

## The Impact of Financing Structure on Firm Performance from the Perspective of Regional Differences

Qingqing Sun<sup>a</sup>, Mingchun Zheng<sup>b,\*</sup>

School of Management Science and Engineering, Shandong Normal University, Jinan, China

<sup>a</sup>2606808090@qq.com, <sup>b</sup>zhmc163@163.com

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*Abstract: In this paper, based on the regional differences empirically studies the impact of financing structure on corporate performance by selecting the financial data of 183 strategic emerging industries listed companies on the GEM in 2012-2016, including evaluating corporate performance through factor analysis. The empirical results show that the asset-liability ratio is negatively correlated with corporate performance, of which the suppression of the eastern region is more obvious, and there is no tax-shield effect in the strategic emerging industries as a whole. Internal financing rate and corporate performance have a catalytic role, of which the central and western regions are more inclined to endogenous financing. There is no significant negative correlation between equity financing rate and corporate performance, and equity owners did not reach the role of effective supervision and governance. Therefore, in the face of the increasingly fierce market competition, the listed company must attach great importance to the financing structure, and according to the regional endowments reasonable optimization of the financing structure and matching financing means to enable enterprises to continue the steady development.*

*Keywords: Financing Structure, Corporate Performance, Regional Differences*

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### 1. INTRODUCTION

Based on the development of economic globalization, science and technology innovation is driving the height of its development strategy with an unprecedented trend, reshaping the global competitive landscape and changing the balance of power among nations. The strategic emerging industries have become one of the major strategies for transforming China's economic. China's strategic emerging industries take innovation as the core, and its growth and market prospects are better through the development of innovative technologies, enhancement of enterprise value and promotion of economic development. However, there is a high degree of uncertainty in innovation activities and higher adjustment costs. Compared with the average enterprises, strategic emerging industries are facing more serious financing constraints. China's economic development has been hindered because of the lack of "viability" of enterprises after

market-oriented reforms. Therefore, the existence of regional differences makes it very important to study the impact of financing structure on corporate performance.

## **2. LITERATURE REVIEW AND RESEARCH HYPOTHESIS**

### **2.1 Literature review**

In the study of the relationship between financing structure and corporate performance, MM theory pioneered a precedent, on the basis of which Modified MM Theorem, Agency Cost Theory, Optimal Financing Theory appeared. This article reviews the literature will follow the internal financing, debt financing, equity financing. In terms of internal financing, domestic and foreign scholars basically think that internal financing can promote the performance of enterprises. Brown et al argue that the internal financing of firms through internal accumulation of profits and retained earnings can be beneficial to the improvement of firm performance [1]. Hui dong Li thinks that the more endogenous financing, the better the company's operating conditions [2]. In debt financing, scholars at home and abroad hold different views. In his study, Abu-Rub investigated the impact of the financing structure on firm performance during the sample period from 28 listed companies on the Palestine Stock Exchange between 2006 and 2010. The results show that the financing structure of the enterprise performance evaluation index significantly promote. The financing structure has a significant negative impact on the financial indicators of these companies [3]. On the contrary, Ling et al. found that when debt-financing ratio of a company is below a certain percentage, its debt level can promote its business performance. However, when its debt ratio exceeds a certain percentage, its operating performance and debt level are restrained [4]. In terms of equity financing, Steier analyzed the data of 435 European companies by focusing on the relationship between business performance and shareholder concentration and wealth. It is concluded that the business performance of enterprises increases with the concentration of their ownership and the increase of shareholders' wealth [5]. Liu (2017) studies the impact on firm performance by focusing on different sources of financing in the financing structure. The results show that there is a positive impact on firm performance and ownership concentration [6].

At the same time, Demsetz et al. think that the different ownership structure of the external environment will affect the development of enterprises under the macro environment [7]. Rami Zeitun et al. found that the corporate financing structure has an inhibitory effect on financial performance, and that corporate performance is affected by the market environment [8]. Based on the regional environment perspective, Xiao found that macroeconomic and other factors have a significant impact on the decision-making of capital structure [9]. Tian argued that the differences in financial growth in the eastern, central and western regions of our country are more pronounced. Among them, the financing ability of the eastern region is obviously higher than that of the central and western regions [10]. Zhai found that enterprises with high R & D

investment have developed more rapidly and are more evident in areas with good technology and finance development. It took the strategic emerging industries of Shenzhen and Shanghai as the research sample [11]. Based on the regional differences, Liu analyzed the relationship between the financing structure of new energy listed companies and corporate performance. It concluded that there was a high level of corporate performance and internal financing rate in the eastern region, and that the long-term debt-bearing debt ratio had a difference in corporate performance [12].

To sum up, the selected samples mostly measure the performance of a company by a single indicator, and do not consider the difference of regional development in the research on the relationship between financing structure and corporate performance. In view of the lack of research in this area, this paper studies how the financing structure affects corporate performance from the perspective of regional differences. This paper takes the financial data of 183 strategic emerging industries listed companies in China's GEM as samples in 2012-2016.

## **2.2 Research hypothesis**

Strategic emerging industries in the innovation process have a higher adjustment costs and a high degree of uncertainty. Rational external investors tend to demand higher returns. Thus, business decision-makers have to rely on internal operating profit accumulation, capital increase and other means of financing. Therefore, financing of strategic emerging industries will follow the "pecking" theory proposed by Majluf and Myers, which gives priority to internal financing [13]. The lower the internal financing costs, the more the improvement of the performance of enterprises have greater benefits. Therefore, internal decision-makers will prioritize internal corporate funding.

H1: Among strategically listed companies in emerging industries, the ratio of endogenous financing has a positive effect on corporate performance.

Based on the MM theory and the revision model, the debt tax shield effect can significantly improve corporate performance. When the ratio of assets and liabilities rises, the enterprises take positive actions in the market competition. At the same time, creditors are optimistic about the future earnings expectation, which helps to improve corporate performance. According to the information asymmetry theory, listed companies usually use R & D investment project information as trade secrets. It is difficult for external creditors to grasp the project information of R & D activities, and the future earnings of enterprise innovation projects cannot be determined so that creditors may overestimate R & D investment risks and increase the cost of debt financing (Jensen & Mecking, 1976 [14]; Garvey & Mawani, 2005 [15]). Due to the small size of strategic emerging industries, the weak corporate governance system and their weak ability to resist risks, they are easily affected by external factors. The introduction of its liabilities has increased the possibility of falling into financial distress and increased the bankruptcy risk of the company. Therefore, a higher gearing ratio may not be good for company performance.

H2: Debt-to-liability ratio has a negative impact on corporate performance in listed companies in strategic emerging industries.

Under normal circumstances, due to the motivation of shareholders to invest in high-risk, high-yield and innovative investment projects, listed companies will adopt equity financing to reduce financial leverage in order to avoid debt costs. At the same time, a large amount of information is disclosed to the public through the stock market. It reduces the investor's investment risk and brings more financing opportunities to the firm, thus alleviating the financing constraints of the firm (Kim & Weisbach, 2008). In addition, investors do not have the right to prioritize profit distribution. The information transmission mechanism in the stock market allows investors peace of mind to control the transfer of funds. Therefore, equity financing will not increase the possibility of financial distress (Brown, Fazzan et al. 2009 [17]).

H3: Among the listed companies in strategic emerging industries, the rate of equity financing has a positive effect on the performance of the company.

According to financial geography and endogenous financial theory, the economic environment is the basis for the sustained and healthy development of enterprises. Different regional environments have an important impact on the growth of micro-individuals. The distribution of regional financing in China showed an imbalance similar to the level of regional economic development (Liu [2009], [18]). The financing capacity in the eastern region had more advantages than the central and western regions.

H4: In the strategic emerging industries listed companies, the impact of the financing structure on corporate performance presents regional differences.

### **3. RESEARCH DESIGN**

#### **3.1 Sample selection**

The research object of this paper is the listed company of strategic emerging industries on the GEM of our country in 2012-2016. It chooses companies that have full and ongoing disclosure of financial data and input into innovation during this period, excluding companies labeled ST or \* ST. Finally, the financial data of 183 listed companies in strategic emerging industries are selected as the research sample, and the research financial data are from the CSMAR database. The software of choice is SPSS 22, Excel 2010.

According to the Strategic Emerging Industries Classification (2012) (Trial) for classification of listed companies in strategic emerging industries, new energy sources (33), new materials (23), biological products (20), high-end equipment manufacturing Energy vehicles (27), next-generation information technology (32), energy saving and environmental protection (24). According to the business registration, divided into the eastern (95) and the Midwest (88) in two parts.

### 3.2 Variable selection

According to the purpose of the research, this paper chooses enterprise performance (P) and total return on assets (ROA) as the explanatory variables; the internal variable financing rate (IFP), the debt financing ratio (LEV) and the equity financing rate Inputs are intermediary variables; control variables are company size (Growth), company growth (Grow). Specific definitions and calculation methods are in Table 1.

Table 1 Variable definitions and calculation methods

explained variable	corporate performance	P	composite index
	corporate performance	ROA	$EBIT \times 2 / (\text{total assets at the beginning of the period} + \text{total assets at the end of the period})$
explanatory variables	internal financing rate	IFP	$(\text{surplus reserve} + \text{undistributed profit} + \text{depreciation of fixed assets}) / \text{total assets}$
	assets and liabilities	LEV	$\text{total liabilities} / \text{total assets}$
	equity interest rate	EFP	$(\text{capital} + \text{capital reserve}) / \text{total assets}$
virtual variable		D	according to the registration area for the division of standards, the east is 1, the Midwest 0
control variables	innovation investment	R&D	$\text{innovation input} / \text{main business income}$
	government subsidy	Subsidy	$\text{Ln Subsidy}$
	Company Size	Size	$\text{Ln ASSET}$
	company growth	Grow	$(\text{total assets at the end of the period} - \text{total assets at the beginning of the period}) / \text{total assets at the beginning of the period}$

### 3.3 Factor analysis

3.3.1 Business Performance (P) indicators of the building. Enterprise performance (P) by the following 10 financial indicators factor analysis derived. The specific definition and calculation method are in Table 2.

Table 2 Descriptive statistics of financial indicators

capability analysis	financial indicator	Indicator calculation
profitability	earnings per share (X1)	net profit / total share capital at the end of the period
	net interest margin of assets (X2)	net profit / average total assets
	operating profit margin (X3)	operating profit / operating income
solvency	net operating cash flow to debt ratio (X4)	net cash flow from operating activities / liabilities
	quick ratio (X5)	quick-moving assets / current liabilities
ability to develop	revenue growth rate (X6)	(current year operating income - last year operating income) / last year operating income
	total assets growth rate (X7)	(total assets at the end of the year - Total assets at the beginning of the year) / Total assets at the beginning of the year
	total profit growth (X8)	(Profit for the year - last year profit) / profit last year
operating capacity	current asset turnover (9)	net operating income / average current assets
	total asset turnover (X10)	net operating income / average total assets

3.3.2 KMO and Bartlett test. There are two ways in which general validation metrics are suitable for factor analysis: KMO sample measures and Bartlett's test. When the KMO value is greater than 0.5, it is suitable for factor analysis. When the Bartlett test statistics less than or equal to  $\alpha$ , it is suitable for factor analysis. In this paper, the use of SPSS22.0 factor analysis of the above indicators: KMO test results for 0.589, Bartlett sphericity test statistics for 314.889, Sig 0.000. Therefore, choose to do factor analysis is appropriate. In addition, the total variance explained by the factors is shown in Table 3, in which the factors with the eigenvalues of the first four factors are greater than 1 and the cumulative contributions of the first four factors are 72.554%. Therefore, the use of common factors to explain dependent variables is reliable.

Table 3 Explains the total variance

	Initial eigenvalue			Extract square and load			Rotate squared and load		
	total	Variance%	Accumulated%	total	Variance%	Accumulated%	total	Variance%	Accumulated%
1	2.907	29.075	29.075	2.907	29.075	29.075	2.511	25.114	25.114
2	1.971	19.706	48.780	1.971	19.706	48.780	1.936	19.363	44.478
3	1.330	13.299	62.079	1.330	13.299	62.079	1.720	17.197	61.675
4	1.047	10.474	72.554	1.047	10.474	72.554	1.088	10.879	72.554
5	.893	8.932	81.486						
6	.783	7.832	89.317						
7	.397	3.975	93.292						
8	.361	3.614	96.906						
9	.201	2.011	98.917						
10	.108	1.083	100.000						

Table 4 Ingredients score coefficient matrix

	Ingredients			
	1	2	3	4
earnings per share (X1))	.364	.064	-.110	.035
net interest margin of assets (X2)	.340	.056	.032	.023
operating profit margin (X3)	.314	-.073	.047	-.003
net operating cash flow to debt ratio (X4)	-.018	.058	.482	-.037
quick ratio (X5)	-.105	-.081	.529	.006
revenue growth rate (X6)	.050	-.064	-.120	-.548
total assets growth rate (X7)	.290	-.173	-.298	-.087
total profit growth (X8)	.058	-.116	-.156	.785
current asset turnover (9)	-.013	.477	-.035	-.003
total asset turnover (X10)	.013	.476	.007	-.042

Obtained from Table 4:

$$F1=0.364X1+0.340X2+0.314X3-0.018X4-0.105X5+0.050X6+0.290X7+0.058X8-0.013X9-0.013X10$$

$$F2=0.064X1+0.056X2-0.073X3+0.058X4-0.081X5-0.064X6-0.173X7-0.116X8+0.477X9+0.476X10$$

$$F3=-0.110X1+0.032X2+0.047X3+0.482X4+0.529X5-0.120X6-0.298X7-0.156X8-0.035X9+0.007X10$$

$$F4=0.035X1+0.023X2-0.003X3-0.037X4+0.006X5-0.548X6-0.087X7+0.785X8-0.003X9-0.042X10$$

Calculate the company's overall operating performance score:

$$P = 29.075\%/72.554\%F_1 + 19.706\%/72.554\%F_2 + 13.299\%/72.554\%F_3 + 10.474\%/72.554\%F_4$$

### 3.4 Model building

In order to test the impact of financing structure and corporate performance, the author uses the fixed effects model of Chen et al [19] to study the overall impact and regional differences of the three types of financing sources on the performance of listed companies. Build the following regression model:

$$P_i = \alpha_0 + \alpha_1 IFP + \alpha_2 LEV + \alpha_3 EFP + \alpha_4 R\&D + \alpha_5 Subsidy + \alpha_6 Size + \alpha_7 Grow + \alpha_8 D + \varepsilon_i$$

The explanatory variables selected in the model are company performance (P); the explanatory variables are LEV, IFP and EFP; the control variables are R & D, Subsidy, Company Size, Company Growth.

## 4. EMPIRICAL ANALYSIS

### 4.1 Descriptive statistics

Table 5 Descriptive statistics of data

variable	N	min	max	mean	Standard deviation
P	915	-2.274	1.954	0.144	0.518
IFP	915	-0.516	0.835	0.220	0.152
LEV	915	0.016	0.925	0.434	0.183
EFP	915	0.038	1.403	0.328	0.181
R&D	915	0.000	0.522	0.045	0.043
Subsidy	915	0.000	22.106	17.047	1.847
Size	915	20.148	27.105	22.406	1.142
Grow	915	-0.443	4.905	0.179	0.311

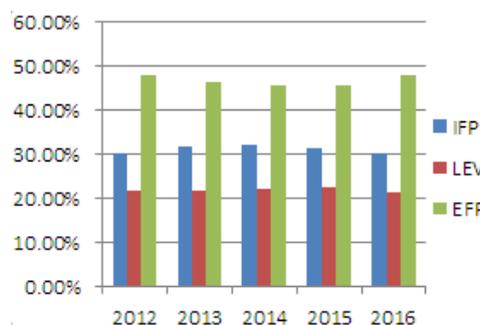


Fig 1 Financing structure ratio

Table 5 is a descriptive statistics of data of 183 listed companies in strategic emerging industries, including the maximum, minimum, mean and standard deviation of each variable. Figure 1 shows the sample structure of the financing structure of the sample companies over the years. Differences in the performance of various corporate financing structure is smaller, less discrete. Among them, the average debt ratio was 18.3%, indicating that most of the selected corporate debt control within a reasonable level. The maximum of equity financing ratio is 1.403, and the proportion of equity financing ratio is the largest in each year, indicating that the sample enterprises still have the absolute control over major shareholders. At the same time, it can be seen that the financing order of listed companies in strategic emerging industries is equity financing, endogenous financing, and finally debt financing.

#### 4.2 The Effect of Financing Structure on Corporate Performance

In order to study the impact of financing structure on the performance of strategic emerging industries, this paper uses the eligible financial data of the strategic emerging industries from 2012 to 2016 to analyze the model. The results are shown in Table 6.

Table 6 Financial structure and firm performance P empirical results

variable	whole		eastern part		Midwest	
	coefficient	Sig	coefficient	Sig	coefficient	Sig
C	-1.049	0.018	-1.681	0.011	-0.048	0.949
IFP	1.637	0.000	1.276	0.003	1.677	0.000
LEV	-0.749	0.002	-1.198	0.003	-0.700	0.045
EFP	-0.346	0.139	-0.571	0.149	-0.581	0.099
R&D	-1.775	0.000	-1.328	0.034	-1.843	0.000
Subsidy	0.019	0.014	0.015	0.215	0.017	0.142
Size	0.044	0.005	0.082	0.000	-0.001	0.977
Grow	0.215	0.000	0.209	0.012	0.255	0.000
Observations	915		475		440	
R <sup>2</sup>	0.469		0.397		0.423	
F	95.574		58.134		46.976	

In the regression analysis, the endogenous financing of listed companies in strategic emerging industries has a significantly positive correlation with their performance (the greater the endogenous financing rate, the higher the corporate performance.) The central and western regions are more inclined to endogenous financing than the eastern regions. And hypothetical H1 match. For economically underdeveloped central and western regions, the self-owned funds are indispensable to the operation and development of enterprises.

At the same time, the debt-to-asset ratio in all samples has a significant negative correlation with the impact on firm performance. This conclusion is consistent with the conclusion of some papers (Wan et al., 2008 [20]; Kong et al., 2010 [21]). The eastern region showed a greater inhibition than the central and western regions, which consistent with the hypothesis H2. In the listed companies of strategic emerging industries, the direct effects and governance effects of liabilities have not formed the tax shield as a whole. It shows that our bankruptcy and withdrawal mechanism in our country is imperfect and cannot restrain corporate performance. There is no significant negative correlation between equity financing rate and corporate performance, which is not in accordance with Hypothesis H3. The reason may be that a large proportion of listed companies in strategic emerging industries are controlled by state-owned shares, resulting in less or no ownership by banks, suppliers, investors and other creditors. In addition, these creditors did not participate in the business decision-making process, and failed to effectively play its supervisory and control role.

### 4.3 Stability test

In order to test the robustness of the research conclusion, this paper replaces company performance index P with company performance index ROA. Regression analysis was performed with all other variables remaining constant, yielding the regression results shown in Table 7. It passed the robustness test, but the significance is not as good as before. This may be the reason why the composite score was used as a measure to calculate the above four aspects of profitability, solvency, development capability and operational capability. In the robustness test, ROA only uses a single financial indicator. The impact on ROA at this time is more than just the variables controlled in the previous section. As a result, there are significant differences.

Table 7 Financial structure and firm performance empirical results of ROA (Robustness)

variable	whole		eastern part		Midwest	
	coefficient	Sig	coefficient	Sig	coefficient	Sig
C	0.046	0.298	0.023	0.740	0.155	0.029
IFP	0.124	0.000	0.033	0.460	0.123	0.000
LEV	-0.134	0.000	-0.139	0.001	-0.135	0.000
EFP	-0.097	0.000	-0.074	0.078	-0.124	0.000
R&D	-0.025	0.458	-0.055	0.410	-0.056	0.182
Subsidy	0.001	0.362	0.002	0.075	0.000	0.798
Size	0.002	0.175	0.003	0.235	-0.002	0.523
Grow	0.034	0.000	0.051	0.000	0.024	0.000
Observations	915		475		440	
R <sup>2</sup>	0.510		0.252		0.502	
F	112.354		21.840		46.133	

## 5. CONCLUSION AND SUGGESTION

From the perspective of regional differences, this paper draws a conclusion that there are significant regional differences in the effect of financing structure on corporate performance. The paper chooses the financial data of 183 strategic emerging industries listed companies from 2012 to 2016 as the sample.

Through the descriptive results of this paper, it is found that listed companies in China's strategic emerging industries prefer equity financing. However, the empirical result shows that there is no significant negative correlation between equity financing and corporate performance, while the internal financing and corporate performance have a positive effect. The debt-to-asset ratio is negatively correlated with corporate performance. The impact of financing on corporate performance and financing structure is not matched. This shows that strategic emerging companies need to be further improved in terms of financing methods and structure.

The empirical results show that the asset-liability ratio is negatively correlated with corporate performance, of which the suppression of the eastern region is more obvious, and there is no tax-shield effect in the strategic emerging industries as a whole. Internal financing rate and corporate performance have a catalytic role, of which the central and western regions are more inclined to endogenous financing. There is no significant negative correlation between equity financing rate and corporate performance, and equity owners did not reach the role of effective supervision and governance.

In this regard, put forward some development proposals. First, debt management can be brought into play by improving the bankruptcy and withdrawal system and supporting mechanisms of listed companies. Second, company managers should attach importance to optimizing the financing structure, reducing financing costs and allocating resources rationally. Thirdly, the eastern region needs to further optimize the financing structure and take advantage of the developed regional economy to make the strategic emerging industries get better development. Fourth, central and western regions should strengthen internal management and increase financing channels to speed up their own accumulation.

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