

Solutions to Difficult and Expensive Bond Financing for Private Enterprises Based on an Empirical Analysis on Influencing Factors of Corporate Bond Financing Cost

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Abstract:

In this paper, an empirical analysis is made on the financing difficulties and strategies for private enterprises in China by using the data of listed companies from the perspective of influencing factors and mechanisms of bond financing in order to solve the problems of difficult and expensive financing for private enterprises. It is found that the credit level and leverage are significantly positively related to the financing cost of corporate bonds, while the company size is significantly negatively related to the financing cost of corporate bonds; large companies are more concerned by the public than small companies, with relatively low information asymmetry of bond financing and relatively strong solvency because of strong capital strength; and return on equity has no significant impact on the financing cost of corporate bonds. Therefore, private enterprises should continuously improve their intangible values such as brand, strength and credit, and achieve lower debt financing costs by using diversified financing tools to reduce the level of financial leverage, and designing terms for resale, so as to promote the development of enterprises.

Keywords: *Private enterprises, Bond financing, Financing cost, Credit rating, Multiple regression.*

I. INTRODUCTION

The problem of difficult financing in private enterprises is common in all countries of the world. According to the Research Report of Barack Bank on the operation of private enterprises, the main reasons for 18% of the failure of private enterprises are financing difficulties and the resulting capital chain problems when the operation conditions are still reasonable, which is especially true for China, where the private economy started late. According to a World Bank report, the private sector in China received less than 1% of the total credit from commercial banks

in the 1990s. In addition, with the development of the socialist market economy and the deepening of reform and opening up, the private economy is the most active part of China's economy in recent years. According to data from the Development Research Center of State Council of the PRC, private economy currently provides more than 50% of tax revenue, creates more than 60% of GDP, provides about 70% of exports, and creates about 80% of jobs. Private economy plays an increasingly important role in Chinese economy.

In China, for a long time, it has been difficult for private enterprises to raise funds from commercial banks relative to state-owned enterprises, or they have to pay higher costs in order to obtain bank loans, which is known as private credit discrimination. Credit discrimination against private enterprises based on the nature of ownership is a special feature in China's financial system. Previous studies have found that private enterprises are more difficult to obtain loans from banks with fewer borrowings. Banks often apply higher credit standards to private enterprises [1]. Due to credit discrimination, private enterprises tend to use more expensive commercial credit to finance.

Debt financing is of positive significance to strengthen corporate governance and improve performance in two aspects. Firstly, the financing pecking order in China does not follow the pecking order theory compared with that in the general western countries, and listed companies seem to prefer equity financing in particular. Because of its low cost, equity financing does not affect managers' control over the company but increases the cash flow at their discretion [2]. Equity financing may be a weaker constraint than debt financing. Secondly, there is a serious information asymmetry between listed companies and investors, reflected in the unfamiliarity of investors with the company, and that it is difficult for investors to distinguish whether the company has a good investment project or just for financing when the listed company adopts equity financing. In the absence of company information, equity financing may fail because of investor distrust. Investors often hold a positive attitude towards the issuance of bonds, so debt financing can reduce the information asymmetry and play a role in transmitting the internal information of the company. Therefore, to some extent, debt financing can play a role in improving corporate governance and improving the market value of enterprises.

In this paper, the attempt is made to analyze which factors restrict the cost of bond financing of Chinese private enterprises, the direction and degree of influence, and then further analyze how to support the bond financing of private enterprises in China. The text is arranged as follows: literature review is presented in Part II to analyze research results of scholars on the concepts related to bond financing cost, influencing factors of bond financing cost, and empirical model of bond financing cost, as the basis of constructing the empirical model of this paper; data and methods are introduced in Part III to explain the sample selection, descriptive statistics and empirical process of this paper; the results are provided in Part IV to interpret the empirical results and discuss and analyze the reasons for the results; and conclusions and enlightenment are proposed in Part V to further explore the empirical results and discuss the guiding significance of the results to the reality in combination with the policy and the operation status of private enterprises.

II. LITERATURE REVIEW

There are many reasons for the difficult and expensive financing of private enterprises. Some scholars believe that venture capital and access criteria of capital market make the role of capital market in financing of SMEs limited [3]. Other scholars have found that the causes of financing difficulties of private enterprises are not only the obstacles at macro level such as lagging national financial innovation, too little government guarantee fund, unfair national interest rate policy and the singularization of capital market financing structure, but also the discrimination of financial institutions in terms of ownership, scale and credit system [4,5]. Private SMEs have relatively low level of credit in the market, and investors are unwilling to purchase bonds issued by enterprises with lower credit rating, which hinders the direct financing channels of enterprises [6].

In terms of financing channels, informal financial organizations can better meet the financing needs of SMEs and contribute to the growth of the private economy than strict formal financial institutions[7]. In addition, the nature of actual controllers and political relations have some impact on enterprise financing. SMEs without political relations are facing more serious financial constraints, and financial development can significantly alleviate their financial constraints [8]. The cost of debt financing of private listed companies is significantly higher than that of state-owned listed companies. The effective way to weaken the difference of financing cost caused by property right nature is a good financial ecological environment [9]. Allowing SMEs to issue high-yield bonds can alleviate their financing difficulties, which requires sustained efforts in formulating the qualified investor system, improving the creditor protection mechanism, and strengthening the credibility of credit rating agencies [10].

In foreign literature, the factors influencing the cost of corporate debt financing are studied, such as the size of the company, the return on equity, the level of debt, the tangibility of assets, the risk of the market, the growth of the company, the multiple of interest protection, and so on, and the conclusion is that these factors have a significant impact on the company's debt financing costs. Among the internal factors, the size of the company, return on equity, asset liability ratio, credit rating and other factors will affect the financing cost of private enterprises. It is found that the return on equity and other factors in the company characteristic variables can significantly affect the debt financing cost of listed companies, and the corporate return on equity is negatively correlated with the debt financing cost [11]. In addition, empirical studies on Chinese companies also confirm that the financing costs of Chinese companies are significantly affected by return on equity: companies with higher return on equity can withstand higher accounting robustness, while companies with higher robustness have lower debt financing costs [12,13].

In addition, some studies confirm that there is a clear scale effect in bond financing: the larger the company size, the easier it is to obtain lower financing costs [14]. According to the data of corporate bonds in China, scholars found that the larger the size of enterprises, the stronger their ability to resist various risks, the lower the risk of default, and the negative correlation between corporate size and corporate bond credit spreads [15].

Some scholars have pointed out that the higher the debt ratio of enterprises, the more likely it

is to fall into financial crisis, the greater the risk of default of matured debts will be, and the higher the debt ratio of enterprises issuing bonds, the additional cost of default risk will need to be paid[16]. Rational creditors will demand higher return on assets for companies with high financial leverage. Ericsson, Jacobs and Oviedo (2009) studied the corporate bond credit spreads by means of univariate and multivariate regression analysis, and found that the proportion of financial leverage had significant explanatory power on the credit spreads. The results of other empirical studies show that the issuers with high financial leverage ratio can obtain more favorable issuance face spreads, thereby saving financing costs [17,18].

Furthermore, bond ratings can convey the company's financial and operational conditions to the stock and bond markets, on which investors can judge investment risks and make investment choices and the cost of financing bonds will be affected. Credit rating can be the risk guide of bonds, which will have a significant impact on the selection of bond varieties and the determination of bond interest rate level. Empirical studies have confirmed that credit ratings mitigate the credit crunch faced by bond issuers and that companies with higher ratings will acquire more capital at lower financing costs [19,20].

To sum up, the existing literature on credit discrimination and debt financing of private enterprises in China is mainly based on survey data for non-listed companies, with two main problems: first, there are more case studies and less statistical analysis studies; second, there are more tests on individual variables and less multi-factor models. Based on this, it is suggested in this paper that listed companies can provide complete and standardized comparable data, including financial data, and provide a new perspective based on the research on them. Therefore, through empirical research, the influence direction and degree of the main factors that restrict the bond financing cost of Chinese private enterprises are tested, and the policy and operational suggestions to support the bond financing efficiency of Chinese private enterprises are put forward.

III. EMPIRICAL MODEL

3.1 Data Sources and Sample Selection

The company bonds studied in this paper are securities with fixed income issued by incorporated enterprises with the approval and supervision of the China Securities Regulatory Commission under the requirements of the Company Law and the Securities Law after the promulgation of the Pilot Measures for Company Bond Issuance. In this paper, private enterprises issuing bonds in China's bond market from the third quarter of 2012 to the fourth quarter of 2019 are selected as the initial sample. According to quarterly statistics, the nature of private enterprises is determined by the classification of Wind enterprises.

3.2 Variable Definition

Drawing on the previous research results on financing cost variables [21-23], the company bond financing cost (Cost) is taken as the explained variable. The cost of bond financing is measured by the bond credit spread, which is equal to the bond maturity yield minus the risk-free interest rate, that is, the remaining part of the bond maturity yield, because the bond interest rate

can be seen as a concentrated reflection of the impact of macro-level factors on the bond interest rate during different bond issuance periods, the credit spread of bonds obtained by adjusting the yield of national debt can better reflect the risk level of bonds, and only by studying the cost of capital use from the risk perspective can the essence of capital cost be truly reflected. Therefore, the formula for calculating the financing cost of corporate bonds is $Cost=Coupon-R$, where, Cost is the financing cost of corporate bonds, i.e. the credit spread of corporate bonds; Coupon is the coupon rate at the time of issuance of corporate bonds; and R is the maturity yield of government bonds of the same maturity on the starting date of bonds.

According to literature review, return on equity, company size, leverage, and business credit rating are selected as explanatory variables of the model. The indicators and meanings of variables are as follows.

Return on equity (Roe). Most foreign scholars have reached a consistent conclusion about the impact of Roe on the cost of corporate debt financing that the Roe is significantly negatively related to the cost of corporate debt financing. In this paper, the return on equity is used to measure the profitability of a company. The profitability level of an enterprise determines the complexity of financing, which directly affects the cost of financing. A profitable enterprise will not worry about raising funds, but will choose the lowest cost financing method after weighing various financing tools. Conversely, low-profitability companies are concerned about missing financing opportunities and tend to determine higher coupon rates in their choice of financing rates, resulting in higher financing costs.

Company size (Size). In general, the larger the size of the company, the greater the total assets. In this paper, the natural logarithm of the total assets at the end of the last period is selected as the variable to measure the size of the company. It is expected that the larger the company size, the lower the financing cost of corporate bonds.

Leverage (Lev). Lev is an important indicator of corporate debt level: companies with high debt ratio often face greater financial crisis or even higher risk of bankruptcy, in which case, creditors will demand higher return on investment because of greater investment risk. Therefore, it is expected that the Lev is positively correlated with the cost of bond financing.

Bond credit rating (BC). Credit ratings related to the issuance of corporate bonds mainly include bond ratings and company ratings. Since the bond rating is to evaluate the risk level from the perspective of the transaction risk of the bond itself on the basis of the company rating, it is more direct and targeted in revealing the default risk information of the bond. In this paper, bond rating is used as a rating index and assigned separately in order to study the relationship between credit rating and bond financing cost. Referring to the international common practice, the specific assignment criteria are: AAA=2, AA+=3, AA=4, AA-=5. The higher the bond rating value, the worse the bond rating level, the higher the risk of default.

Put provision (Put). Special clauses are often attached to the prospectus for corporate bond offerings, in which the put provisions and adjustment of coupon rate are often used. The put provisions in the bond prospectus protect the rights and interests of bond investors who can put the bond to the issuing company at the higher put price determined in the bond prospectus when

the bond meets the put-back conditions. If the prospectus contains a put provision, it will be assigned 1, otherwise 0, and the expected put provision is negatively related to the financing cost of corporate bonds.

Maturity (Mat). The maturity is the natural number of the bond issue period. The longer the maturity, the more uncertain and unstable factors investors face, the higher the rate of return required by investors. Therefore, the longer the expected maturity, the higher the financing cost of corporate bonds.

3.3 Design of Research Model

Based on the above analysis on the factors affecting the financing cost of corporate bonds, a multivariate regression model 1 is built in this paper for the financing cost of corporate bonds, as follows:

$$Cost = \alpha_0 + \alpha_1 * Roe + \alpha_2 * Size + \alpha_3 * Lev + \alpha_4 * Br + \alpha_5 * Put + \alpha_6 * Mat + \varepsilon \quad (1)$$

Thereinto, α_0 is a constant term; $\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5$ and α_6 are the coefficients to be estimated; and ε is a random error term. *Cost* is the explanatory variable, financing cost, that is, the difference between the coupon rate of a bond and the maturity rate of a bond of the same period. Among explanatory variables, *Roe* is the rate of return on equity, i.e. the rate of return on equity of the issuer in the previous period; *Size* is the size of the company, i.e. the natural logarithm of total assets of the issuer in the previous period; *Lev* is the rate of assets and liabilities of the issuer in the previous period; *Br* is the bond rating, AAA is assigned 2, AA + is assigned 3, AA is assigned 4, and AA- is assigned 5. *Put* and *Mat* are the control variables, where *Put* represents the put provision and is assigned 1 if any or 0 if not; *Mat* is the natural logarithm of the maturity of a company's bond issue.

IV. EMPIRICAL RESULTS AND ANALYSIS

4.1 Regression Results

According to the established regression model, multiple regression analysis is carried out with SPSS19.0. The result shows that the F value of the regression equation is 63.284, which is significant at 0.1%, indicating that the overall fitting effect of the model is very good and the regression model has statistical significance. R2 is 0.758, and the adjusted R2 is 0.695, indicating that the total sum of squares of deviations of the explained variables can be explained by the regression square of the explained variables with the proportion of 0.695, that is to say, each explanatory variable has a better explanatory power for the financing cost of corporate bonds (Cost) (TABLE I).

TABLE I. F test results of multiple regression model

Model	R	R ²	Adjusted R ²	Standard error	F	Sig.
1	0.871	0.758	0.695	0.5968	63.284	0.000

TABLE II. Fitting results of multiple regression model parameters

	Unstandardized coefficients		Standardized coefficients	T	Sig.	Collinearity statistics	
	B	Standard error	Trail			Tolerance	VIF
	6.341	0.757		7.541	0		
Roe	-0.275	0.332	-0.026	-0.745	0.367	0.880	0.921
Size	-0.205	0.032	-0.330	-5.826	0	0.326	2.485
Lev	0.791	0.198	0.142	3.589	0	0.668	1.213
Br	0.237	0.033	0.323	6.455	0	0.418	,2.046
Put	-0.291	0.075	-0.148	-3.506	0	0.591	1.370
Mat	-0.007	0.017	-0.014	-0.383	0.604	0.735	1.102

The coefficient of return on equity (*Roe*) is -0.275, indicating that profitability is negatively correlated with financing cost of corporate bonds, but the p value is 0.367, indicating that it is not significant, failing to pass the regression test, thus the negative correlation between profitability and corporate bond financing cost has not been verified. The company size (*Size*) is significant at the level of 1%, and its coefficient is -0.205, which indicates that the company size is negatively related to the cost of corporate financing bonds. The larger the company size, the lower the financing cost of issuing corporate bonds. The leverage (*Lev*) is significantly positively correlated at the 1% level with a coefficient of 0.791, indicating that the higher the asset-liability ratio, the greater the risk of debt repayment and the higher the cost of bond financing. The bond rating value (*Br*) is significantly positively correlated at the 1% level with a coefficient of 0.237, which indicates that the smaller the rating value is, the better the credit rating level is, the lower the financing cost of corporate bonds, and the credit rating level is negatively correlated with the financing cost of corporate bonds.

The coefficient of *Put* among the control variables is -0.291, which is significantly negatively correlated at the level of 1%, indicating that the use of put provision in corporate bond contracts can significantly reduce the financing cost of the issuing company. The coefficient of *Mat* is -0.007, but it fails to pass the significance test, indicating that the impact of *Mat* on the

financing cost of corporate bonds is not obvious.

In this paper, variance inflation factor (VIF) is used to study the multicollinearity between explanatory and control variables. In the VIF test, the coefficients of *Size* and *Br* are greater than 2 and the others are less than 2, the maximum value of which is 2.485, which is far less than the threshold of multicollinearity 10, indicating that there is no multicollinearity among the variables in this paper.

4.2 Robustness Test

In order to ensure the reliability of the conclusions of the study, the following methods are used to test the robustness. For the sample of multiple corporate bonds issued by the same listed company in the same fiscal year, the weighted average credit spread based on the amount of bonds issued is used to measure the overall credit spread of the company, so as to obtain the financing cost of corporate bonds, and then the sample is re-analyzed by multiple regression analysis. The results of the regression analysis are shown in TABLE III below. TABLE III shows that the coefficients of the explanatory variables have changed, but the level and direction of significance have not changed. The coefficient of the Roe of the company and the financing cost of corporate bonds is -0.304, which are negatively correlated, but the p value is 0.363, which has not passed the significance test, thus the profitability has no significant impact on the financing cost of corporate bonds. The size of the company is significantly negatively correlated with the financing cost at the level of 1%, and the asset-liability ratio and bond rating value are significantly positively correlated with the financing cost of the corporate bonds at the level of 1%. Therefore, the conclusion of the study has not changed.

TABLE III. F test results of robustness test model

R	R ²	Adjusted R ²	Standard error	F	Sig.
0.635	0.403	0.517	0.56844	59.541	0.000

TABLE IV. Fitting results of robustness test parameters

	Unstandardized coefficients		Standardized coefficients	T	Sig.	Collinearity statistics	
	B	Standard error	Trail			Tolerance	VIF

(constant)	6.615	0.793		7.918	0		
Roe	-0.304	0.349	-0.029	-0.830	0.363	0.929	0.972
Size	-0.214	0.033	-0.347	-6.116	0.000	0.344	2.623
Lev	0.831	0.208	0.150	3.797	0.000	0.705	1.281
Br	0.248	0.034	0.341	6.817	0.000	0.441	2.048
Put	-0.277	0.078	-0.142	-3.372	0.000	0.624	1.446
Mat	-0.007	0.017	-0.014	-0.370	0.662	0.776	1.163

V. DISCUSSIONS AND MANAGEMENT STRATEGIES

At present, the prominent problems faced by private enterprises in China are the lack of funds and difficulties in financing. In essence, it is necessary to make unremitting efforts in improving their own management quality to solve the problem of financing difficulties of SMEs. On the one hand, the operating performance of enterprises can significantly affect the financing cost. Bond financing of private companies not only expands the financing channels, is conducive to promoting the development of private economy in China, but also enriches fixed income investment tools to meet the growing investment needs of investors. On the other hand, there are high threshold for corporate bond issuance, complex issuance procedures, and insufficient number and scale of private enterprises and SMEs from the current situation of corporate bond development. Private enterprises should continuously improve their brand, strength, credit and other invisible values, so as to obtain lower debt financing costs, obtain financial leverage effect, and realize the development of enterprises, and select appropriate financing tools according to their own financial conditions, and reduce the overall financing costs through put provisions, because the debt level of the company can significantly affect the financing costs of corporate bonds.

VI. CONCLUSIONS

In this paper, the factors influencing financing cost of corporate bond in China are studied. In the empirical model, the selected explanatory variables are return on equity, company size, leverage and bond rating; the control variables are put provision and maturity. The following conclusions are drawn through multivariate linear regression analysis: the bond rating value and leverage are significantly and positively related to the financing cost of corporate bond, while the company size is significantly negatively related to the financing cost of corporate bonds; large companies are more concerned by the public than small companies, with relatively low information asymmetry of bond financing and relatively strong solvency because of strong capital strength. Return on equity has no significant impact on the financing cost of corporate bonds. The cost of bond financing for companies with good performance is not necessarily low, mainly because the invisible "compulsory payment" of the bond market has not been completely broken. The put provision in the control variable is significantly negatively related to the financing cost of corporate bonds, indicating that the use of the put provision, a protective clause,

can significantly reduce the risk faced by investors and the financing cost of debtors. The coefficient between maturity and the financing cost of corporate bonds is negative, but not significant. Generally, the longer the maturity is, the worse its liquidity will be, the greater the uncertainty investors will face, the higher the rate of return required by investors, and the higher the financing cost will be.

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