Study on the Influencing Factors of Debt Management of New Energy Listed Companies

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Abstract: Development of the new energy industry, plays an important role in promoting sustainable development of our economy, and our new energy listed the effectiveness of debt management and the healthy and stable development of the new energy industry plays a key role.In this paper, taking the main financial indicators of listed companies in the industry based on factor analysis, correlation analysis and linear regression model empirical analyzes the influencing factors of new energy listed company debt management. The results showed that the profitability and scale of operations and liabilities are closely positively correlated. Finally, status and optimization of enterprise on the basis of empirical analysis of debt management measures.

1. Introduction

In today's society, capital is a prominent problem that all enterprises will encounter in the process of development. Almost no enterprise can meet the demand for capital only by its own capital, without using the debt. With the rapid development of China's economy, the consumption of energy increases greatly, and the traditional conventional energy sources (such as coal, oil, natural gas, etc.) are decreasing day by day, which can no longer meet the needs of development. At this time, new energy emerges as the times require, and it is an important field to solve the energy problem in the future. At present, our country has promulgated a lot of laws and regulations, clearly defined the goal and direction of optimizing the energy structure, and the general public for the development of new energy sources and More and more attention has been paid to the use of it. In order to survive in the increasingly competitive market environment and develop in the context of economic globalization, more and more new energy companies have begun to expand their scale in view of the development of new energy resources in China, in order to survive in the increasingly competitive market environment and to develop and strengthen under the background of economic globalization. For enterprises, the first problem to enlarge the scale of enterprises is to raise funds. In recent years, in the economic development of our country, the channels of raising funds have also begun to diversify, and the debt management has been highly valued by investors.

2. The Hypothesis of the Study

At present, scholars at home and abroad have had a lot of empirical studies on the factors affecting debt management, and some of these research methods have been used for reference in this paper. In the part of empirical research, it quantifies the factors that affect the level of debt management of listed companies of new energy, takes the ratio of assets and liabilities as the explanatory variable, and takes the profitability, development ability, operating ability and company size as the explanatory variables. The relevant studies are carried out and the assumptions made are as follows:

Hypothesis 1: There is a positive correlation between the profitability of new energy listed companies and debt management.

Hypothesis 2: There is a positive correlation between the development ability of new energy listed companies and debt management.

Hypothesis 3: There is a positive correlation between the operating capacity of new energy listed companies and debt management.

Hypothesis 4: There is a positive correlation between the company size and debt management of new energy listed companies.

3. Selection of Variables and Model Construction

3.1 Selection of Variables

3.1.1 Dependent Variable.

This paper mainly studies the influencing factors of debt management, that is, to determine the appropriate debt level of the company. Then the ratio of assets and liabilities is chosen as the dependent variable (that is, the explained variable), and the ratio of assets to liabilities = total liabilities / total assets.

3.1.2 Independent Variable.

This article mainly carries on the factor selection from the company's own angle, its main situation is shown in the following table:

Table 1. Selection of Independent Variables

	Type Nam
Profitability (X1)	Return on net assets, Net profit margin on total assets、Operating net interest rate
Capacity development(X2)	Total asset growth rate, Increase rate of business revenue, net profit growth rate
Operational capacity(X3)	turnover of total capital, average accounts receivable turnover ratio, turnover of current assets
Enterprise scale(X4)	Natural logarithm of total assets

3.2 Model Construction

Taking the ratio of assets and liabilities as the explanatory variable of the correlation analysis of the influencing factors of the liability management, and the main financial indexes of the enterprise operation as the explanatory variable, the regression equation is constructed as follows:

$$Y= a+b1X1+b2X2+b3X3+b4X4+u$$

Y represents the debt-to-debt ratio, X1, X2, X3 and X4 respectively correspond to the profitability, the development capacity, the operating capacity and the size of the enterprise, a represents the fixed constant, and u represents the uncertain error constant, and the regression equation is estimated.

3.3 Sample Selection

In order to study the influencing factors of debt management of new energy listed companies in China, 62 new energy listed companies listed in Shanghai and Shenzhen from 2013 to 2017 were selected as the research object, and the total sample size was 310. Among them, there are 28 listed on the Shenzhen Stock Exchange and 34 listed on the Shanghai Stock Exchange. Taking into account the stability of the company's financial position and the completeness of the data, the following principles are followed in the selection of samples:

Based on the continuity of the data, the listed companies that eliminate the default data of the year from the listed companies;

In view of the disturbance to the overall evaluation, the ST-class listed companies are excluded from them, since most of these companies have lost more than two years of continuous loss and have a large impact on the whole sample.

4. Empirical Analysis

4.1 Factor Analysis Method

Factor analysis is a data simplification technique. By studying the internal relations between many variables, it obtains a few independent variables, and these variables can reflect the main information of many original variables. The following is the specific process of factor analysis to reduce the dimensions of profitability, development capacity, operational capability and enterprise size.

4.1.1 KMO Test and Bartlett Test

Table 2. KMO and Bartlett

Kaiser-Meyer-Olkin		.513
Bartlett	Approximately Chi-Square	784.911
	df	36
	Conspicuousness	.000

KMO (Kaiser-Meyer-Olkin) is the number of samples that test the appropriateness of the sample. When the statistical quantity of KMO is between 0.5 and 1, it is indicated that the factor analysis method is suitable; when it is lower than 0.5, it is indicated that the factor analysis method is not suitable, the sample is small, and the sample needs to be enlarged. The value here is 0.513, indicating that it is suitable for use with a factor analysis method. Bartlett's sphericity test is to determine whether the related array is a unit array, and if it is a unit array, the factor analysis method is invalid. In general, when the significance level value is less than 0.05 (i.e., $p < 0.05$), the factor analysis method is effective. Here the value is $0.000 < 0.05$, reaching the significant level, so it is suitable for factor analysis.

4.1.2 Total Variance Decomposition Table

Table 3. Total Variance Interpretation

	Initial eigenvalue			Extraction of load square sum			Rotating load square sum		
	overall	variance percentage	accumulate %	overall	variance percentage	accumulate %	overall	variance percentage	accumulate %
1	2.298	22.984	22.984	2.298	22.984	22.984	2.092	20.923	20.923
2	1.871	18.707	41.692	1.871	18.707	41.692	1.857	18.574	39.496
3	1.539	15.386	57.077	1.539	15.386	57.077	1.738	17.379	56.875
4	1.093	10.927	68.004	1.093	10.927	68.004	1.113	11.129	68.004
5	.975	9.753	77.758						
6	.801	8.008	85.765						
7	.614	6.138	91.903						
8	.336	3.359	95.262						
9	.261	2.605	97.868						
10	.213	2.132	100.000						

It can be seen from Table 3 that 4 factors with a characteristic value greater than 1 are extracted as the initial factor, and the explanation proportion of the four factors before rotation on the overall variance is 22.984%, 18.707%, 15.386%, 10.927%, and the cumulative variance contribution rate is 68.004%. The total variance of the four factors after the rotation was 20.923%, 18.574%, 17.379%, 11.129%, respectively. The total variance of 68.004% was explained by the characteristic value of the four factors.

4.1.3 Rotating Factor Load Table

Factor 1 represents the Company's profitability (X1) at the maximum net profit margin, net asset yield and net operating interest rate. Factor 2 represents the Company's operating capacity (X2) on account of the maximum load on the account’s receivable turnover, current asset turnover and total asset turnover. Factor 3 represents the company's development capacity (X3) in terms of total asset growth rate, operating income growth rate and net profit growth rate load. The factor 4 is the largest in the log of the natural number of total assets, and the description factor 4 represents the enterprise size (X4).

4.2 Correlation Analysis

Table 4. Variable Correlation Analysis

		X_1	X_2	X_3	X_4	Y
	Pearson relativity	1	.000	.000	.000	.272**
X_1	Conspicuousness		1.000	1.000	1.000	.000
	N	310	310	310	310	310
	Pearson relativity	.000	1	.000	.000	.048
X_2	Conspicuousness	1.000		1.000	1.000	.402
	N	310	310	310	310	310
	Pearson relativity	.000	.000	1	.000	.000
X_3	Conspicuousness	1.000	1.000		1.000	.994
	N	310	310	310	310	310
X_4	Pearson relativity	.000	.000	.000	1	.296**
	Conspicuousness	1.000	1.000	1.000		.000
	N	310	310	310	310	310
	Pearson relativity	.272**	.048	.000	.296**	1
Y	Conspicuousness	.000	.402	.994	.000	
	N	310	310	310	310	310

From the above correlation analysis results, we can see that the profitability (X1) and enterprise size (X4) have a significant positive correlation with the ratio of assets and liabilities, indicating that the profitability and size of the enterprise have a great impact on the debt management of the enterprise; However, operating capacity and development ability are not significantly related to asset-liability ratio, so X 2 and X 3 are excluded in the following regression analysis.

4.3 Regression Analysis

Table 5. Model Summary

Model	R	R square	Adjusted R squared	Standard estimate error	Change Statistic				
					R-square variation	F Change	df1	df2	Signifiant F Changes

1	.402[a]	.162	.156	.15789	.162	29.646	2	307	.000

Table 5 reflects the statistical value of the regression equation. R is a complex correlation coefficient, which indicates the close degree of linear regression between independent variables and dependent variables in the model. Its value is between 0 and 1. The closer to 1, the closer the regression relationship is. Here the value is 0.402, indicating that the independent variable and dependent variable are at a moderate level. The R square value is 0.162, indicating that the independent variable can explain 16.2% of the dependent variable. The F value of significance was changed to 0.000, which indicated that it had passed the test of significance.

Table 6. Coefficient

Model		Non-standardized coefficient		Standard coefficient	t	Conspicuousness	Collinear statistics	
		B	Standard error				tolerate	VIF
		.582	.009		64.920	.000		
1	X_1	.047	.009	.272	5.211	.000	1.000	1.000
	X_4	.051	.009	.296	5.669	.000	1.000	1.000

As can be seen from Table 6, the significant value of the profitability (X1) and the enterprise size (X4) is 0.000, indicating that it is significantly related to the asset-liability ratio. And the coefficient of X1 is 0.059, and the coefficient of X4 is 0.050. Therefore, the regression equation of the influence factors of the liability management is obtained:

$$Y=0.582+0.047X1+0.051X4$$

From the above regression analysis, it can be seen that the debt management of new energy listed companies in China is positively related to the scale and profitability of enterprises.

5. Conclusion

The influencing factors of corporate debt management include profitability and enterprise size, and are positively related to it. That is to say, the stronger the profitability of the enterprise, the larger the size of the enterprise will be its debt scale, of course, the larger the size of the debt is the greater its capacity. Suppose one and four are established, that is, the profitability and size of the listed companies in China have a certain impact on their debt management, and there is a positive correlation. First of all, the guarantee of a company's debt ability is its profitability. Companies with higher profitability generally enjoy a higher reputation, so it is easier to raise money from creditors. Hypothesis two and hypothesis three are not true, that is, our country the development ability and operation ability of new energy listed companies have no effect on their debt management.

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