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The impact of corporate finance structure on firm value-Evidence from A-share listed companies in China's manufacturing sector

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ABSTRACT
Based on the data of A-share listed companies in China's manufacturing industry from 2016-2020, this paper uses a panel data multiple regression models to conduct a study around the impact of different financing sources in the financing structure on corporate value and finds that the asset-liability ratio, equity concentration, asset size, and corporate growth are positively correlated with corporate value, the debt financing ratio, equity financing ratio, endogenous financing ratio, and bank borrowing ratio are The article also found that the debt financing ratio, equity financing ratio, endogenous financing ratio, and bank borrowing ratio are negatively correlated with enterprise value, and the commercial credit ratio has no significant correlation with enterprise value. The article also divides the sample into eastern, central and western regions based on the perspective of regional differences in order to study the impact of corporate financing structure on enterprise value from a macroscopic perspective, and finds that the financing levels differ in different regions, with the central region requiring particular attention.

Keywords: *financing structure, firm value, linear regression*

1. INTRODUCTION AND LITERATURE REVIEW

Different financing methods of enterprises have different costs and risks, which further affect the enterprise value, so it is clear that the financing structure has an important impact on the enterprise value. As the manufacturing industry is an important pillar industry in China's national economic development, studying the impact of the financing structure of listed manufacturing companies on enterprise value is helpful to provide the theoretical basis for relevant policy regulations of Chinese government departments and the design of financing structure of Chinese listed companies.

Eldomiaty (2007) used the data of 1637 Australian firms in 1992-2001, 164 Japanese firms in 1991-1996, and 99 Egyptian firms' financial data as the basis of the study, respectively, and found a high negative correlation between financing structure and firm performance [1]. Dimitris and Maria (2010) studied the relationship between capital structure, equity structure and firm performance of French manufacturing firms using DEA data envelopment analysis and concluded that capital structure is negatively related to firm performance [2]. Margaritis and Psillaki (2015) learn from industry analysis of firms in the French manufacturing industry that the utility of financial leverage can be more fully demonstrated in firm performance[3].UG Onyinyechi (2019) studied the impact of debt financing on the financial performance of listed companies on the Nigerian Stock Exchange using time series data from 2000-2017 and found that debt ratio, equity ratio has an impact on the financial performance of listed companies. [4].

Based on the financial data of A-share listed companies in the retail industry from 2005 to 2008, Hui Peng and Yuntao Wang(2011) conducted an empirical study on the relationship between financing structure and business performance using regression analysis. The results are showed that there are structural characteristics such as the highest gearing ratio and preference for debt financing among listed companies in the retail industry in China, which has a positive effect on business performance. Moreover, there is a negative correlation between equity financing ratio, equity

concentration and business performance. Commercial credit financing has a facilitating effect on business performance among the debt financing structure, and bank credit has a limiting effect on business performance[5]. Jiasan Li et al. (2015) used the financial data of 30 listed real estate companies to conduct an empirical study using a panel data model. It was found that the gearing ratio of real estate companies was significantly influenced by the size, profitability, and growth capacity of the companies, while the concentration of company equity was not significant for their capital structure choices [6].

In summary, the research perspective on corporate financing structure is becoming broader and broader, and the research methods are diversified and more in-depth. However, the research on the issue of financing structure for manufacturing industry is slightly less. The impact of financing structure on enterprise value is empirically studied with relevant data of listed companies in manufacturing industry is rarely. Few researchers have conducted three parts of financing structure for debt financing, equity financing and endogenous financing. This paper refers to the previous research results and integrates them into a comprehensive study. In this paper, concerning the previous research results, a more reasonable variable index is synthesized. The sample is divided into regions for research comparison, which provides theoretical reference for the research on the financing structure of the Chinese manufacturing industry.

2. STUDY DESIGN

2.1 Data sources and selection of the sample

This paper selects all A-share manufacturing industry companies listed in Shanghai and Shenzhen as research subjects, and the data are obtained from the RESET financial database. The sample is selected according to the following principles: (1) excluding the companies that were ST and PT in 2020 and the listed companies with incomplete data; (2) excluding the listed companies with abnormal changes in financial indicators and the companies with negative net profit; (3) referring to the 2012 edition of China Securities Regulatory Commission industry classification, the listed companies are divided into 19 major industries, and the listed companies in the manufacturing industry are selected. (4) Excluded companies listed for less than two years because the newly listed companies have not yet entered the typical business track and have packaging components. After screening and processing, the final empirical study was conducted on the remaining 689 sample companies.

3. EMPIRICAL TESTING AND ANALYSIS

3.1 Descriptive statistical analysis

The statistics in Table 1 indicate that 1) the maximum and minimum values of enterprise value are 38.81 and 0.45, respectively, indicating a significant difference in enterprise value among listed manufacturing companies. 2) The mean value of gearing ratio is 40.28, indicating a large share of debt financing in the financing structure of the whole industry; the maximum and minimum values of gearing ratio are 85.41 and 6.56, indicating that the financing structure of listed companies in the manufacturing industry varies significantly from one another.3) The maximum value of bank borrowing ratio is 0.74, and the minimum value is 0, indicating that the ratio of bank borrowing varies greatly from company to company.4) The mean value of the commercial credit ratio is 0.44, indicating that companies in the industry are more inclined to commercial credit borrowing.5) The mean value of the growth rate of companies' main business income is 13.52, which indicates that the growth capacity of the whole manufacturing industry is high, while the maximum value is 118.70. The minimum value is -40.59, which indicates that the growth capacity of manufacturing listed companies varies widely.6) The mean value of the shareholding ratio of the first largest shareholder is 0.36, which indicates that the equity concentration of manufacturing listed companies is high, and its maximum value is 0.96, which indicates that this industry also has the phenomenon of one share. The phenomenon of dominance.7) It can be found through the debt financing rate, equity financing rate, and endogenous financing rate that listed manufacturing companies are more inclined to equity financing and endogenous financing, and debt financing is the last. In contrast, the difference between the maximum and minimum values of equity financing, debt financing and endogenous financing are all large, indicating that the financing of companies in this industry varies widely.

In addition, the minimum and maximum values of the other indicators show essentially no anomalous data, and no special treatment is required to exclude the effect of outliers.

Table 1 Descriptive statistics of the variables

VarName	Obs	Mean	SD	Min	Median	Max
ROE	3445	10.12	7.44	0.45	8.68	38.81
DAR	3445	40.28	17.91	6.56	39.69	85.41
BD	3445	0.25	0.21	0	0.23	0.74
CD	3445	0.44	0.22	0.05	0.41	0.90
OC	3445	0.36	0.15	0.05	0.34	0.96
GROWTH	3445	13.52	23.50	-40.59	10.34	118.70
SIZE	3445	22.36	1.25	19.98	22.28	25.74
DFP	3445	0.13	0.12	0	0.10	0.62
EFP	3445	0.37	0.42	-0.03	0.32	13.16
IFP	3445	0.23	0.40	-10.50	0.25	0.82

3.2 Model Building.

First, to better test the possible endogeneity of manufacturing listed companies to address the possible endogeneity problem, the article uses explanatory variables lagged by one period (zhang et al., 2015). Where Y is measured by return on net assets (ROE). This paper uses a panel data regression measure for Chinese A-share manufacturing listed companies to construct specific models.

$$Y_{i,t} = \beta_0 + \beta_1 DAR_{i,t-1} + \beta_2 BD_{i,t-1} + \beta_3 \mathrm{CD}_{i,t-1} + \beta_4 Z + \varepsilon_{i,t} \quad (1)$$

$$Y_{i,t} = \beta_0 + \beta_1 OC_{i,t-1} + \beta_4 Z + \varepsilon_{i,t} \quad (2)$$

$$Y_{i,t} = \beta_0 + \beta_1 DFP_{i,t} + \beta_2 EFP_{i,t} + \beta_3 IFP_{i,t} + \beta_4 Z + \varepsilon_{i,t} \quad (3)$$

3.3 Analysis of regression results

Based on the panel model constructed above, this paper mainly uses Stata software for regression analysis, and the regression results are as follows.

Table 2 Regression analysis of financing structure and firm value

	(1) Enterprise value ROE	(2) Enterprise value ROE	(3) Enterprise value ROE
Growth	0.050*** (12.12)	0.057*** (14.02)	0.047*** (11.27)
SIZE	0.198 (0.50)	0.461*** (2.80)	0.213 (0.53)
DAR	0.125*** (8.51)		
BD	-3.456*** (-3.34)		
CD	1.810 (1.50)		
OC		5.598*** (4.74)	
DFP			-8.885*** (-4.47)
EFP			-9.680*** (-7.10)
IFP			-14.955*** (-7.61)
_cons	-148.805 (-0.53)	-3.283 (-0.88)	12.771 (1.41)
N	2633	2633	2633
F	33.914***	8.10***	43.613***
R-Square	0.111	0.1089	0.102
Hausman test	66.06***	30.43***	82.38***
Model select	FE	FE	FE

Note: *, **, *** indicate significant at the 10%, 5%, and 1% significance levels, respectively.

From the F-test and Hausman test results of all models, it can be seen that models (1), (2) and (3) reject the original hypothesis to select the fixed-effect model, and the results of model (1) show that corporate growth ability has a significant effect on corporate value at the 1% significance level. The lagged period of gearing has a positive and significant effect on corporate value at the 1% significance level, indicating that debt reflects the lagged period of gearing has a positive and significant effect on enterprise value at the 1% level of significance, indicating that the corporate governance role embodied in debt can be brought into full play. The impact of debt financing on enterprise value has a significant positive effect. Table 2 also shows that the percentage of bank borrowing has a significant negative effect on enterprise value at a 1% level of significance, which indicates that most bank borrowing financing does have a greater financing risk and has a significant negative effect on enterprise value.

The results of model (2) show that all control variables have a significant effect on enterprise value at 1% significance level, and equity concentration OC lagged one period has a positive and significant effect on enterprise value at 1% significance level. It is indicated that the relative concentration of equity in manufacturing listed companies is conducive to the supervision and management of listed companies by major shareholders and is beneficial to enhancing company value.

Model (3) shows that the growth ability of the enterprise has a significant effect on the enterprise value at a 1% significance level, while the debt financing rate lags one period, the equity financing rate lags one period. The internal financing rate lags one period all have a significant negative effect on the enterprise value at 1% significance level. The negative correlation between endogenous financing rate and enterprise value indicates that it is relatively easy for A-share manufacturing listed companies to raise internal funds. In contrast, the excessive raising of internal funds makes the companies generate a poor financing structure, which has a negative effect on the companies themselves. From the above, it can be seen that A-share manufacturing listed companies do not follow the theory of preferential financing but follow the order of endogenous financing, equity financing, and debt financing, which may be the influence of the sample area, and may also be the reason of the unsound development of China's bond market. Debt financing is usually considered second to equity financing in China, especially in the manufacturing industry, because China's manufacturing listed companies will pay more attention to debt financing to the company's negative impact.

3.4 Examining the impact of financing structure on firm value based on the perspective of regional differences.

Ming Liu and Fei Zuo (2015) established a fixed-effects model based on panel data of new energy listed companies in China from 2005 to 2012. They found that the endogenous financing rate in different regions was positively correlated with financial performance, while the debt financing rate and equity financing rate were negatively correlated with financial performance [16]. The author conducted another fixed-effects regression study on the model (3)by region regarding their study. Area1 is referred to the eastern region, including Shanghai, Beijing, Tianjin, Shandong, Guangdong, Jiangsu, Hebei, Zhejiang, Hainan, and Fujian. Area2 represents the central region, including Sichuan, Anhui, Shanxi, Jiangxi, Henan, Hubei, Hunan, Liaoning, and Heilongjiang; Area3 is the western region, including Yunnan, Inner Mongolia, Ningxia, Jilin, Guangxi, Xinjiang, Gansu, Tibet, Guizhou, Chongqing, Shaanxi, and Qinghai. The regression results are as follows.

Table 3 Regression analysis of financing structure and firm value based on regional differences perspective

	Area1 Enterprise value ROE	**Area2** Enterprise value ROE	**Area3** Enterprise value ROE
DFP	-15.510***	-3.385	-13.381**
	(-7.30)	(-0.85)	(-2.58)
EFP	-27.923***	6.281***	-22.166***
	(-15.78)	(2.65)	(-4.70)
IFP	4.778**	3.707	4.947
	(2.18)	(1.24)	(0.97)
GROWTH	0.057***	0.028***	0.059***
	(11.92)	(3.55)	(5.69)
SIZE	-4.974***	2.192***	-0.762
	(-15.25)	(3.13)	(-0.59)
_cons	130.636***	-42.963***	34.080
	(17.48)	(-2.68)	(1.14)
N	2176	815	454
F	151.883	6.953	12.891
R-Square	0.307	0.052	0.155

Using the model (3) for sub-regional testing, the results for the eastern region show that the debt financing rate and the equity financing rate have a negative and significant effect on firm value at the 1% significance level. In comparison, the endogenous financing rate has a positive and significant effect on firm value ROE at the 1% significance level, indicating that the endogenous financing rate for the eastern region differs from the overall body sample. In contrast, the results for the central region only show that the equity financing rate has a positive and significant impact on enterprise value at a 1% significance level. For the western region, there is no significant difference with the eastern region. However, the endogenous financing rate has no significant impact on enterprise value. Overall, due to the different sample divisions, each financing rate has heterogeneous on enterprise value.

From an overall perspective, the impact coefficients of debt financing rate, equity financing rate, and endogenous financing rate on enterprise value ROE are higher in the east and west regions. It indicated that manufacturing companies in the east and west regions are more inclined to debt financing and equity financing, and listed manufacturing companies in the east have higher governance levels and better development opportunities. Thus, they are more able to obtain these two types of investment. In contrast, companies in the west can generally be listed. Substantial capital is better for companies in all aspects in the West, favouring Western investors, plus the national policy strongly supports the development of companies in the west. Thus these two financing methods are more favourable. The central region's debt financing and endogenous financing rates did not pass the substantive test, and the correlation coefficient was low. The possible reason is that the central region manufacturing industry financing structure is not perfect, and corporate governance is not sound.

4 Conclusions and recommendations

In terms of endogenous financing, this paper finds that the rate of endogenous financing is negatively related to enterprise value. According to the empirical study, it is found that endogenous financing has an absolute advantage in the eastern, central and western regions, which indicates that the listed companies in China's manufacturing industry prefer endogenous financing as a safer way, while the profitability of enterprises influences the adoption of endogenous financing and the limited amount of financing, which is not conducive to the development of external financing. Thus the excessive adoption of internal financing also brings negative effects to the enterprise value.

As for the control variables, enterprise growth capacity is positively related to enterprise value, and enterprise size is negatively related. It indicates that blindly expanding enterprise size and remanufacturing capacity is not suitable for enhancing enterprise value. However, it should be determined according to the growth level and capacity of the enterprise, and the appropriate enterprise growth capacity and enterprise value can help listed manufacturing companies to develop better.

Regarding regional differences in enterprise value, the study found that the financing structure of different regions has remarkable differences. The eastern and western regions need to focus on developing endogenous financing to prevent the risks brought by external financing while entirely using the advantages of debt financing and equity financing to enhance enterprise value further. The central region needs further to improve the financing structure of the regional manufacturing industry and increase the means of financing. The national policy should be more favourable to the financing in the central region and provide a green channel for the listed companies in the manufacturing industry in the central region to raise funds. In contrast, the listed companies in the manufacturing industry in the central region themselves should pay more attention to the soundness and improvement of corporate governance.

In conclusion, listed manufacturing companies should reasonably adjust their financing structure according to their own actual situation and effectively balance debt financing, equity financing, and endogenous financing. The company should also ensure the relative concentration of equity, strengthen corporate governance, and enhance the enterprise's growth capacity and enterprise scale. The State should strongly support the financing of manufacturing enterprises in central and western China, give more policy preferences and inclination to ensure that manufacturing enterprises in central and western China can develop better, and at the same time formulate good laws and regulations on supervision and management to promote better governance of the company.

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