global scale. Consequently, investors in the secondary market would have an irrational preference for companies registered on the STAR Market [7-9]. While there has been little investigation on pricing efficiency in relation to STAR Market IPO underpricing, the root

causes of this phenomenon have received comparatively less attention. In order to determine if secondary market investor behavior has a more significant influence on the underpricing of innovations in science and technology enterprises during their IPOs, we split the underpricing into two distinct components: the effect of providing pricing in the main market along with the impact of secondary market investor behavior [10,11]. The element that mostly affects IPO underpricing will be examined by comparing their effect factor to IPO underpricing. While doing so, we use the Nasdaq Market as a control to see how undervaluing high-tech firms in IPOs differs in established and emerging capital markets. We may learn about the key causes of STAR Market IPO underpricing by dissecting IPO underpricing. In order to strengthen the Chinese capital market structure and guarantee the efficient functioning of STAR Market, the study conclusion is very significant.

1.1 Underpricing of IPO

There is a lot of evidence that IPOs are underpriced, and several research have attempted to address this issue [12]. The primary goal of calculating long-term performance is to compare the share price two years from now to the offering price with the closing price of the same trading day to get a sense of how the stock has done overall. Since the objective of this research is to examine underpricing of IPOs, the second section will consist of a two-part layer in which the estimated IPO over- or underpricing is based on the original offering price with the closing price. Consequently, the comparison will just include companies whose IPOs were underpriced [13].

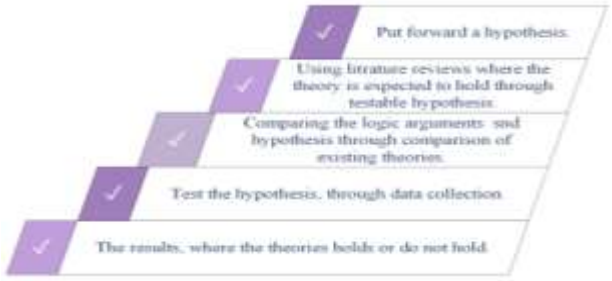

Figure 1. *Proposed Testing Model*

IPO Underpricing: Causes and Implications

- **Asymmetric Information** - When there is a knowledge gap between the company's management and early investors as well as new investors, underpricing occurs. For the purpose of attracting investors and ensuring a successful subscription, companies may choose to underprice their shares [14].
- **Market Sentiment and Demand** - The price of IPOs is heavily impacted by investor mood, which is determined by market circumstances and speculative behavior. Companies take advantage of the good market momentum to underprice high-demand initial public offerings.
- **Underwriter Role** - In order to reduce risk, boost demand, and guarantee a successful sale, investment banks financing the IPO may choose to establish a lower price. Strategic underpricing is another possible outcome of underwriters' close contacts with institutional investors [15].
- **Long-Term Performance Considerations** - Companies may have difficulties with long-term value despite the fact that early investors gain from underpricing. Opportunity costs in capital-raising can mount up if underpricing persists [16,17]**.**

1.2 Bond Issuance Strategies

Capital Structure Considerations - Companies need to structure their capital in a way that strikes a balance between issuing stock and debt. In order to take advantage of their increased market value and reputation, corporations might issue bonds after their IPO [18,19].

Interest Rate and Credit Ratings - Current interest rates while credit ratings are important factors for bond-issuing firms to consider. Creditworthiness after an IPO may boost trust in the market and reduce borrowing rates [20,21].

Timing and Market Conditions -Bond issuance must be timed strategically. In order to maximize their IPO value and minimize their financing expenses, companies may postpone bond offers [22,23].

Risk Management and Debt Maturity Structure - It is crucial for risk management to strike a balance between issuing bonds with short and lengthy maturities. To lock in interest rates, businesses might choose long-term bonds; to have more leeway, they can go for short-term debt [24,25].

Interplay Between IPO Underpricing and Bond Issuance

- Investors may have more faith in future bond issuances if underpriced IPOs indicate financial stability.

- Financial Strategy: A company's leverage and capital expenses might be affected if it uses the money from an IPO to issue fewer bonds.
- When deciding between stock and debt funding, it is important to take regulatory along with tax considerations into account [26].

1.3 Hypothesis testing

We postulate the following based on the data presented above:
(i) H1: An improved IPO pricing effectiveness and a decrease in the degree of IPO underpricing may be achieved by a registration-based approach.
(ii) H2: The IPO underpricing stage is improved by the illogical actions of secondary market investors.
In conclusion, academics both at home as well as overseas have hypothesized about IPO underpricing for quite some time. From the points of view of stock issuers, insurers, and investors, the empirical study on IPO underpricing delves into several topics and provides a thorough examination of the elements that contribute to IPO underpricing.

1.4 Motivations

Financial experts and academics alike are interested in the topic of underpricing in IPOs, which is the focus of this article. The primary concern of the study is to determine the rationale for the persistent underpricing of IPOs at debut, in spite of developments in theory and industry practice. We want to shed light on the tactics of corporations as well as the market dynamics at work in order to uncover the underlying processes of this underselling and examine its influence on post-IPO performance. In order to synthesize different ideas and find where they overlap and differ, this research relies on a literature evaluation that uses conceptual and methodical methodologies. This paves the way for an all-encompassing synopsis of the relevant theoretical frameworks. Underpricing of IPOs may be better understood by examining data asymmetry, signaling theory, along with risk management tactics. Convergences, like the paramount relevance of information asymmetry, and divergences, such the relative weight of behavioral and structural elements, are also covered in the article. Our research fills a knowledge vacuum in the literature by examining how underpricing affects post-IPO firm performance and how current theoretical models fail to account for modern factors like social media's influence and shifts in international legislation. The purpose of this article is to help readers better comprehend and apply financial theories to both developing and developed markets by offering a comprehensive and broadly applicable study of the underpricing issue in IPOs.
What follows is an outline of the rest of the paper. In Section 2, the literature on initial public offering underpricing is reviewed. The approach, data, and research methodologies are detailed in Section 3. The findings and analysis of the empirical tests are provided in Section 4. The robustness test is presented in Section 5. The policy implications are addressed and concluded in Section 6.

2. Related Work

In [27], the author shows that the effect of local mutual funds on the issue of municipal bonds is not uniform. Municipal bond funds in the same state or those in close proximity to it tend to have higher offering yields because to their bigger overall fund sizes. Bond rates are falling as the number of local funds increases, assuming the aggregate size of the funds remains constant. When the main market involvement of local funds is linked to the gaps between the features of new issues and the bonds already in their portfolios, these links hold. My empirical results are further supported by an expansion of Rock's (1986) IPO underpricing model that takes into account faulty signals that educated investors have access to. Issuers gain from local funds' accreditation, which increases demand from both institutional and individual investors, despite the higher borrowing cost.
Following the financial crisis, underwriters often assigned the lowest-priced bonds to investors with intimate ties to the underwriters, as seen in [28]. Underwriters conspire with associated investors who benefit from increasing underpricing, they said, in order to secure future intermediation in freshly issued bonds. To find out how strong the relationship was between the underwriter and the investor, they used a new identification method that relied on the fact that institutional investors had previously owned bonds issued by the underwriter. After the crisis, average underpricing increased compared to before the crisis, and our channel completely explains this trend. We also examine the trading behavior of freshly issued bonds to support the procedure. Our findings provide light on the consequences of regulation in the aftermath of the crisis.
Bond IPO underpricing, which compensates the first bond investors, is strongly correlated with loan holder and bondholder conflict of interest, according to the authors in [29]. In order to simulate the tension between bondholders and loan holders, they used four variables: the size of the loan, the number of lead banks, the remaining term of the loan, and a loan covenant index. Bond IPO

underpricing is positively correlated with all four factors in the empirical tests, suggesting that corporations' borrowing structures indeed influence the pricing of bond IPOs.

3. Proposed Work

3.1 Firms, Entrepreneurs, and IPOs

Opportunity for investing arises in nature at regular periods, $\Delta t > 0$. At each point in time, $t_j = t_0 + j\Delta t, j \in \{0,1,2,\dots\}$, nature creates a physical investment opportunity with probability $\lambda \in (0,1)$. One entrepreneur at a time may take advantage of any such investment opportunity. You have to jump on a new investment opportunity as soon as it comes up or else it will be gone forever.

We take it as read that companies are funded entirely by equity and that the only way to raise more capital is to launch an IPO, or initial public offering, of common shares. This can be due to a lack of capital on the part of entrepreneurs, an inability to get debt funding due to issues with asymmetry of information or agency, or a lack of capital on the part of individual investors to justify a private equity placement.

3.2 Investors

Stocks or cash are the two options available to investors, however IPO shares cannot be short sold. The conditions of the IPO and the investor's confidence in the worth of the offering company (V^) determine whether the investor chooses to participate in that IPO. If an investor thinks he can make a profit—or even a little—from an IPO, he will likely participate.

Figure 2. *IPO Underpricing Model*

$$V^i(I,\alpha) \le \hat{V} \qquad (1)$$

The presence of two distinct investor categories, each with varying degrees of familiarity with the initial public offering (IPO) market, is a key premise of our concept.

3.3 Sequence of Events for an Individual IPO

In our model, at every one instant, t_j, up to three outcomes may happen: (1) the market clearing values of all businesses that have issued stock are determined during a public trading session, (2) if a company has issued equity at $t_{j-\ell}$ thereafter, the market value of the company's cash flows becomes known to the public, and (3) a company that has not been listed yet has the option to launch an initial public offering. We will assume that these occurrences occur in the above-mentioned order to keep things clear. At times, we may imagine the IPO, the trading session, and the disclosure of achieved cash flows $t_j - \epsilon, t_j$, and $t_j + \epsilon$, that is, in turn. This specific timeline assumes that no fresh data becomes accessible between the IPO sale and the time investors get their funds. $(t_j + \epsilon)$, throughout the trading session that determines its initial market clearing price (at $t_{j+1} - \epsilon$). Moreover, the time- t_j the market clearing prices for each of publicly listed companies, as well as the genuine intrinsic worth of every company that has ever gone public at $t_{j-\ell}$ by the time the time-t_j IPO becomes public, they are already well known. If you look at Figure 1, you can see the timeline of events for one particular IPO company. Figure 2 shows IPO Underpricing Model.

We shall indicate the period when we are mostly concerned with the ever-changing IPO market $-t_{j+k}$ price of the firm that went public at t_j by $V_{j,j+k}$. At time t_j in an ongoing series of company prices, if the initial public offering (IPO) is successful, $V_{j,j+k}, k \in \{0,1,2,3,\dots\}$, is noticed. The entrepreneur sets the problem's price, V_(j,j), which is the same as (3). Following this, the highest-valued investors will set the market clearing prices for the shares. At $t_{j+\ell}$ There is no longer any room for doubt about the actual worth of the company, and everyone can see what the genuine value is. As a result, us

$$V_{j,j+k} = \begin{cases} V^i(I,\alpha) & for\ k = 0, \\ max\{\hat{V}^L(I), \hat{V}^R(I,\alpha)\} & for\ 1 \le k < \ell, and \\ V_T(I) + \tilde{\delta}_T(I) & for\ \ell \le k. \end{cases} \qquad (2)$$

Our metric for evaluating an initial public offerings (IPO) anomalous performance, or underpricing, is the stock price achievement from t_j to t_{j+1}. There are two ways to evaluate the long-term success of IPO shares: the offer price (i.e., from time to t_j to $t_{j+\ell}$), or using the initial market clearing price (i.e., starting from t_{j+1} to $t_{j+\ell}$), given that our model produces distinct forecasts for the two-time frames.

3.4 Statistical Hypothesis Testing

In statistical hypothesis testing, we assume a hypothesis we make about a population is correct and use the data sample to determine how frequent or rare it is in relation to the population as a whole. IPOs that are underpriced have been the subject of much research in economics and finance. During an IPO, a firm usually offers its shares for sale at a price greater than what they are really worth in the market. For those lucky enough to get shares during the IPO, this usually means a quick spike in price. Underpricing, the difference between the initial public offering price with the market's price on the initial trading day, is worrisome since it occurs during this uncertain time. The listed company's success in the first few years after its public offering is one aspect that could affect IPO underpricing. A freshly listed company's financial health, growth potential, and general market response might be revealed by its three-year performance.

3.5 Sample Size

A large sample size is necessary for this study approach to ensure accurate representation. This research made use of the following formula to determine an appropriate sample size from an infinite population (the "unknown population"):

$$n = \frac{Z^2 \times p(1-p)}{M^2} \qquad (3)$$

We states that when the population estimate is available, the following formula may be used to arrive at a representative number of respondents:
In what locations: assuming an endless population,
n= Sample Size
Z = Z value
p = population proportion (expressed as decimal)
M = Margin of Error
Evaluating a sample size as-Estimating 50% of the population with a 5% Margin of Error is one way to reduce bias and get a realistic sample size.
The estimated total number of retail investors in the sample is 312

3.6 Regression Model

To find out how multiple variables are related to one another, statisticians use regression analysis. Although many varieties of regression models exist, ordinary least squares linear regression models will serve as the primary emphasis of this investigation. A single variable is used in simple regression to analyze the dependent variable's fluctuations. Using multiple regression, an adjusted version of ordinary least-squares regression that incorporates the concurrent utilization of multiple independent variables, we will examine the long-term results of stocks while underpriced IPOs to determine if there is a relationship. We have also identified control variables which could impact the outcome.

Table 1. *Sample Size*

Population Scenario	Z value at 95% Confidence level	Margin of Error	Sample size Calculation	Sample Size
50%	1.96	5%	$(1.96)2 * 0.5(1-0.5)/0.052$	$\mathbf{312.21}$

Therefore, we may use multiple regressions to understand the factors that affect long-term performance, our dependent variable.
Moreover, in the event that our independent and controlled variables exhibit strong correlations, multiple regressions will enable us to manage multicollinearity and evaluate the distinct impact of each of the independent variables.
Aside from that, it will provide us with coefficients that show how strong and in what direction the links are between the independent and dependent variables.

$$y = \beta_0 + \beta_1 x_1 + \cdots \beta_k x_k + \varepsilon \qquad (4)$$

Where:
y = Long-term performance
β_0 = is the constant
β_1 = measures the change in long-term performance as a function of the underpricing unit increase
x = underpricing
ε = Error term

$$LTP = \beta_0 + \beta_1 UNDERPRICED + \beta_2 ROA + \beta_3 SIZE + \beta_4 AGE + \beta_5 INDUSTRY \qquad (5)$$

Two important ways for businesses to get funds are bond issuance and IPOs. Many researchers in the field of financial economics have examined IPO

underpricing, which occurs when the price of a stock is initially set less than the market price on its initial trading day. Concurrently, the cost of capital, credit ratings, and leverage are all impacted by the bond issuance techniques that corporations use when making financing choices. Learn more about the dynamics of corporate finance and investments by delving into the relationship between IPO underpricing and bond issuance tactics.

3.7 Independent variable (Underpricing)

Initial stock returns will serve as a metric or capture for our independent variable, underpricing. Ritter defines the initial return as the percentage change in a stock's price from its IPO price on the first trading day (1998, p.4). A positive or negative first return is possible. A positive value indicates that the IPO offer cost was greater than the first day's trading closing price. During the first public offering, the stock was likely underpriced. That is to say, first-day traders would have been profitable if they had purchased the stock at the asking price and sold it at the greater closing price. In contrast, a stock's negative first returns indicate that its first-day trading closing price was lower than its IPO offer price. This shows that the stock was overvalued on the first public offering, and that investors who bought it at that price lost money. Undervalued equities are of particular interest to us.

$$Initial\ return\ (X\ Day\ _1) = Closing\ price - Opening\ price\ (X\ First\ _{day}) \qquad (6)$$

3.8 Cumulative Abnormal returns (CAR)

Commonly linked with event driven analysis, CAR measures the out-of-the-ordinary returns of a portfolio or investment in comparison to a benchmark. The CAR is calculated by adding up all the aberrant returns during the event window. It quantifies how much of an effect the incident had on the investment's profits throughout that period. But, as an event-based metric, CAR is biased in terms of observations and fails to represent long-term performance. The following is how CAR is calculated as follows:

$$CAR_i(\tau_1, \tau_2) = \sum_{t=T_1}^{T2} AR_{iT} \qquad (7)$$

Were,
CAR_i = Cumulative abnormal return for stock i
τ_1, τ_2 = Time period I & 2
AR_{iT} = Abnormal returns for stock i at day T

4. Results & Discussion

4.1 Descriptive Summary of Variables

All of the STAR-exported factors used in this analysis are summarized in the table 1. The data that was exported from STAR is summarized below. There are a total of 108 observations because the IPOs were filtered out using a deductive approach. This involved first determining the total amount of IPOs, and then reducing the number if the IPOs were not the initial offering. This applies, for example, to companies that were previously listed in a prior market or went public, private, and back public again. Subsequently, 108 IPOs were considered in China, with the number further reduced according to the condition that the interests should be class A shares, which eliminated class B, C, or even D shares, among many others as previously mentioned. As shown in table 2 that there is a wide range of values for the variables:

Table 2. *Descriptive statistics of Variables [1].*

Variable	obs	Mean	Std. dev.	Min	Max
Long-term Performance	108	1.487378	1.599994	.0144107	8.760446
Underpricing	108	1.105784	.1109173	1.0007	1.535398
Average market Capitalisation	108	9677.503	42184.03	21.6601*	423547.4*
AGE	108	15.27843	21.52077	0	131
Industry	108	36.43519	12.13343	10	60
Return on Assets	108	51.09581	77.04839	.2528*	602.49*

Table 3. *P-value analysis*

Variable	obs	W	V	Z	Prob > Z
Long-term Performance	108	0.78224	19.175	6.580	0.00000
Underpricing	108	0.78891	18.588	6.511	0.00000
Average Market Capitalisation	108	0.20295*	70.186	9.470	0.00000
Age	108	0.60875	34.452	7.885	0.00000
Industry	108	0.98505	1.317	0.613	0.26996
Return on Assets	108	0.59143*	35.977	7.982	0.00000

long-term performance ranges from 0.0144 to 8.76, age from 0 to 131, market cap from 21.66 to 43,2547, and so on. At first look, the underpricing factors do not seem to follow a normal distribution. In order to estimate data more accurately, linear regression models require that certain assumptions be satisfied. Prior to doing a regression, one of the assumptions made is that the data follows a normal distribution. The normalcy test may be executed in Stata using the swilk command, which generates the Shapiro-Wilk test. Table 2 displays the Shapiro-Wilk test findings. It is clear from the data in the table 3 that there is no typical disruption to the LTP, underpricing, Average Market cap, ROA, or age. The p-value is higher than 0.05, thus we can't rule out the possibility that the industry variables follow a normal distribution.

Second, for multiple linear regressions to work, the variables must have perfect correlation with one another; otherwise, the findings may not be as trustworthy. A perfect correlation exists when the correlation coefficient is both positive and negative. This suggests that the two variables are same, even if they take on different forms. One way to think about correlation in statistics is as a quantitative assessment of the degree and trajectory of this propensity to fluctuate in tandem. When one variable's change tends to have an effect on the other, we say that the two variables are highly correlated (Frost p.16, 2019). A correlation value of 1 shows perfect correlation and a value of 0 indicates no link; the range of possible values is from 1 to -1. Neither underpricing nor industry has a positive association with long-term success, as seen in table 4. From this, we may deduce that these two factors have a detrimental effect on long-term success, although the age of the firm has a good effect. Thus, a positive correlation between a company's long-term success and its length of operation exists. After determining that our variables do not exhibit perfect correlation, we may go on with the regression analysis.

4.2 Bond Issuance Strategy

Following these procedures allows us to determine the remaining loan maturity for any bond IPO. For businesses that have a single outstanding lending facility, we begin by maintaining their records. We take a look at the facility termination dates for each business and choose the one that comes to a close last if they have more than one. To get the remaining maturity of a loan, just subtract the date of the bond's IPO from the date of the firm's latest terminating facility. An additional variable is constructed for IPOs that contains bond and loan details. Debt remaining maturity is what we call it. The latest ending debt (a bond or a loan) is used to construct this variable. Then, the difference among the maturity date and the IPO, offering date is calculated.

4.3 Bond/issue-specific variables

- Bond offering amount, or LN — the natural logarithm of the offering amount for an initial public offering. Money in the billions is being offered in the bond auction.
- The length, in years, of an initial public offerings Macaulay period.

Table 4. *IPO Samples*

Variable names	N	Mean	SD	P25	P50	P75
Panel A IPO Sample						
IPO underpricing (in bps)	193	72.31	118.28	1.21	41.89	112.21
Covenants index	136	4.27	3.35	2.00	3.96	7.00
Outstanding loan amount	193	1.58	2.01	0.31	0.85	2.02
Number of lead bank	193	2.04	2.34	1.00	2.00	2.00
LN (loan remaining maturity)	193	1.05	0.76	0.75	1.24	1.52
LN (bond offering amount)	193	8.50	0.33	8.30	8.48	8.70
Duration	193	7.84	4.82	4.55	6.70	7.91
Conpon	193	5.33	2.54	3.38	5.00	6.88
D_senior-secured	193	0.03	0.16	0.00	0.00	0.00
D_bond covenants	193	0.66	0.48	0.00	1.00	1.00
D_putable	193	0.17	0.38	0.00	0.00	0.00
D_callable	193	0.84	0.36	1.00	1.00	1.00
D_convertible	193	0.35	0.48	0.00	0.00	1.00
Firm size	193	15.02	2.13	13.87	15.01	16.14
Leverage	193	0.51	0.22	0.34	0.52	0.65
Market-to-book ratio	193	1.90	1.01	1.18	1.57	2.42
Profitability	193	-0.06	1.53	0.00	0.01	0.05
Z-score	193	3.72	3.35	1.59	2.88	4.80

As a percentage, the coupon rate of an IPO.

Based on the findings in Section 2, we construct the following OLS model to test the hypothesis and get insight into the impact of loan holders on bond IPO underpricing.

$$Underpricing_i = \alpha_1 + \beta_1 \cdot LoanCovenantsIndex_j + \gamma_1 \cdot Bond_i + \delta_1 \cdot Firm_j + \lambda_1 \cdot Year_t + \varepsilon_i$$

$$Underpricing_i = \alpha_2 + \beta_2 \cdot OutLoanAmount_j + \gamma_2 \cdot Bond_i + \delta_2 \cdot Firm_j + \lambda_2 \cdot Year_t + \varepsilon_i$$

$$u_i = \alpha_3 + \beta_3 \cdot LeadBankNumber_j + \gamma_3 \cdot Bond_i + \delta_3 \cdot Firm_j + \lambda_3 \cdot Year_t + \zeta_i$$

$$Underpricing_i = \alpha_4 + \beta_4 \cdot LoanRemainingMaturity_j + \gamma_4 \cdot Bond_i + \delta_4 \cdot Firm_j + \lambda_4 \cdot Year_t + \eta_i \quad (8)$$

which correspond to bond IPO i issued by company j in year t, with the subscripts i,j, and t standing for various observations. We group the standard deviations of the OLS computed parameters by company since some of these businesses have more than one problem.

Our data shows that credit facilities at the same company often expire before IPO bonds do. There are typically four to five years left before the end of lending facilities on the bond IPO date, but bonds still have nine years to go until maturity after the termination of loan facilities. More underpricing occurs when the remaining term of a loan becomes longer, according to the good signals. This positive link suggests that bondholders' interests will be appropriated by loan holders prior to the loan's maturity, as per earlier research. In order to compensate bond investors, expropriations lead to a conflict between interests and raise bond IPO underpricing.

5. Conclusion

Resolving information asymmetry via bank monitoring would decrease IPO underpricing, according to previous research. On the other hand, there is evidence in the literature that banks, as senior creditors, have the power to significantly impact the management team. Their cohesiveness and senior secured claims make them a potential threat to junior debtholders' interests, which might lead to a reorganization of the loan and bond markets. As a result, bond IPOs need to be priced low to entice first purchasers. We construct four proxies to experimentally evaluate our conflicting hypotheses—the monitoring hypothesis and the conflict-of-interest hypothesis—in this work. The findings from the experiment back up the theory of conflicts of interest. Corporate finance relies heavily on the bond issuance techniques and the link between initial public offering underpricing. In order to optimize their capital structure, improve their market image, and maintain development over the long term, firms must negotiate these financial systems with great care. To maintain financial stability and maximize capital efficiency in a dynamic economic environment, a well-planned IPO and bond issuance strategy is essential.

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- **Data availability statement:** The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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