

Empirical Study on the Impact of Enterprise Attributes on Capital Structure of State-owned Multinational Enterprises

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Abstract: The response and sensitivity of enterprises with different attributes to internal and external environmental factors are different. Therefore, the capital structure of enterprises often does not conform to the target capital structure under the trade-off theory. Through paired T-test on the data of state-owned enterprises and non-state-owned enterprises, state-owned transnational enterprises and non-transnational state-owned enterprises, this paper finds that before 2015, due to the influence of different enterprise attributes, the capital structure of enterprises is obviously different, and then converges. Through paired T-test on the data of state-owned enterprises and non-state-owned enterprises, state-owned transnational enterprises and non-transnational state-owned enterprises, this paper finds that before 2015, due to the influence of different enterprise attributes, the capital structure of enterprises is obviously different, and then converges.

1 Introduction

At the critical time of the reform of state-owned enterprises, the state put forward the great idea of building "one belt and one road". This undoubtedly brings new opportunities and challenges to Chinese enterprises, especially state-owned enterprises. At the same time, it has also aroused widespread concern in the academic circles about the transnational operation of state-owned enterprises. From the actual situation, the state-owned enterprises are the strong implementers of the "one belt and one way" construction. Since the "one belt and one road" initiative was put forward, the state-owned enterprises have undertaken 3116 projects of the "five links" construction, with the contract amount exceeding 70%. This is determined by its special attribute of the enterprise, and at the same time is closely related to the internal capital structure of the enterprise. The trade-off theory holds that enterprises have target capital structure and follow the principle of maximizing value in production and operation. But in reality, different attributes of enterprises have different sensitivity to environmental impact, which leads to different principles of capital structure adjustment of different enterprises. This paper attempts to start from the perspective of enterprise attributes, so as to study the differences of capital structure under enterprise attributes.

In his book *The Nature of Enterprises*, Scott (1937) first quoted the perspective of enterprise attributes, deepened the connotation of enterprise economic attributes, and raised the issue of transaction costs. After that, Zhang Wuchang, Al chin, Grossmann, and other economists continued to deepen the research on the boundary, efficiency and property right structure of enterprises. Among them, the core idea is to identify the attribute of the enterprise as a specific investment so as to maintain the long-term relationship of the enterprise. It can be seen that the traditional view of enterprise attributes has a certain degree of reflection on the economic attributes and property rights attributes of enterprises. In reality, because of the different nature of ownership, enterprises do undertake a lot of different functions. In the economic activities with the global market as the carrier, multinational enterprises obtain various resources with comparative advantages from the global scope, such as labor force, technology, environment, resources, etc. At the same time, they will use various resource relationships including government to maintain and develop customer relations.

Based on this, this paper defines the state-owned enterprises engaged in transnational operations, whose corporate attributes are transnational economic attributes and political attributes of state-owned enterprises.

2 Theoretical Deduction of Capital Structure Differences under Different Enterprise Attributes

2.1. Capital structure differences under transnational economic attributes

From the Perspective of Transnational Economic Attributes. Tax-saving value is the key factor of capital structure of state-owned transnational enterprises and non-transnational state-owned enterprises (Liu&Hsueh). The tax revenue borne by domestic enterprises is levied by the local government, and the tax cost of multinational enterprises depends on the tax policy of the host government.

Assuming that the income of the state owned multinational enterprise is expressed as R_c in the home country, the foreign income is Y_f , the income tax paid by the enterprise in the mother country is T_c , the host country's income tax is T_f , the debt financing D_c in the home country, the interest rate is set to r_c , because it is a state-owned enterprise, it needs to calculate the ratio of the dividends paid to it, set it to e , the debt financing D_f in the home country, and the borrowing interest rate is r_f . If we take r_c approximation as the capitalization ratio of multinational enterprises and quote MM model, we think that the value of a company is not affected by financial leverage. The value of a leveraged company is equal to the value of a leveraged company. We can get the tax-saving value TN_i and TN_u of the state-owned multinational enterprises and the state-owned non-multinational.

$$TN_i - TN_u = \lambda V_u \left(\frac{T_c - T_f}{1 - T_c} \right) + \theta D(T_c - T_f) \quad (1)$$

When $T_c < T_f$, $\theta > \frac{\lambda TN_u}{(1 - T_c)D}$, $T_c < T_f$, $\lambda > \frac{\theta(1 - T_c)D}{TN_u}$. Only when these two conditions are met, $TN_i > TN_u$.

2.2. The Difference of Capital Structure under the Political Attribute of State-owned Enterprises

From the perspective of state-owned enterprises' political attributes, compared with non-state-owned enterprises, state-owned enterprises in multinational enterprises have obvious differences in bankruptcy costs due to their different ownership nature and managers' interests, And bankruptcy costs are also a key factor in capital structure. If the asset pricing model (CAPM) is used to examine the bankruptcy cost of an enterprise, assuming that β_i is the system risk coefficient and R_f is the risk-free interest rate, the risk premium can be expressed by β_i times the difference between the market portfolio yield R_m and the risk-free interest rate R_f . Then the bankruptcy cost can be expressed as:

$$R = R_f + \beta_i(R_m - R_f) \quad (2)$$

Obviously, there are Chinese enterprises in multinational enterprises, because the diversification of investment can reduce the correlation coefficient between securities and market portfolio risks, so β_i is less, so the system risk of enterprises is not high, but it has increased the liability tendency

theoretically. At the same time, state-owned enterprises' political attributes make them more relevant to the government and lower risk-free interest rates.

However, as mentioned above, because of the accelerated development of the "one belt and one way" initiative, state-owned enterprises have strong motivation to expand overseas investment. Therefore, transnational state-owned enterprises may not have a lower debt ratio than non transnational state-owned enterprises, and may have more complicated capital structure choices. So whether the transnational economic attributes and the political attributes of state-owned enterprises will have an impact on the capital structure of state-owned transnational enterprises needs empirical testing.

3 Empirical Analysis on the Difference of Capital Structure

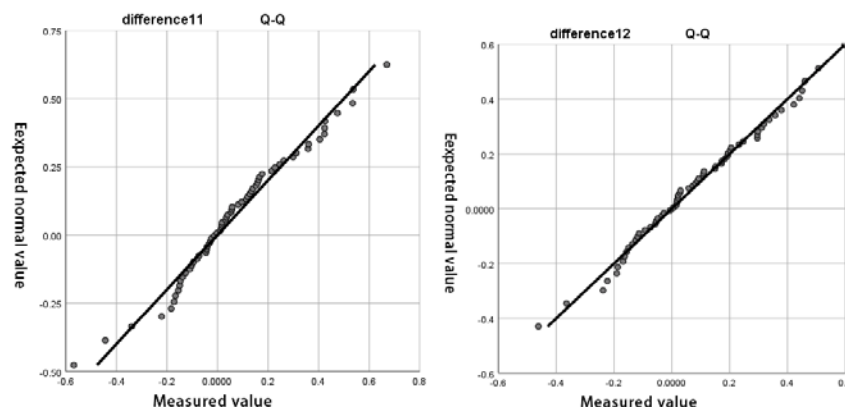
3.1. An Empirical Study on the Impact of Transnational Economic Attribute

3.1.1. Index Selection and Data Source

In order to further study the relationship between the corporate attributes and capital structure of state-owned multinational enterprises, this paper first fixes the political attributes of state-owned enterprises. We choose state-owned multinational enterprises in listed companies, and then match non-transnational state-owned listed companies with industry scale. On the basis of sample selection, we divided the Chinese enterprises involved in overseas investment in China's global investment tracking (CGIT) database into ownership, and then screened out 70 listed companies. Because financial enterprises do not have capital structure data, they are excluded from this study. 68 eligible state-owned multinational enterprises and 68 matched non-multinational state-owned enterprises were excluded from the outliers, and 126 enterprises (63 groups, two groups) were finally paired T-test. In order to better carry out the differences of capital structure and financing structure between state-owned multinational enterprises and non-multinational enterprises in the same industry, this paper chooses the proportion of creditor's rights financing as the observation variable. The calculation method of debt financing ratio is: $\text{debt financing ratio} = [(\text{short-term borrowing} + \text{long-term borrowing} + \text{bond financing}) / \text{endogenous financing} + \text{external financing}] * 100\%$. The time span of data selection is from 2011 to 2018, and the interval selection takes into account the time effect of the implementation of the policy of "one belt and one road". The data mainly come from the financial information in the annual reports of A-share listed companies.

3.1.2. Index Selection and Data Source

According to the hypothesis of paired sample T test, the samples must satisfy the normal distribution and have a pairing relationship. As shown in the following figure, this paper first tests the normal distribution of state-owned multinational enterprises and matched non-multinational state-owned enterprises. Considering the large number of samples, the normal Q-Q chart is selected for direct observation after calculating the difference of the dependent variables.



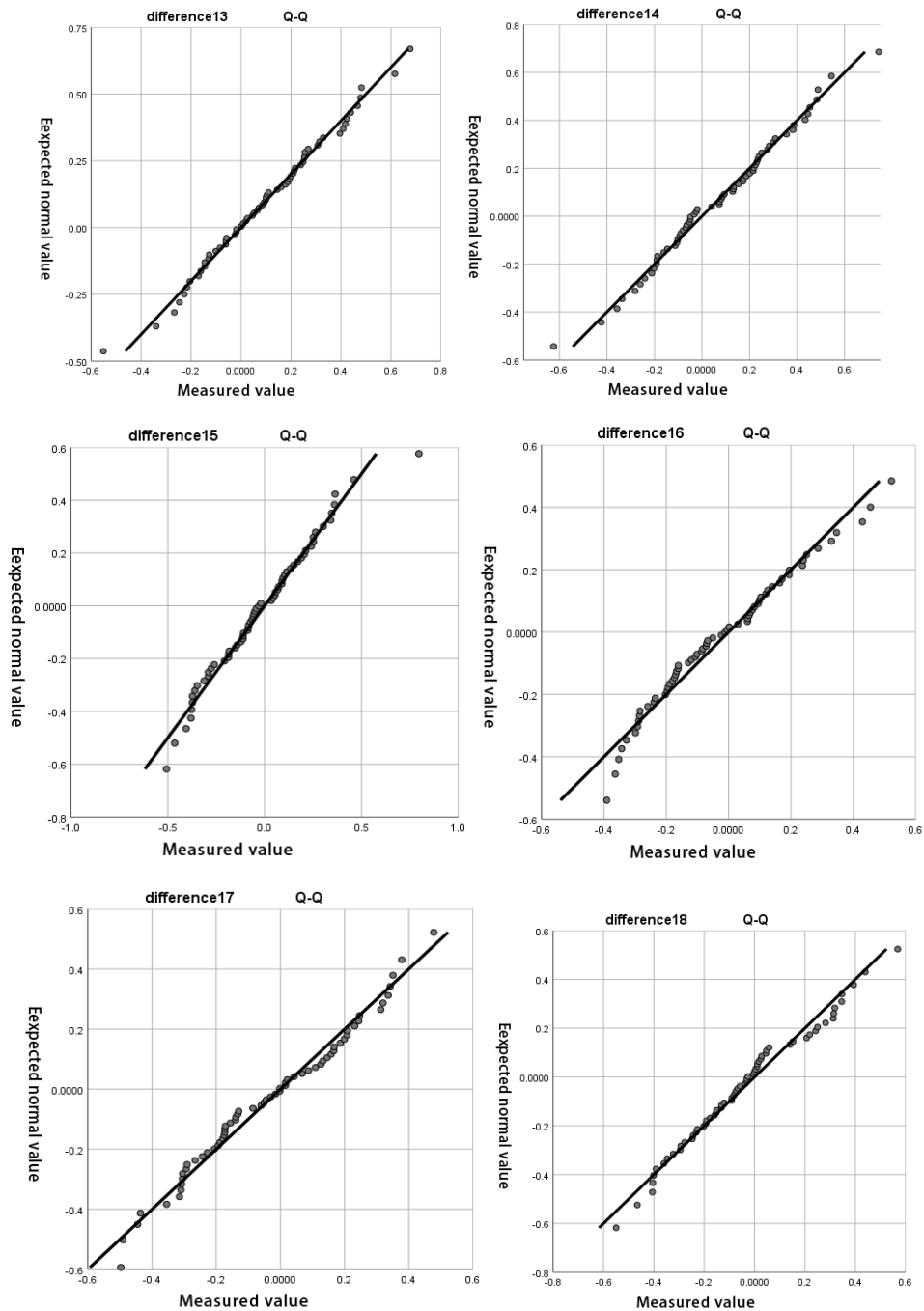


Figure 1. Q-Q Normal Distribution Test

As shown in the figure, the data of the selected enterprises from 2011 to 2018 fully conform to the normal distribution and can be tested by paired T-test. The results are as follows.

Table 1 Paired sample test

		Paired difference					t	Degree of freedom	Sig. (Double tail)
		average value	Standard deviation	Average Standard Error	Difference 95% confidence interval				
					lower limit	Upper limit			
group 1	2011	.0733206	.2361141	.0297476	.0138561	.1327852	2.465	62	.016
group 2	2012	.0832984	.2199570	.0277120	.0279030	.1386939	3.006	62	.004
group 3	2013	.1030048	.2427601	.0305849	.0418664	.1641431	3.368	62	.001
group 4	2014	.0710127	.2636200	.0332130	.0046209	.1374045	2.138	62	.036
group 5	2015	-.0210270	.2562382	.0322830	-.0855597	.0435058	-.651	62	.517
group 6	2016	-.0276270	.2196352	.0276714	-.0829414	.0276874	-.998	62	.322

group 7	2017	-.0355492	.2393887	.0301601	-.0958385	.0247401	-1.179	62	.243
group 8	2018	-.0470143	.2449556	.0308615	-.1087056	.0146770	-1.523	62	.133

3.1.3. Result analysis

From the comparison of mean value, the capital structure of enterprises presents the characteristics of stages. The main manifestation is that the proportion of creditor's rights financing of state-owned multinational enterprises is higher than that of non-multinational enterprises between 2011 and 2014. Then non-transnational state-owned enterprises began to increase debt financing, gradually surpassing transnational enterprises. The value of saliency (double tail) is less than 0.05 in 2011-2014 years. Therefore, it is possible to get a conclusion that the capital structure of China's state owned transnational enterprises and non transnational state owned enterprises is quite different during the period when T test results are rejected. From 2015 to 2018, the value of significance (double tail) is significantly greater than 0.05, which indicates that the capital structure of transnational state-owned enterprises and non-transnational state-owned enterprises is more and more convergent.

3.2. Empirical Study on the Impact of Attribute of State-owned

3.2.1. Index Selection and Data Source

The non-state-owned multinational enterprises are selected from the CGIT database, and 22 listed companies are selected from them, and they are matched with the state-owned multinational enterprises according to the industry and scale. Data were collected from 2011 to 2018. Similarly, the proportion of creditor's rights financing is used to analyze the difference of capital structure, and the calculation method of relevant indicators is the same as the above.

3.2.2. Paired T-test

Firstly, the normal distribution test is carried out. Considering the small number of samples, the Kolmogorov-Smirnov test is selected after calculating the difference of the group dependent variables. give the result as follows.

Table 2 Kolmogorov-Smirnov Verification of Single Sample

		dif1	dif 2	dif 3	dif 4	dif 5	dif 6	dif 7	dif 8
Number of cases		26	26	26	26	26	26	26	26
Normal parametera,b	average value	.0912	.0919	.1085	.0805	-.1739	-.0899	-.1171	-.0763
	Standard Deviation	.27638	.24862	.25228	.25448	.29363	.38149	.36228	.43831
Extreme difference	absolute value	.106	.099	.107	.124	.108	.140	.151	.189
	Positive	.106	.099	.075	.102	.089	.137	.151	.189
	Nagetive	-.084	-.058	-.107	-.124	-.108	-.140	-.109	-.168
Inspection statistics		.106	.099	.107	.124	.108	.140	.151	.189
Sig. (Double Tail)		.200 ^{c,d}	.200 ^{c,d}	.200 ^{c,d}	.200 ^{c,d}	.200 ^{c,d}	.200 ^{c,d}	.200 ^{c,d}	.059 ^c

a. The test distribution is normal distribution.

b. Based on the data.

c. Riley's significant correction.

d. This is the lower limit of true significance.

If the probability values are greater than 0.05, it is confirmed that the distribution law obeys the normal distribution.

Table 3 Paired sample test

		Paired difference					t	Degree of freedom	Sig. (Double tail)
		average value	Standard deviation	Average Standard Error	Difference 95% confidence interval				
					lower limit	Upper limit			
group 1	2011	-.1308020	.2764404%	.0542144	-.2424586	-.0191453	-2.413	25	.023
group 2	2012	-.1710834	.2624122%	.0514633	-.2770740	-.0650929	-3.324	25	.003
group 3	2013	-.1291763	.3237471%	.0634920	-.2599406	.0015880	-2.035	25	.053
group 4	2014	-.0813277	.4254069%	.0834292	-.2531533	.0904979	-.975	25	.339
group 5	2015	-.1560269	.3120739	.0612027	-.2820763	-.0299775	-2.549	25	.017
group 6	2016	-.0825038	.3740058	.0733486	-.2335681	.0685604	-1.125	25	.271
group 7	2017	-.0941385	.3516118	.0689567	-.2361575	.0478806	-1.365	25	.184

group 8	2018	-.0618154	.4141689	.0812252	-.2291018	.1054710	-.761	25	.454
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3.2.2. Result analysis

The probability values in 2011 and 2012 are less than 0.05, rejecting the original assumption that there is a significant difference between the capital structure of state-owned multinational enterprises and non-state-owned multinational enterprises, but the difference between the capital structure of state-owned multinational enterprises and non-state-owned multinational enterprises has not been obvious since 2013.

4 Conclusion

From the results of empirical analysis, it is obvious that the political and transnational economic attributes of state-owned enterprises have a significant impact on the capital structure before 2015, mainly because the financing channels in China are not diversified and open enough, and enterprises with different attributes have different degrees of financing constraints. With the deepening of the reform of state-owned enterprises and the optimization of the relevant policy environment of the state, the diversified financing pattern of coexistence of various financing modes has initially taken shape, and the financing modes are constantly innovating. Therefore, enterprises tend to combine direct financing with indirect financing in the choice of financing modes. In this context, the financing constraints of state-owned multinational enterprises and non-state-owned multinational enterprises are more and more convergent, so the empirical results are in line with empirical facts.

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References

- [1] Francis A. Longstaff Ilya A. Strebulaev Corporate Taxes and Capital structure: A Long-term Historical Perspective [J], NATIONAL BUREAU OF ECONOMIC RESEARCH, w20372, 2014.8
- [2] Faulkender M, Flannery M J, Hankies K W, et al. Cash flows and leverage adjustments[J]. Journal of Financial economics, 2012, 103(3): 632-646.
- [3] Jiang Fu-xiu and Huang Succession, Marketization Process and Dynamic Adjustment of Capital Structure [J] Managing the World, March 2011: 124-134
- [4] Liu Yang, Study on the Impact of Capital Structure of Chinese state-holding transnational Enterprise on Transnational Investment —— Based on Dual Characteristic's perspective [D]. Ph.D. Dissertation, Yunnan University, 2016.
- [5] Nuria E. Hurtado-Torres,J. Alberto Aragón-Correa,Natalia Ortiz-de-Mandojana.How does R&D internationalization in multinational firms affect their innovative performance? The moderating role of international collaboration in the energy industry[J]. International Business Review . 2018 (3)
- [6] Yu Kun, Li Zhiguo, Zhang Xiaorong, Xu Jiangang, Mystery of Enterprise Investment Efficiency: Financing Constraint Hypothesis and Monetary Policy Shock [J]. Economic Research, 2014 (5). [7]