An Analysis of the Factors Affecting Debt Financing Structure

--Empirical Evidence from Chinese Listed Companies

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Abstract

This paper explores the factors affecting the Chinese listed companies debt financing and examines them using the data of Chinese listed companies. The evidence suggests that company size, the company's growth opportunities, the fixed asset ratio and free cash flow have a significant impact both on the company's maturity structure of debt financing and the type and source of it. It provides the basis for corporate to arrange the debt covenants and select financing structure reasonably.

Keywords: debt financing; debt maturity structure; influencing factors

1. Introduction

Separation of ownership and management will produce two kinds of conflicts in modern enterprise: one is The conflict between shareholders and managers caused by the equity financing, the other is the conflict between creditors and shareholders caused by the debt financing. The main causes of agent relationship is that the ownership and management of capital are separated, and the agency problems is caused by which the objective function of the principal and the agent is not completely consistent .

Previous studies have focused on looking for the optimal proportion of debt financing to make two kinds of agents cost smallest, such researches considered that the company's debt was homogeneous, but they were different in corporate debt. The debt and its various configuring come into being the debt financing structures, different debt financing structure will lead to differences in governance effect of debt financing. Are there heterogeneity in Corporate debt financing maturity and sources ? what are the factors causing the heterogeneity of debt financing maturity structure and the sources of debt? Based on this, this paper study the factors influencing the debt maturity structure of and debt source structure by using a empirical analysis method, it will provide the base evidence for corporate to arrange the debt covenants and select financing structure reasonably.

2. Theoretical Analysis and Assumptions

2.1. Literature Review

Domestic and foreign scholars have researched on the factors affecting financing structure. It found that free cash flow, Tobin’s Q, ROE, business growth, ownership structure, operating management decisions and product market competition and other factors had an impact on the financing structure.

Jensen (1986)consider that debt contracts will reduce future cash flow. Stulz (1990) considers that debt contract has an impact on free cash flow , the company will adjust the financing structure in order to have enough cash flow to pay interest for the debt contract in the future. Wu Jing (2007) think that investors can obtain information for operating activities decision making from operating activities cash flow per share, cash flow generated from operating activities maintains the company's investments, dividends, financing and other needs. Therefore, the company's free cash flow have an impact on the company's financing structure.

Tobin's Q represents the company's performance and future growth opportunities, Goyal (2001) confirmed that the amount of the company's debt is modest, and short-term debt is more than long-term debt in the composition of debt, they will have more growth opportunities (market value / book value ratio

measure) .The higher growth opportunities, the more sensitive as to companies' financial crisis. Wu Bo (2004) found that the correlation relationship between Tobin's Q and the company's debt ratio is not stable.

Scholars have found that the company's growth also affected its capital structure. High-growth companies have high cooperation risk generally, and these companies have a tendency to reduce debt financing, while the high-growth business whose financing options is more diverse, with more financing channels, it also makes high-growth companies have the possibility choose to reduce the debt financing. Shen Gen-xiang, Zhu Pingfang (1999) Xiaozuo Ping, Wu Shinong (2002) Zhengfei, Xin Yu (1998) Hong Xixi, Shen Yi-feng (2000) LV Changjiang, Hanhui Bo (2001) and other scholars have examined the correlation between the company's growth and capital structure, but they did not have come to a unified conclusion.

In addition, corporate performance also affects financing structure. According to preferential financing theory, corporate prefer inner financing, corporate retained earnings and considered it the most secure way of financing. Such the order of financing preference indicate that the capital structure will be affected by corporate profitability. But Chinese scholars did not form the same conclusion on the relationship between the capital structure and the earnings ratio.

In summary above, the influencing factors for the capital structure were discussed by the scholars at home and abroad , but did not reach a more consistent conclusions. Meanwhile, the research on the internal structure of debt financing were less, this paper discusses about the maturity structure and source structure of debt in depth by using Chinese capital market data.

2.2. Theoretical Analysis and Assumptions

Large companies have the advantage of long-term debt issued because the big company's information asymmetry level is low, the risk of bankruptcy and the financing costs are low , on the contrary, shareholders and creditors have more potential conflicts of interest in small company. In particular, there are severe agency problems (such as risk transfer, dilution obtain the right, etc.) in small companies, so small companies are not easy to issue long-term debt, more inclined to use short-term debt financing. Creditors control the risk of lending to small companies by limiting the length of debt maturity. Thus, large companies should have more long-term debts. Therefore, these arguments imply firm size positively related to debt maturity. For the source of debt, there is the higher threshold for bank loans , so large-scale companies may have easier access to bank loans.

Accordingly, we hypothesis as follows:

Hypothesis 1 In the same circumstances, the larger the company, the higher the proportion of long-term debt, and the higher the proportion of bank loans.

Financial literature suggests that debt maturity should match with the duration of its assets, it is generally considered as the matching principle is due to control financial risks and marginal cost .The agency costs of debt will be reduced if the debt maturity match with the life of those assets. It shows that companies who the has a longer life assets using long-term debt can reduce agency costs of debt. In financing channels, bank loans generally require real physical assets to pledge as collateral so the enterprise who own real estate assets should be easier to obtain bank loans.

Therefore, we propose hypothesis as follows:

Hypothesis 2 In the same circumstances, the more long-term assets companies, the higher proportion of long-term debt, and the higher the ratio of bank loans.

Company opportunity set (IOS) has more growth opportunities, the shareholders and creditors have greater conflicts to perform these options . the shareholders even don’t choose to invest to a positive NPV projects at the expense of the interests of shareholders when corporate have financial crises and a higher debt ratio, that is the underinvestment problem. Myers considered that the company could control the incentive problems by the follow ways: less debt in the capital structure; more strict terms in contracts; shorten the validity period of the debt. Myers considered that debt financing could prevent companies' bad investments. the company insufficient investment will produce agency problems, focus on investment opportunities have more investment options can be short-term corporate debt financing to solve such problems, reduce the problems resulting from insufficient investment agency costs. However, companies with fewer growth opportunities should not choose to issue more short-term debt but long-term debt, because long-term debt have more efficient in restricting managers freedom aspect. Enterprises which have a lot of opportunities for future growth should be short-term debt financing, so

debt maturity is negative correlation with growth opportunities. With sources of debt financing, the upstream and downstream enterprises have more information about the business growth opportunities, relatively speaking, banks are outsiders, and have less information about growth opportunities for business relatively, so the enterprises with more growth opportunities gain the trade credit much more easily.

Therefore, we propose hypothesis as follows:

Hypothesis 3 In the same circumstances, the company with the more growth opportunity has a higher proportion short-term liabilities, and higher proportion trade credit in debt financing.

The agency cost theory of free cash flow (Jensen, 1986) considers that the free cash flow to reduce debt agency costs. The debt contract reduce the amount of free cash flow controlled by managers thus it ensure that managers target actions are consistent with the shareholders, thereby reduce agency costs. When the short-term debt financing contract governance effect is mainly reflected in the company's liquidation and constraints arbitrary decision rights of the managers on the free cash flow, and long-term debt financing covenants governance effect is mainly displayed to prevent managers inefficient expansion (Hart and Moore), so when the enterprise have a lot of free cash flows, managers will be more easily to do excessive investment and seeking private interests. So companies may reduce free cash flow by short-term debt financing to better motivate managers to prevent managers excessive investment by using company cash flows and access to personal interests, And corporate debt maturity structure is negative correlation with its own cash flow.

Therefore, we propose hypothesis as follows:

Hypothesis 4 In the same circumstances, companies with high free cash flow has a high proportion of long-term debt, and short-term debt ratio is low.

3. Sample Selection and Variable Definitions

3.1. Sample Selection

This paper selected the year of 2010 for the study window, the data is come from the Juchao zixun network and SCMAR database, sample companies are listed in Shenzhen main board .we selected sample following the principles as below : As there is a big difference in the A-share market, B shares, H shares and other overseas tradable shares markets in China , we the exclude the B shares, H shares and other foreign tradable shares of listed companies and left listed companies only issued A shares in order to maintain data consistency; taking into account the extreme values of the data adverse effects on the study, we excluded ST companies; In view of the differences between financial companies and the general operations of listed companies, this article excludes financial companies in order to maintain the comparability of data. According to the above criteria for initial screening of the sample, the remaining 1,022 listed companies were selected as sample.

3.2. Variable Definition

we select the relevant variables to test our hypotheses, definitions and calculations of variables are shown in Table 1.

Table 1 Variable Definitions

variable name	Mark	The formula
The proportion of short-term debt financing	Slr	Current liabilities / total liabilities
The proportion of bank loans	Blr	(Short-term loans + long-term loans) / Total liabilities
Proportion of commercial credit	Clr	Accounts Receivable / Total liabilities
Tobin's Q	TBQ	Market value / replacement value
Main business revenue growth	Grr	(Current main business income - the main business income the previous period) / previous period income from principal operations
Total Assets	Size	Natural logarithm of total assets
Earnings Per Share	EPS	Net profit / number of ordinary shares
Free cash flow	FCF	Net free cash flow
Current Ratio	Lr	Current Liabilities / Current assets
Fixed assets ratio	Far	Fixed Assets / Total Assets
Asset-liability ratio	LEV	Total Liabilities / Total Assets

3.3. Model Specification

Based on theoretical analysis and research hypotheses, the main research on the term structure of debt financing and financing source type by what factors. In this paper, short-term corporate debt financing ratio, the proportion of bank loans and commercial credit ratio are the

dependent variables, the previous theoretical analysis and assumptions shows that corporate debt financing structure may be influenced by the company's free cash flow, the company's growth opportunities, the company's level of profitability, the company's solvency, and company size and other factors, therefore, this study intends to adopt the model (1) regression.

$$y = \varepsilon + \beta_1 FCF + \beta_2 Gff + \beta_3 TBQ + \beta_4 EPS + \beta_5 LEV + \beta_6 Size + \beta_7 Far + \beta_8 Lr \quad (1)$$

3.4. Descriptive Statistics

We have made descriptive statistical analyses on the main variables of sample listed companies. From Table 2, the average long-term debt ratio is 0.131, and the average short-term debt financing ratio is 0.859. It shows that debt maturity structure of Chinese listed companies is mainly in short-term debt financing, and long-term debt is underweight. Assets -liability ratio was 0.423, it indicates that the proportion of debt in the capital structure is low. It shows that Chinese listed companies have a preference for equity financing, which may be due to the development of China's capital market imbalance, the stock market is growing rapidly, but the bond market develops slowly, so banks become the main source of external financing. Meanwhile, the interests of creditors are not be well protected, and the legal system is inefficient or costly in China. The average ratio of bank loans is 0.322, and commercial credit ratio compared to 0.259 in table 3-3, there is a little difference between them, it shows that debt source types of companies did not differ significantly.

Table 2 Descriptive Statistics

variable	(N)	mean	sd	min	p50	Max
Slr	1022	0.859	0.171	0.0700	0.928	1
Llr	1022	0.131	0.169	0	0.0560	0.930
Blr	1022	0.322	0.254	0	0.319	0.972
Clr	1022	0.259	0.191	0	0.209	0.943
FCF	935	-33.1	100.4	-1167	-5.330	533.6
Grr	1018	0.809	11.29	-1	0.280	355.6
Ger	1019	0.908	7.730	-2.410	0.256	190.5
TBQ	1022	5.830	78.57	0.0530	2.864	2513
EPS	1021	0.548	0.493	-0.966	0.469	4.900
LEV	1022	0.423	0.316	0.0110	0.413	6.998
Size	1022	21.33	1.047	18.98	21.20	25.63
Far	1022	0.224	0.163	0	0.192	0.874
Lr	1022	3.441	6.280	0.0600	1.750	88.73

4. Empirical Results and Analysis

Using the above data, we use OLS regression to regress the model (1), data processing by stata11.0 EXCEL statistical software, results are presented in Table 3.

Table 3 Multivariate Regression Analysis: Debt Financing Structure and Affecting Factors

	(1) Slr y (1)	(2) Blr y (2)	(3) Clr y (3)
FCF	0.000	-0.000 *	0.000
	(1.56)	(-1.85)	(-1.01)
Grr	0.0006	-0.0002	0.0002
	(1.43)	(-0.34)	(0.31)
TBQ	0.0044 **	-0.0118 ***	0.0028
	(2.47)	(-4.71)	(1.38)
EPS	0.0380 ***	-0.0530 ***	0.0332 **
	(3.39)	(-3.34)	(2.57)
LEV	-0.0439 **	0.1626 ***	-0.1120 ***
	(-2.49)	(6.51)	(-5.53)
Size	-0.0391 ***	0.0041	-0.0290 ***
	(-7.32)	(0.54)	472
Far	-0.2836 ***	0.4783 ***	-0.1727 ***
	(-8.36)	(9.97)	(-4.44)
Lr	-0.0037 ***	-0.0026 **	0.0008
	(-4.17)	(-2.05)	(0.74)
cons	1.7561 ***	0.137	0.9335 ***
	(15.66)	(0.87)	(7.25)
(N)	932	932	932
r2	0.181	0.237	0.138
r2_a	0.174	0.230	0.131
F	25.57	35.84	18.49

Note: ***, ** and * denote the 1%, 5% and 10% level of statistical significance.

It can be seen that the proportion of short-term debt is a significant negative correlation the with the Size of the company, that is the larger the company, the lower the proportion of short-term debt, and long-term debt ratio is higher, Hypothesis 1a was confirmed. you can see the size of the company and the proportion of bank loans are related, but not significant. the size of the company and the business credit ratio showed a significant negative correlation, indicating that the larger the company, the financing channels more smooth in debt financing will be less use of commercial credit and easier to use bank loans financing. Therefore, the hypothesis 1 is verified.

The proportion of fixed assets is significantly negatively correlated with the short-term debt ratio, and negatively positive correlated with the proportion of bank loans, and is significantly positively correlated with the proportion of commercial credit. It shows that the company with the more long-term assets will not use short-term debt financing. they will finance by

more and more long-term debt. In the sources of financing, the more long-term assets, the higher the proportion of bank loans in debt financing. so the hypothesis 2 is verified.

From Table 4-1, we can see the variable TBQ are significantly positively correlated with the proportion of short-term debt and. it shows that companies are more willing to adopt short-term debt financing with good growth opportunities. In the sources of debt financing, the variable TBQ are significantly negative correlation with the ratio of bank loans, indicating the proportion of bank loans are low in good growth opportunities company. the variable TBQ were positively correlated with the commercial credit ratio, but not significant, indicating good growth opportunities companies are willing to use the other ways of debt financing, including commercial credit, but it will lower by bank loans. Thus, it can be seen the hypothesis 3 is verified.

Regression results in Table 4-1 shows that the business cash flow *cff* are positively correlated with the proportion of short-term loans, but not significant, and they are significant negative correlated with the proportion of bank loans at the 10% level. they are positively correlated with the proportion of commercial credit, but not significantly. It shows that companies with high free cash flow are willing to use more short-term loans, and easier to use commercial credit and other debt financing, so the hypothesis 4 is verified.

In conclusion, on the maturity structure of debt financing, growth companies are small-scale and the credit of them are not high, they still have the serious problems of asymmetric information, and the less assets of them can be use to pledge, so these companies mostly will choose short-term debt financing; Mature business are the larger size and less growth, they will give priority to choose the long-term debt financing. In the way of debt financing structure, companies with the better growth and stronger profitability more able to obtain commercial credit, the big size company use less commercial credit compared with small size companies. Regression results can also be seen, earnings per share, asset-liability ratio and liquidity ratio have a significant impact on the proportion of bank loans of the enterprise.

5. Conclusions

In this paper, we study the factors impacting the Chinese listed companies the debt maturity structure and source type of debt financing in empirical analysis. we found that company size, Tobin's Q, fixed asset ratios and free cash flow have impact on the company's debt financing terms and financing structure. the study found, the bigger size companies have the higher proportion of long-term debt, and less use of bank borrowings in debt financing; companies with good growth opportunities have the higher the proportion of short-term debt, and less use bank loans in debt financing; the companies with high proportion of fixed assets have the more long-term debt financing, and the higher proportion of bank loans in debt financing; Companies with high free cash flow have a high proportion of short-term liabilities, and the lower the proportion of bank loans. This paper provided evidence support for the financing theory research, and the basis for corporate to arrange the debt covenants and select financing structure reasonably.

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