

The Influence of Equity Incentive on Corporate Debt Default Risk

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Abstract. As researchers show more interest in debt default risk, work on influencing factors of this risk is put a particular emphasis. Because risk preference of management and corporate financial condition cannot be explained by their traits perfectly, this paper has argued association between equity and debt default risk. Selecting 323 listed enterprises as sample, the study uses descriptive analysis and multiple linear regression analysis to determine the relationship of these two indicators. According to the analysis results, large proportion of equity incentives to the total share capital has passive impact on financial condition. It brings heavy credit burden to companies while large proportion of managerial ownership can decrease debt default risk and promote the stability of financial system. This paper strengthens the idea that there is reasonable and significant association between equity incentive and debt default risk. It also proves that different measuring factors of equity incentive have different directions effects on corporate debt default risk.

Keywords: Equity incentive; debt default risk; financial condition.

1. Introduction

Since the improvement of funding policies plays a critical role in corporate governance with the expansion of business scale and promotion of globalization, debt default risk has been a question of great interest. Corporate risk has considerable impact on market risk, even negative influence on the economic condition of a country. Debt default risk, as an important aspect of corporate risk, is a classic problem in financing performance and has rich research experience. There has been an increasing interest in debt default risk, mainly because it can threaten corporate stability and sustainability, even result in bankruptcy. In recent years, poor performance on financing of Chinese companies makes Chinese government publish abundant policies about debt default risk, which brings new research phenomenon. There is an urgent need to address the safety problems caused by debt default risk in this new global condition.

The influencing factors of debt default risk according to current researches can be divided into two main parts. One is the external part, including organizational environments, business cycle, industry situation. From Duncan, when environmental uncertainty increase, the uncertainty of operating performance also climb, causing the rise of default probability [1]. As for the business cycle, Bevan and Garzarelli demonstrated that macro-economy stagnation can remarkable increase default risk from impacting producing and operating activities [2]. For further, Kuehn and Schmid have found that this impact will not remove even with the upturn of macro-economy situation, and different industry may have influence in different degrees [3]. Studies of Acharya, Bharath and Srinivasan show the importance of industry-wide distress [4], which limit recoverable funds. The other part is the internal factor. It is well established from many studies that there is a reasonable association between corporate financing strategies and default risk. As radical financing decisions usually need more funds, managements prefer to choose short term loan to meet the requirement and put the company under greater repayment pressure, which may increase the risk [5]. Also, investigators have provided significant evidences on the relationship between corporate governance and debt default risk. Companies with low governance level are more likely to be adversely affected by organizational environment while entities with higher level are capable to promote the comparability of accountant information and decrease financing distress and principal conflicts [6]. Management traits not only affect corporate behaviors, also impact financing decisions, including their education background,

age, sex ratio of management group and their personality. It has been observed that female managers and young management show apparent effect in reducing credit risk [7]. Governance with overconfidence also show different performance. As depicted as over optimism, they are willing to take adventure to improve their operating activities. They always overate property and underestimate liability, which can magnify the credit risk [8].

Executive incentive is a key strategy for improve governance motivation. As the primary means of executive incentive, equity incentive widely spreads in modern corporate governance. In the enterprise, it is a classic problem in corporate governance that how to balance shareholders and managers. Since it can solve principal-agency conflicts between shareholders and management, equity incentive has been attracting considerable interest. The upper echelons theory suggests that management with different mental profiles will make various decision preference, especially risk appetite, which will bring distinct economic consequence [9]. However, the risk appetite of top management team can not reflect on their demographic traits thoroughly [10]. As equity incentive can coordinate the relationship between shareholders and key managers [11], it also influences the mental traits of managers through enhancing motivation and loyalty. In this way, equity incentive may have effects on the debt fault risk. A search of the literature revealed few studies which discuss whether equity incentive is one of the influencing factors of debt fault risk or link this two concepts. Thus, this research will find if there is association between equity incentive and debt fault risk.

2. Methodology

2.1. Data Source

In order to determine the relationship between debt default risk and equity incentive, the equity incentive information of the first 340 companies which published the lasted announcement about equity incentive from 2022 to 2023 are utilized. The debt default risk level is measured by Zscore model based on the operating daters of these companies. After selecting and assessing, the paper finally uses 323 of them. Daters mainly come from Chinese Research Data Services Platform (CNRDS).

2.2. Indicator Selection and Description

Equity incentive was prepared according to the method used by Wu and Tang et al., which utilizes the proportion of equity incentives to the total share capital (X1) and the proportion of managerial ownership (X2) to analyse equity incentive strategies [12, 13]. The higher this indicator is, the better the equity incentive strength of the company is. As the samples of this paper are information from Chinese corporate, this study employs ZScore model to define the debt default risk by adapting the procedure of Putri et al. [14]. ZScore has two critical values: 2.67 and 1.81. If ZScore is higher than 2.67, this company is financially sound. When the number is lower than 2.67 and higher than 1.81, corporate may have unstable financial condition. And entities with ZScore below 1.81 are in financial trouble. The formula of Zscore is as follows:

$$Zscore = 1.2 * \frac{Workingcapital}{Totalassets} + 1.4 * \frac{Retainedearning}{Totalassets} + 3.3 * \frac{EBIT}{Totalassets} + 0.6 * \frac{Marketvalue}{Library} + 0.999 * \frac{Operatingincome}{Totalassets} \quad (1)$$

2.3. Method Introduction

From the upper echelon theory, management behaviors and mental traits have effects on corporate strategies. Equity incentive brings managers motivations to improve their operating performance. The desire of acquiring extra payment may prompt managers to implement more risky strategies, which can result in heavier debt burden and higher possibility of debt default. Based on above-mentioned discussion, this paper proposes the hypothesis:

H₁: The proportion of managerial ownership has significant and negative effects on financial condition of corporate, and have higher debt default risk.

H₂: The proportion of equity incentives to the total share capital has significant and negative effects on financial condition of corporate, and have higher debt default risk.

Besides independent variable and dependent variables, the present study also use some control variables, which are based on current researches about influencing factors of debt default risk, to promote result accuracy, including enterprise scale, interest coverage ratio, equity financing capability, board size and proportion of fixed assets. This paper also set two dummy variables as error terms: industry and year. The detailed definition of control variables and are as Table 1:

Table 1. Definition of Values

Type	Name	Character	Definition
Dependent	Equity Incentive	X1, X2	The above-mentioned definition
Independent	Debt Default Risk	Zscore	Zscore model
	Enterprise Scale	Scale	The logarithm of total assets
	Interest Coverage Ratio	Cover	EBIT/Financial expenses
Control	Equity Financing Capability	Offer	Cash flow from equity financing/Total assets at the beginning of the year
	Board Size	BS	Total number of directors
	Proportion of fixed assets	Fixed	Net fixed assets/Total assets

In order to show the relevance between equity incentive and debt default risk, this paper builds the following multiple linear regression model of Zscore:

$$Zscore = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 Size + \alpha_4 Cover + \alpha_5 Offer + \alpha_6 BS + \alpha_7 Fixed + \sum Year + \sum Year + \varepsilon \quad (2)$$

The impact of equity incentive to debt default risk reflects on the significance level of α_1 and α_2 . If α_1 or α_2 is significant, it proves the hypothesis. To determine this significance level and test hypothesis, this paper uses multiple linear regression analysis and the independent samples T test.

3. Result and Discussion

3.1. Descriptive Analysis

After obtaining numbers of each variable, this paper first uses SPSS software to analysis in descriptive statistical method to examine basic features of indicators and corporate ensemble equity incentive strategies and financial performance. The result is as Table 2:

Table 2. Descriptive analysis

Name	Sample size	Min	Max	Average	SD	median
proportion of equity incentives to the total share capital (%)	323	0.050	10.000	2.193	1.737	1.927
proportion of managerial ownership (%)	323	0.000	73.432	17.755	19.893	8.117
ZScore	323	-0.170	42.661	5.315	6.068	3.262

3.2. Multiple Linear Regression Analysis

The next question is to determine the effect of equity incentive to debt default risk, so regression analysis was used. Table 3 presents the results getting from the regression analysis of debt default

risk. It provides that both the proportion of equity incentives to the total share capital and the proportion of managerial ownership have significant impact on debt default risk. However, the values α_1 and α_2 are shown different result. As can be seen from the table, one of correlation coefficients is below zero, while the other is above zero. Since the result shows $\alpha_1 = -0.452$ ($t = -2.471$, $p = 0.014 < 0.05$), it means the correlation between the proportion of equity incentives to the total share capital and debt default risk is significant and the effect is negative. However, the related coefficient of equity incentives period of validity is 0.099 ($t = 6.205$, $p = 0.000 < 0.01$) at the $p = 0.05$ level indicating that the influence of equity incentives period of validity on debt default risk is significant and positive.

Table 3. Multiple Linear Regression Analysis

	Non-standardized Coefficients		Standardized Coefficients	t	p	Collinearity diagnostics	
	B	Standard error	Beta			VIF	Tolerance
constant	4.547	0.593	-	7.672	0.000**	-	-
the proportion of equity incentives to the total share capital (%)	-0.452	0.183	-0.129	-2.471	0.014*	1.002	0.998
the proportion of managerial ownership(%)	0.099	0.016	0.325	6.205	0.000**	1.002	0.998
F	F (2, 320)=23.021, p=0.000						
D-W	1.870						
Independent Variable: ZScore							
* p<0.05 ** p<0.01							

According to data mentioned above, this paper draws two conclusion. The first one is that the proportion of equity incentives to the total share capital has significant but not negative impact on debt default risk, so H_1 is partly accepted. Secondly, the proportion of managerial ownership has contrary effect on corporate debt default risk. More larger the proportion is, more risky the financial condition will be. Therefore, this analysis can completely prove H_2 . To sum up, corporate equity incentive strategies have significant impact on debt default risk, but effects of different factors are at various degrees. Normally, equity incentive promotes financial condition of companies more obviously when the proportion of managerial ownership is larger. And the higher proportion of equity incentives to the total share capital increases debt default risk more reasonably. Directors who prefer low risky financial performance are capable to reduce risk through declining the proportion of equity incentives to the total share capital and rising the proportion of managerial ownership. At the same time, these two factors have virtually identical strength of influence.

3.3. Discussion

As mentioned above, two dependent variables have contrary impact on debt default risk. There are several possible explanation for this observation. Firstly, what should not be ignored is psychology feature of enterprise managers. The inconsistency of two factors may be due to different mind of management. If the proportion of managerial ownership is high, it means managers are linked tightly with the corporate by stocks. In this way, the board can ensure that managers make decisions that achieve equity maximization. At this time, managers prefer less risky strategies and more stable financial condition because the rise of stock price depends on low debt default risk. However, some managers are more willing to promote their operating performance through radical financial strategies. They expect to acquire more stocks by their outstanding performance. This motivation may explain the fact that the proportion of equity incentives to the total share capital can increase debt default risk. Another possible explanation for this difference is dividend policy. Dividend policy is discontinuous

and unstable, and dividend payout ratio varies in different industry [15]. Listed companies have capacity to choose between cash dividend and stock dividend, and some entities may prefer more retained earnings. All of these influencing factors to dividend can decide managers' mind. Management will compare several options and finally choose one that can bring largest benefit for them. As samples involve various industries and different dividend policies, financing strategies decided by management might show different degree of risk. Finally, this contradictory result finding is likely to be related to two utilized factors. According to definition, this paper uses two factors to measure equity incentive, and the interesting result may come from the shortage of these indicators. The proportion of managerial ownership is usual to measure equity incentive, but management not only acquire stocks from equity incentive in listed companies. Besides, implementation of equity incentive strategies may be inconsistent compared with the plan, which also compromised the effects of equity incentive.

4. Conclusion

This essay has discussed the association between equity incentive and debt default risk. The study has identified that equity incentive has significant impact on debt default risk. Also, it has shown that different indicators of equity incentive cause different directions of influence. The large proportion of equity incentives to the total share capital motivates management to implement more risky strategies and brings the corporate high debt default risk. However, large proportion of managerial ownership is capable to decrease the risk and ensures the safety of corporate financial condition. The contrary of findings could be attributed to the psychology feature of enterprise managers, difference of dividend policy and indicators. Taken together, these results suggest that the effects of equity incentive on debt default risk are authentic and significant. This thesis has provided a deeper insight into the influence of equity incentive on variable aspects of companies. It also confirms debt default risk has abundant influencing factors, laying the groundwork for future researches into financial condition.

It is unfortunate that samples of this paper are not plentiful. This limits the data analysis only in listed companies. Also, the control variables did not include all influencing factors of debt default risk, which may cause relationship coefficients not extremely accurate. Although the current study has these shortages, the findings bring some insight to research on equity incentive. Future studies should utilize more measures and more samples to have more broad suggestions.

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