The study on the financial leverage effect of GD Power Corp. based on financing structure

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Abstract: At present, enterprises are paying more and more attention to the source of fund and effectiveness and rationality of financing structure, as the optimal financing structure is crucial to the development of enterprises. The financing structure has financial leverage effect; the financial leverage effect affects the return on equity through the choice of liabilities ratio in financing structure. The paper makes empirical analysis on the relation of financing structure and financial leverage based on State Power Corp., and comes to related conclusions.

Introduction

GD Power needs a large amount of fund, so reasonable financing structure will affect the development of the company. Therefore, constant optimization of the financing structure is needed; the more reasonable of the structure, the more helpful to the enterprise for the fund; the unique financing structure of enterprise helps the enterprise achieve the goal of value maximization.

Theoretical analysis and research hypothesis

Financial leverage effect can be determined by the capital structure; the return on equity of the enterprise is affected by the choice of liabilities ratio in financing structure, which also affects the equity of shareholders and profitability of enterprises. According to the theory, this paper puts forward the following assumptions:

Hypothesis 1: the yield rate of enterprise net assets and property ratio is positively related

Property ratio is the proportional relation of the fund provided by creditors and shareholders, which embodies the rationality of the enterprise capital structure and reflects its long-term financial situation. The equity ratio increases with proper increase of debt as well as the return on equity.

Hypothesis 2: return on equity and profit rate before taxation are positively related

Profit rate before taxation is the utilization efficiency of total asset for enterprise. The higher the efficiency, the enterprise can get more money to pay the debts of the enterprise, which increases the income of the shareholders and return on equity.

Hypothesis 3: return on net assets and liabilities rate are positively related

Liabilities rate is affected by the volatility of financial market; changes in interest rates lead to the debt risk of the enterprise, as the decrease of indebted interest would result in the decrease of return on equity.

Variable selection and data source

Return on equity, as the explained variable, is adopted to measure the financial leverage effect in the paper; financing structure of enterprise is reflected by the financial indexes such as ratio of property right, profit rate before taxation and liabilities rate. The three indexes are the explanatory variables, and see more details in table 1.

The data comes from the annual report disclosed by GD Power Development Co., Ltd from 2006 to 2013 and Ruisi financial database.

Table 1 Definition table of variables

Variable type	Variable description	Variable model	Model sign
Dependent variable	Return on equity	Return on equity =after-tax profits/owner's equity	γ
Independent variable	Property rate	Property rate =total liabilities/shareholder's equity	X_1
	Profit rate before taxation	Profit rate before taxation = Profit rate before taxation /Average balance of total assets	X_2
	Liabilities rate	Interest cost/total liabilities	X_3

Model setup and Empirical analysis

Model setup. The regression model of financing structure affecting financial leverage effect:

$$\gamma = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Whereby, β_0 is the regression constant term, $\beta_1, \beta_2, \beta_3$ are the parameters of the model separately, ε is the random error.

Descriptive analysis. In addition to the year 2008, the returns on equity of GD Power are all higher than profit before taxation from the year 2006 to 2013. In 2008, the profit before taxation, return on equity and profit rate before taxation of GD Power are all declined as well as the company's overall profitability. The rest of the years, the earnings per share of shareholders are better, and the financial leverage effect is positive. Equity ratio is the ratio of debt and shareholders' equity; the average level of equity ratio is 241%, bigger than 200% in these years. GD Power overused the financial leverage and led to the big risk of finance.

Table 2   Related coefficient and test of significance

		Return on equity	Profit rate before taxation	Equity ratio	Liabilities rate
Return on equity	(Pearson) correlation	1	0.938**	0.531*	0.438
	Significance（bilateral）		0.001	0.042	0.278
	N	8	8	8	8

Profit rate before taxation	(Pearson) correlation	0.938**	1	-0.032	0.178
	Significance（bilateral）	0.001		0.941	0.673
	N	8	8	8	8
Equity ratio	(Pearson) correlation	0.531*	-0.032	1	0.833
	Significance（bilateral）	0.042	0.941		0.055
	N	8	8	8	8
Liabilities rate	(Pearson) correlation	0.438	0.178	0.833	1
	Significance（bilateral）	0.278	0.673	0.055	
	N	8	8	8	8

**.Significant correlation at the level of 0.01(bilateral) *. Significant correlation at the level of 0.05(bilateral).

Table 2 shows that the correlation coefficients between return on equity and profit rate before taxation, equity ratio and liabilities rate are 0.938, 0.531, and 0.438 separately. Correlation significance appears at the level of 1% for profit rate before taxation and at the level of 5% for equity ratio; hypothesis 1 and 2 are considered true through 95% inspection of confidence. The correlation significance of liabilities rate and return on equity is not obvious, which can be caused by the loan interest of commercial bank affected by the capital market and regulated by national macro-control.

Analysis of regression result. multiple -correlation coefficient is 0.988, and R-Square, the determination coefficient is 0.976; the Adjusted R Square is 0.958, close to 1, shows that fitting degree of equation is good, and more parts of explained variables can be explained by model.

Table 3   ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	144.000	3	48.000	54.500	0.001^b
	Residual	3.523	4	0.881		
	Total	147.523	7			

a. Predictors: (Constant), liabilities rate, profit rate before taxation, equity ratio

b. Dependent Variable: return on equity

Table 3 is the analysis of variance table for the regression equation, F inspection: because $F=54.5>F_{\partial=0.01}=16.7$, the significance is 0.001, the return on equity has overall linear relationship with equity ratio, profit before taxation and liabilities rate.

Table 4　Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	-10.025	2.115		-6.351	0.003
equity ratio	0.025	0.013	0.275	1.856	0.042
profit before taxation	2.419	0.214	0.939	11.287	0.000
liabilities rate	0.320	1.148	0.042	0.279	0.794

a. Dependent Variable: return on equity

T test: regression coefficient significance of profit before taxation and equity ratio. The significances of T test are 0.000 and 0.042 separately, which are all less than the significance level of 0.05. The previous hypothesis 1 and 2 are confirmed, which means the return on equity and equity ratio are positively related; the return on equity and profit before taxation are in significant positive correlation, and the hypothesis 3 is rejected. Then the regression model is:

$$\gamma = -10.025 + 0.025X_1 + 2.419X_2$$

Conclusion

The following conclusions are reached through empirical studies:

The return on equity and equity ratio are in significant positive correlation. When a corporate has good profitability, the increase of equity ratio will improve the return on equity, increase the wealth of shareholders and enterprise value; the financial leverage effect is positive. In the six years from 2008 and 2013, the equity ratio is as high as 200%, which means the average level of asset-liability ratio in GD Power is above 70%, far above the national average level; the financial leverage effect get an excellent return. However, enterprise should adjust the financing structure and reduce debt in order to avoid the negative effects of financial leverage.

The return on equity and profit before taxation are in significant positive correlation. The bigger the profit before taxation, the greater the company's overall profitability will be. The variation of profit before taxation will increase the enterprise's earnings per share of common stock and return on equity; the financial leverage effect of the enterprise is positive. Conversely, in the case of certain interest expense, earnings per share will decrease as well as the return on equity.

The return on equity and indebted interest rate are not in significant positive correlation. In the case of certain capital structure, when total assets return rate is higher than indebted interest rate, there will be favorable impact on return on equity. On the contrary, there will be a decline for the return on equity level. From 2006 to 2013, in addition to 2007 and 2013, the indebted interest rates are lower than the return on total assets, which is favorable for return on equity, leading to insignificant positive correlation between the return on equity and indebted interest rate.

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