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Debt Financing and Corporate Performance——Taking the case of China's Listed Companies on Growth Enterprise Market

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Abstract: This article samples 293 listed companies on GEM (Growth Enterprise Market) of Shenzhen Stock Exchange, uses SPSS 17.0 to analyze their annual report data from 2009 to 2011. The results show that corporate performance will increase and then decrease along with the improvement of debt asset ratio, and achieve optimized performance at about 50%-60% of DAR (debt asset ratio); short-term borrowings have significant negative effects on corporate performance, bank debt, commercial credit and long-term borrowings have indistinctive positive effects on corporate performance, and other debt have marked positive effects on corporate performance. This research is helpful for governmental macro-control and SMEs themselves to build reasonable capital structure to improve their corporate performance.

Keywords: GEM (Growth Enterprise Market), listed companies, debt financing, corporate performance

1. INTRODUCTION

Since the MM theory proposed in 1958, the discussion on the relationship between capital structure and corporate value keeps going on. From a generalized view, corporate governance aims at resolving the relationship among various stakeholders, the financing structure theory deems that all funds providers tend to advocate their own interests; therefore corporate financing structure is closely related with corporate governance. As an important part of the corporate finance structure, the effects of the ratio, maturity structure and changing of debt financing on corporate performance have become a hot topic recently. The previous research has reached different conclusions about governance effects of debt financing and can be classified into three categories:

• Positive effects. It was founded Debt financing has positive affection on corporate performance[1-2]; debt financing inhibits the managers from abuse of cash flow to a large extent, the optimal proportions of equity and debt impacts greatly on the managers' equity incentive, thereby helps reduce agency costs and maximize profits [3]. Some scholars hold similar points, e.g., Harris and Raviv [4], Hui Wang [5] and Ruiming Tang [6].

• Negative effects. It was argued by Myers [7] that to some extent debt financing caused interest conflicts between stockholders and creditors, increased agency costs, and thereby produced negative effects on corporate value. Diamond[8] studies the relationship between debt financing and reputation mechanism of corporate governance, he thinks the debt financing will reduce the company's operation performance. Naiping Zhu and Yusheng Kong[9] proves that asset-liability ratio, current debt ratio, long-term debt ratio all have a significant negative correlation with corporate performance, debt financing affects corporate governance effects negatively.

• Other effects. McConnell and Servaes [10] examines the relationship between corporate performance and ownership structure sampling companies in different growth rate and find that corporate growth rate significantly affects the governance effects of debt financing. Shengjuan Yang [11] analyzed the annual report data of china's private listed companies from 2001 to 2004, concluded that debt financing of private listed company plays a certain but very limited role of governance. Xiaoyan Cui and Mei Wang [12] sampled 723

China's listed companies from 2004-2009, and pointed out that there was an inverted "U" shape relation between corporate performance and indicators including asset-liability ratio, long-term debt ratio and short-term debt ratio.

From the above, there isn't an accordant conclusion on the governance effects of debt financing; moreover in domestic related research, samples are mostly listed companies on main and SME board market, little is sampled on GEM (Growth Enterprise Market). In order to make up the defects of related research, this paper samples listed companies on GEM of Shenzhen stock exchange to research the relationship between debt financing and corporate performance, aiming at helping emerging SMEs to improve the potentiality of debt financing.

2.   MODEL SETTING AND VARIABLE SELECTION

2.1 Hypothesis

Company can improve its corporate value through reasonable capital structure and make full use of the governance effects of debt financing.. Managers should balance the higher personal interests against the risk of losing all the benefits with bankruptcy. As the possibility of enterprises bankruptcy is positively related to debt ratio, debt financing can be seen as an effective incentive mechanism. Yet too high asset-liability ratio will not only increase the risk of bankruptcy but also court enormous financial pressure which negatively impacts corporate performance. Therefore, the following hypothesis is proposed:

Hypothesis H_1：In the case of normal operational and financial status, performance of GEM listed companies will first decrease and then increase with the increase of asset-liability ratio.

The primary purpose of designing relationship between banks and enterprises is preventing financial risks, so the banks tend to impose "credit crunch" on SMEs to resist risks. Especially state-owned commercial banks are inclined to lend money to large and medium-sized enterprises. There are high threshold of bank loans and costs for a large number of SMEs. Only those outstanding ones with super performance might get small loan from banks to alleviate fund shortage, which would not let them have heavy burden of interest expenses.

With the implementation of the Bills Law, as well as the development of information technology and improvement of credit system, commercial financing gets tremendous development in recent years. As an important way of short-term financing, it is the redistribution of existing capital between enterprises in forms of account payable, note payable and deposit received and so on. All of these are based on understanding and trust from each other, or it would be difficult to use. Then, the following hypothesis is proposed:

Hypothesis H_2: Bank debt financing, commercial credit and other liabilities of listed companies on GEM are positively correlated with corporate performance.

Debt maturity structure refers to constituent structure and the respective proportion of short and long term debt. It is an important part of debt covenants, which specifies the rights and obligations of creditors and debtors. Because of difficulty for SEMs to get loan, their bank debt is mainly of short-term. For long-term debt, creditors face high risks, thus they may propose some restrictive terms to debtors, and have high enthusiasm to participate in debtors' corporate governance. Then, the following hypothesis is proposed:

Hypothesis H_3: short-term debt of listed companies on GEM is positively correlated with corporate performance, and long-term debt is negatively correlated with corporate performance.

2.2 Selection of variables

We select data from 2009 to 2011 to carry out empirical analysis from China's economic and financial database (CCER). Rejecting the companies whose data is missing, sample data include 58 firms in 2009, 188 firms in 2010 and 293 firms in 2011, totally contain 539 data samples.

2.2.1 Measurable indicators of corporate governance effects (explained variables)

We select ROA, ROE, and EPS as measures of corporate performance and governance indicators. Good corporate governance highlights not only the greatest wealth for shareholders, but also the maximum of the corporate value. So the effects of corporate governance should be measured by profitability of the entire company's assets, profit ability of shareholders and the future operational conditions of the company.

2.2.2 Measurable indicators of debt financing (explanatory variables)

Debt financing is an important source of corporate finance whose function of signal transduction will increase the attention of investors. Here we use DAR as explanatory variable to analyze debt financing governance effects, considering different types of debt have different effects in corporate governance, we set BD, CD and ED to reflect the different types of debt sources; and SD and LD to reflect the different time limit of debt.

2.2.3 The selection of control variable

We select two control variables: (1) Company size which affects the level of corporate governance; (2) Industry dummy variable. As corporate performance are affected by lots of economic factors beyond control, e.g. industry policy, market conditions, etc. We use symbols and definitions for each variable as follows:

Explained Variable: Return on total Assets (ROA), Rate of Return on Common Stockholders' Equity (ROE), Earning per Share (EPS); Explanatory Variable:Asset-liability Ratio (DAR), Bank Borrowing Rate (BD), Commercial Credit Rate (CD), Other Debt Ratio (ED), Short-term Debt Ratio (SD), Long-term Debt Ratio (LD); Control Variable: Corporate Size (Lnsize), Industry (Indus).

Use the above variable to build mathematical models as follows:

Model 1 (reflects the relationship between corporate performance and asset-liability ratio):

$$PE_\mu = \alpha + \beta_1 \text{DAR} + \beta_2 \, DAR^2 + \beta_3 \, Lnsize + \sum_{i=1}^{11} \gamma_i \, Indus_i + \varepsilon \qquad (1)$$

Model 2 (reflects the relationship between corporate performance and bank, commercial credit, and other debts):

$$PE_\mu = \alpha + \beta_1 \text{BD} + \beta_2 \text{CD} + \beta_3 \text{ED} + \beta_4 \, Lnsize + \sum_{i=1}^{11} \gamma_i \, Indus_i + \varepsilon \quad (2)$$

Model 3 (reflects the relationship between corporate performance and short and long term debt financing):

$$PE_\mu = \alpha + \beta_1 \text{SD} + \beta_2 \text{LD} + Lnsize + \sum_{i=1}^{11} \gamma_i \, Indus_i + \varepsilon \qquad (3)$$

PE_μ represent variables of corporate performance, including ROA, ROE and EPS; α is a constant (intercept), $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \gamma_i$ are coefficients; ε is random error; other variables are defined in Table 1.

3. DESCRIPTIVE STATISTICS AND EMPIRICAL ANALYSIS

3.1 Selection of variables

Table 1 shows that ROA, ROE and EPS are 0.0759, 0.0979 and 0.7097; standard deviations are 0.0488, 0.0745 and 0.4299, indicates little difference in ROA, ROE and EPS among these companies, and the minimum and maximum company size are 18.6, 22.50, mean is 20.5898, indicates little difference in company size.

Table 2 reviews sample companies' debt from the scale, changing and maturity structure. For asset-liability ratio, the maximum is 74.69%; the minimum is only 1.26%. The companies are mainly dependent on commercial credit, which accounts for more than 50% of the total debt financing, and bank loans only account for 20%. It differs a lot from listed companies on Main Board market mainly dependent on bank borrowings. Bank borrowings gradually decreased and commercial credit gradually increased. the short-term debt ratio gradually decreased, but the mean value goes beyond 90%, more than 10 times bigger than the rate of long-term liabilities, some companies even had no long-term liabilities, means they prefer current liabilities.

Table 1.   Descriptive statistics of total sample for each variable indicator in 2009-2011

Index	N	Minimum	Maximum	Mean	Std. Deviation
ROA	519	0.00	0.47	0.0759	0.0488
ROE	519	0.00	0.55	0.0979	0.0745
EPS	519	0.00	2.78	0.7097	0.4299
DAR	519	0.01	0.75	0.1784	0.1364
BD	519	0.00	0.96	0.1456	0.2129
CD	519	0.00	1.73	0.3888	0.3055
ED	519	0.00	0.56	0.0381	0.0630
LD	519	0.00	0.26	0.0102	0.0291
SD	519	0.01	0.75	0.1613	0.1268
Lnsize	519	18.68	22.50	20.5898	0.6331

Table 2.   Asset-liability ratio and structure of sample companies in 2009-2011

Year	Samples	Index	Minimum	Maximum	Mean	Std. Deviation
2009	58	DAR	0.0254	0.5498	0.1868	0.1310
	58	BD	0.000	0.6257	0.2261	0.2091
	58	CD	0.0454	0.9963	0.5251	0.2262
	58	ED	0.000	0.2873	0.0586	0.0740
	58	SD	0.4378	1.000	0.9214	0.1200
	58	LD	0.0000	0.5622	0.0786	0.1200
2010	188	DAR	0.0126	0.6854	0.1761	0.1515
	188	BD	0.000	0.9285	0.1954	0.2627
	188	CD	0.0497	1.0449	0.5332	0.2662
	188	ED	0.000	0.6462	0.6302	0.0896
	188	SD	0.1659	1.0000	0.9027	0.1470
	188	LD	0.000	0.8341	0.0973	0.1470
2011	293	DAR	0.020	0.7469	0.1766	0.1260
	293	BD	0.000	0.9600	0.1904	0.2491
	293	CD	0.010	1.7300	0.5453	0.2612
	293	ED	0.030	0.5600	0.0547	0.0725
	293	SD	0.270	1.0000	0.9022	0.1333
	293	LD	0.000	0.6700	0.0362	0.0951

3.2 Correlation Analysis

Table 3 shows statistical results of Pearson correlation coefficient of the variables. The correlation coefficient between ROA and ROE is 0.918, ROA and EPS is 0.422, indicates significant correlation, so separately test them. ROA and ROE are significantly positive related with DAR, LD, and ED at confidence level of 1%. It explains that these variables promote ROA and ROE. EPS is significantly positive related with BD at confidence level of 1%, indicates that bank borrowing promote on EPS. There was a significant correlation between the explanatory and control variables, but correlation coefficients are relatively small, so no multicollinearity exists.

Table 3. Pearson correlation coefficient matrixes of variables

		ROA	ROE	EPS	DAR	LD	SD	BD	CD	ED	LNSIZE
ROA	Correlation	1									
	Sig.(2-tailed)										
ROE	Correlation	.918**	1								
	Sig.(2-tailed)	.000									
EPS	Correlation	.422**	.374**	1							
	Sig.(2-tailed)	.000	.000								
DAR	Correlation	.140**	.454**	.039	1						
	Sig.(2-tailed)	.001	.000	.381							
LD	Correlation	.221**	.147**	.026	.379**	1					
	Sig.(2-tailed)	.002	.001	.552	.000						
SD	Correlation	.137	.441	.035	.972**	.167**	1				
	Sig.(2-tailed)	.625	.317	.428	.000	.000					
BD	Correlation	-.081	.054	.164**	.473**	.354**	.421**	1			
	Sig.(2-tailed)	.065	.218	.000	.000	.000	.000				
CD	Correlation	.056	.052	.093*	.007	-.166**	.056	-.145**	1		
	Sig.(2-tailed)	.202	.236	.034	.866	.000	.202	.001			
ED	Correlation	.220**	.116**	.060	-.199**	-.118**	-.181**	-.105*	.137**	1	
	Sig.(2-tailed)	.000	.008	.172	.000	.007	.000	.017	.002		
LNSIZE	Correlation	-.467**	-.484**	.092*	-.087*	-.037	-.074	.030	.000	-.091*	1
	Sig.(2-tailed)	.000	.000	.037	.048	.396	.094	.492	.999	.037	

**.Correlation is significant at confidence level of 0.01 (2-tailed)
*. Correlation is significant at confidence level of 0.05 level(2-tailed)

3.3 Analysis of regression results

Table 4 lists the regression results of model 1. The R-value of ROA, ROE and EPS are 0.510, 0.667 and 0.318 respectively; their F-values are 13.666, 31.101 and 14.380 respectively; it explains that entire equation is significant; D-W are close to 2 explain that the variables of equation are not exist autocorrelation, so the model 1 is significant. The regression coefficients of DAR with ROA, ROE and EPS are 0.820, 0.815 and 0.843 respectively, which is significantly related at confidence level of 1%, indicates that they are significantly positive correlated. Substitute the regression coefficient value of ROA, ROE and EPS into model 1 and take the derivative, obtain that ROA reached maximum when DAR equals to 50.98%, ROE reached maximum when DAR equals to 61.60%, and EPS reached maximum when DAR equals to 57.41%. We can derive that ROA, ROE, and EPS has "inverted U-shaped" relationship with DAR, so hypothesis H_1 has been verified.

Regarding to the result, we understand that the listed companies on GEM are all newly-rising SMEs, there are little company-paid and excessive consumption, and activities like "empire of the manager" has not occurred, so the incentive effect of debt financing has been greatly displayed. But too high assets-liability ratio has negative impacts on corporate governance, so there is an optimal debt financing ratio interval.

Table 4.   Regression coefficient of model 1

Item	ROA	ROE	EPS
Constant	0.730 ***	1.060 ***	1.580 **
	（11.111）	（12.199）	（2.479）
DAR	0.820 ***	0.815 ***	0. 843 ***
	（1.414）	（1.451）	（1.977）
DAR^2	-0.209 ***	-0.251 ***	-0.242 ***
	（-2.98）	（-2.632）	（-1.987）
$Lnsize$	-0.033 ***	-0.049 ***	0.108 ***
	(-10.352)	（-11.716）	（3.535）
$Indus$	No industry D, J, M, industry G is significant at confidence level of 1%.	No industry D, J, M, industry G is significant at confidence level of 1%；F、L is significant at confidence level of 10%.	No industry D, J, M, industry A, H are significant at confidence level of 5%, G is significant at confidence level of 10%.
R	0.510	0.667	0.318
Adjust R^2	0.241	0.430	0.078
D-W	1.812	1.815	1.825
F	13.666 ***	31.101 ***	14.380 ***

(Note: T test statistic is in the parentheses, *, **, *** denote significant at confidence level of 0.10, 0.05 and 0.01)

Regression results of model 2 are shown in Table 5. The regression coefficients between BD and ROA, ROE and EPS are 0.006, 0.027 and 0.177, which between CD and ROA, ROE and EPS are 0.003, 0.014 and 0.029, the regression coefficient between BD and ROE, as well as CD and ROE are significant at confidence level of 5%, while BD and CD has no significant regression coefficient with ROA and EPS. So hypnosis H2 about that bank borrowing and commercial credit rates are positively related with corporate performance can be partially accepted, and we can deem that they are weakly positive correlated. The regression coefficients between ED and ROA, ROE and EPS are 0.157, 0.213, and 0.817, and are significant at confidence level of 1%. It illustrates that other liabilities have significant positive impacts on corporate performance, then hypnosis H$_2$ about that other liabilities is positively related corporate performance has been verified.

This empirical result can be explained as follows: At present, state-owned commercial banks of China don't have enough driving force to participate in the corporate governance of the debtor company because of their unclear property rights. In order to guard against financial risks, China's government does not encourage banks to do so. "Commercial Bank Law", "Corporate Law" and other laws expressly limit the right of banks to participate in the debtor company's corporate governance, so positive effect of bank debt financing is not obvious. Unlike most of the debt coming from bank borrowings for listed companies on main board market, the source of the debt for listed companies on GEM is mainly commercial credit. But companies which offer commercial credit have not supervised and regulated the debtor companies effectively, so it is unfavorable for improving their corporate performance. Therefore, commercial credit has positive effect but not significant.

Regression results of model 3 are shown in Table 6. The regression coefficients of SD with ROA, ROE and EPS are -0.044, -0.243 and -0.130, and significant at confidence level of 1%. It illustrates that short-term debt has significant negative impacts on corporate performance, then hypnosis H3 about that short-term debt is negatively related with corporate performance has been verified. The regression coefficients of LD with ROA, ROE and EPS are 0.025, 0.146 and 0.270, but not significant. It illustrates that long-term debt has positive impacts on corporate performance but the influence is weak. We can accept the hypnosis H$_3$ partially.

Table 5. Regression coefficient of model 2

Item	ROA	ROE	EPS
Constant	0.737*** （11.265）	0.875*** （8.832）	-1.805*** （-2.827）
BD	0.006（0.475）	0.027** （1.325）	0.177（1.445）
CD	0.003（0.261）	0.014** （0.729）	0.029（0.253）
ED	0.157*** （4.341）	0.213*** （4.705）	0.817*** （2.312）
Lnsize	-0.033*** （-10.567）	-0.053*** （-11.439）	0.116*** （3.850）
Indus	No industry D, J, M, industry F is significant at confidence level of 5%.	No industry D, J, M, industry F, L are significant at confidence level of 5%; industry G, H are significant at confidence level of 10%.	No industry D, J, M, industry A, H are significant at confidence level of 5%; industry K is significant at confidence level of 10%.
R	0.534	0.555	0.350
Adjust R^2	0.265	0.308	0.098
D-W	1.855	1.826	1.852
F	14.360***	16.016***	15.010***

(Note: T test statistic is in the parentheses, *, **, *** denote significant at confidence level of 0.10, 0.05 and 0.01)

The empirical result of model 3 can be explained as follows: high proportion of short-term debt of listed companies on GEM show their strong preference to short-term debt financing, which reflects short sight of the investors. Investors tend to overlook the long economic benefits by choosing projects with low gains and short payback period rather than the ones with high gains but long payback period. Commercial credit, one of the sources of short-term debt, doesn't give full play to positive effects, and creditors of small short-term debt negatively participate in the debtor company's corporate governance, so the contribution of short-term debt to corporation performance is negative. Usually, there are more restrictive clauses in the long-term debt financing contracts, especially for preventing managers from excessive investment, which will also play a role in supervising corporate operational activities. Because the average value of the proportion of long-term debt is lower than 10%, it couldn't give full play to governance effects of debt financing, so their positive effect is not obvious.

Table 6. Regression coefficient of model 3

Item	ROA	ROE	EPS
Constant	0.933*** （9.027）	1.060*** （12.134）	-1.621** （-2.552）
SD	-0.044*** （-2.784）	-0.243*** （-11.608）	0.130*** （0.83）
LD	0.025（0.381）	0.146（1.643）	0.270（0.419）
Lnsize	-0.033*** （-10.429）	-0.049*** （-11.756）	0.108*** （3.541）
Indus	No industry D, J, M, industry G is significant at confidence level of 1%, industry F is significant at confidence level of 10%.	No industry D, J, M, industry G is significant at confidence level of 1%, industry F is significant at confidence level of 10%.	No industry D, J, M, industry A is significant at confidence level of 5%, industry G, H is significant at confidence level of 10%.
R	0.510	0.659	0.316
Adjust R^2	0.242	0.419	0.077
D-W	1.850	1.853	1.856
F	13.688***	29.758***	14.311***

(Note: T test statistic is in the parentheses, *, **, *** denote significant at confidence level of 0.10, 0.05, and 0.01)

From Table 4, 5 and 6, control variables of the three models reflect the following issues:

• The coefficient between company size and ROA and ROE are significantly negative. It indicates that the larger scale of listed companies on GEM, the lower ROA and ROE. The coefficient between company size and EPS is significant positive; it indicates that the larger scale of listed companies on GEM, the higher EPS. There are more differences in coefficient between company size sand ROA, ROE and EPS, which suggests possibility of manipulating stock prices.

- In terms of control variables of the industry, some industries are affected significantly by industry environment, policies and other factors, such as transportation industry, warehousing industry, information and technology industry, and retail trade industry.

4.   CONCLUSIONS AND SUGGESTIONS

In recent years the difficulty of debt financing for SMEs has attracted much attention from all quarters of the society, and all kinds of measures have been tried to solve that problem, the launch of GEM is a newly channel for newly-rising SMEs' debt financing. This article tests governance effects of debt financing of listed companies on GEM from angles of total and different types of debt financing. Then we draw conclusions: corporate performance will increase first and then decrease along with the improvement of debt asset ratio. Bank loans, commercial credit and long-term loans have weak positive effects and other debt has significant positive effects on corporate performance, while short-term loans negatively influence corporate performance.

There are many factors affect corporate performance, hence there are many ways to improve corporate value. On the basis of these studies, we propose firstly to strengthen the commercial creditor companies involving in the debtor companies' corporate governance, forming an effective system of supervision and regulation to promote effects of debt financing governance. Secondly, listed company on GEM should adjust debt financing structure to improve use efficiency of debt, and choose capital source and structure reasonably according to its own scale and development. Properly increasing the proportion of long-term debt and making full use of debt financing is a better way to enhance corporate governance and improve corporate performance.

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