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Analysis of the Factors Influencing the Financing Efficiency of SMEs
—Based on the Empirical Study of 60 Shandong SMEs Listed on the SME Board

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ABSTRACT
Small and medium-sized enterprises are important parts of the national economy, but the problem of "financing difficulties" greatly restricts their. This article summarizes the financing status of SMEs and influencing factors, combined with the 2017-2020 data of 60 small and medium-sized enterprises listed on the SME board in Shandong Province, and uses econometric methods to conduct empirical analysis on the factors affecting the financing efficiency of small and medium-sized enterprises. It concludes that the size of the enterprise, the profitability of the enterprise, the growth of the enterprise, the solvency of the enterprise and its market competitiveness are the significant factors that affect the financing of SMEs in Shandong. In response to this problem, corresponding feasible improvement suggestions put forward in the enterprises themselves, financial institutions, and the government.

Keywords: *small and medium-sized enterprises, financing efficiency, multiple linear regression, empirical research.*

1. INTRODUCTION

In the context of the continuous reform of China's socialist market economy, more and more small and medium-sized enterprises (SMEs) emerged in many industries. They have gradually become important parts of economic construction and their status in the national economy gradually improved. Therefore, supporting the development of SMEs plays an important role in promoting technological innovation, providing jobs, and meeting social needs.However, SMEs have problems such as single financing channels and high financing costs, which severely restrict the development of the company.Therefore, starting from the SMEs, the author uses an econometric model to analyze the internal factors that affect their financing efficiency. This research is of great significance to how managers operate SMEs.

2. THEORETICAL ANALYSIS OF THE FACTORS INFLUENCING THE FINANCING EFFICIENCY OF SMES

In recent years, the academic circles paid more and more attention to the financing capabilities of SMEs. Scholars conducted in-depth theoretical research and empirical analysis on the influencing factors of SME financing by using interdisciplinary theories and various analytical tools. Therefore, the author conducts a theoretical analysis on the financing efficiency of SMEs from three aspects: the status quo, influencing factors and solutions.

2.1 Financing Difficulties of SMEs

Yang Shu et al. (2017) pointed out that SMEs played very important roles in alleviating employment pressure and improving the economic structure. However, financing difficulties severely restricted the development of SMEs[1].Besides, Yaxin and Qiuling (2020) believed that SME financing has the following problems: Firstly,most companies did not have their own factories or office space, which increased the difficulty of their loans to a certain extent.Secondly,the quality of SME operators was low, and there were also some question in business management.Finally,the government's lack of support for SMEs led to a relatively single financing channel and imperfect corporate credit guarantee systems[2].Therefore, the funding is seriously restricting the development of small and medium-sized enterprises.

2.2 Financing Influencing Factors of SMEs

2.2.1 External factor

Berger and Udell (1998) believed that the policies adopted by the government and the macroeconomic environment affected the financing of SMEs[3]. Beck et al. (2008) found that in countries with imperfect financial markets, most SMEs used internal funds in their operations rather than bank loans and other financing methods.While in areas with developed financial markets,most SMEs chose to finance through loans and other methods[4]. Jinsong (2015) believed that due to the high total cost of financing in the entire economy and society, the "dualization" of financial resources, the slower economic development and many other macro factors, it was very difficult for China's small and medium-sized enterprises to obtain financing.[5].Besides, the information asymmetry between banks and SMEs(Stiglitz and Weiss,1981)[6] and bank-enterprise relations(Petersen,1994)[7] were also important external factors restricting the financing of SMEs. Petersen and Rajan (1994)found small and medium-sized enterprises that had good relationships with banks were more likely to obtain low-cost financing. Therefore, the bank-enterprise relationship played an important role in the financing of SMEs[7].

In summary, the macroeconomic environment, government policies, and bank-enterprise relations are significant external factors that affect the financing efficiency of SMEs.

2.2.2 Internal factor

Although external economic and policy factors limited the financing capabilities of SMEs, their own problems can be more targeted to expose the influencing factors that led to their financing difficulties.

SMEs had the characteristics of small scale, incomplete financial system, insufficient effective collateral,high volatility in earnings,lack of effective management, and inability to effectively avoid risks(Yifu,Yongjun, 2001)[8].The research group named Hunan Provincial Institute of Fiscal Science (2013) found that SMEs' own attributes such as scale, efficiency and anti-risk ability were the biggest obstacles restricting its access to credit [9].Xiuxiang and Jianfang (2012) analyzed that the significant factors that affected the financing of SMEs were corporate growth, corporate size, asset structure and profitability.[10]In addition, the level of internal accumulation of enterprises (Lian Bing, Lian Hao, 2016)[11] and debt solvency (Lina, 2017)[12] were also the primary reasons for the financing difficulties of SMEs.Yaping and Hailin (2016) believed that it was difficult for banks to issue loans due to lack of credit, short expected operating time and imperfect system[13].Manuel (2016) found that large companies were large in scale and had better governance mechanisms than SMEs, so they were more likely to obtain low-cost debt funds[14].

In summary, enterprise scale, profitability, enterprise credit and its asset structure are significant internal factors that restrict the rationing of SME credit.

2.3 Solution

Besanko and Thakor (1987) pointed that guarantee agencies can provide support and assistance to eligible small and medium-sized enterprises, so that they can get financing in time[15].Yuze and Mingyuan(2020) believed that China should establish policy banks that served SMEs,and banking financial institutions should be encouraged to improve credit information technology to increase the availability of financing for SMEs[16].Dingcong(2018) pointed out that the promotion of small and micro financial infrastructure construction and financial service supply-side reform can solve the financing dilemma of small and micro enterprises[17].Lan(2021) believed that SMEs should strengthen their own management and innovate financing channels such as use foreign banks, credit financing and ChiNext for diversified financing[18].

In summary, domestic and foreign scholars mainly considered a series of external environmental factors such as the macroeconomic environment, technological development level, institutional policies and other internal factors such as the scale of the enterprise and its internal corporate governance structure for the financing of SMEs. Moreover, empirical research mostly focused on all SMEs listed on the SME board, they also lacked research on local enterprises, especially on the financing efficiency of these companies in Shandong Province. For that reason, the article takes 60 SMEs listed on the SME board as the research object, and uses econometric models to conduct an empirical analysis of the influencing factors of the financing efficiency of SMEs in Shandong Province.

3. AN EMPIRICAL ANALYSIS OF THE FACTORS INFLUENCING THE FINANCING EFFICIENCY OF SMES

3.1 Selection of Samples and Data

The samples used in this study are all derived from Ccerdata. The author selected the 2017-2020 data of Shandong SMEs listed on the SME board, and excluded companies with ST, equity changes, and abnormal financial data, and finally got a sample of 60 companies.

This article uses the multiple linear regression model in econometrics for analysis, and uses Eviews10.0 software to do statistical analysis.

3.2 Construction of the Model

3.2.1Assumestablished

Starting from the actual financing environment of my country's SMEs, this article analyzes the factors affecting the financing capabilities of SMEs and establishes relevant assumptions:

Hypothesis 1: There is a positive correlation between the size of a company and its financing capacity.

Hypothesis 2: There is a positive correlation between the company's operating capacity and financing capacity.

Hypothesis 3: There is a negative correlation between the profitability of a company and its financing ability.

Hypothesis 4: The growth of a company is positively correlated with its financing ability.

Hypothesis 5: There is a negative correlation

between the solvency of a company and its financing ability.

Hypothesis 6: There is a positive correlation between the company's asset structure and financing capacity.

Hypothesis 7: There is a positive correlation between the market competitiveness of an enterprise and its financing ability.

Table 1: Influactor indexes and calculation formulas

Index category	Variable name		Computational formula
Enterprise scale	Natural logarithm of the total assets	X1	Ln(total assets)
Operation capacity	Inventory turnover ratio	X2	Operating cost / (Initial inventory + End inventory) * 2
Profitability	Return on equity	X3	Net profit / average shareholder equity
Enterprise growth	Operating income growth rate	X4	(End value of the current period-end value of the same period last year)/abs (end value of the same period last year)
Debt paying ability	quick ratio	X5	(Current assets-inventory) / current liabilities
Asset structure	fixed assets ratio	X6	Total fixed assets / assets
Market competitiveness	Operating profit margin	X7	Operating profit / gross operating income

3.2.2 Selection of the variables

1) Explained variable: asset-liability ratio Y=total liabilities/total assets

This indicator can quantify the company's solvency, debt scale, and use of debt amount, and it can also reflect the company's asset structure and financing capabilities.

2) Interpretation variable:

The author selects the seven indicators in the following table as the factors that affect the financing efficiency of SMEs, and measures their financing effect with relevant indexes respectively. The corresponding relationship and related calculation formulas are shown in the following table:

In conclusion, the multiplex regression model established in this paper is as follows:

$$Y = c + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \epsilon$$

3.3 Regression Analysis

In this paper, a multiple linear regression model is established based on the known panel data, and uses the Generalized Least Square method in Eviews10.0 software to test the model.The test results are analyzed as follows:

3.3.1 Model checking results

The figure below shows the test results of the model by Eviews10.0 software. As the picture shows, the R-squared is 0.993023 and the Adjusted R-squared is 0.9903362, which indicate that the fitting effect is very good; the F-statistic is 373.0961 and its Prob. is 0.000000. This means the regression equation is significant as a whole; at the same time, the Durbin-Watson statistic is 2.156, which is close to 2. This means there is no first-order autocorrelation.

Dependent Variable: Y
Method: Panel EGLS (Cross-section weights)
Date: 07/23/21 Time: 15:37
Sample: 2017 2020
Periods included: 4
Cross-sections included: 60
Total panel (balanced) observations: 240
Linear estimation after one-step weighting matrix
White cross-section standard errors & covariance (no d.f. correction)
WARNING: estimated coefficient covariance matrix is of reduced rank

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-223.4587	15.71866	-14.21614	0.0000
X1	12.15778	0.658616	18.45958	0.0000
X2	-0.066738	0.075382	-0.885338	0.3772
X3	-0.157565	0.004891	-32.21209	0.0000
X4	1.593295	0.181960	8.756314	0.0000
X5	-0.045359	0.001237	-36.66922	0.0000
X6	-0.048609	0.032830	-1.480665	0.1405
X7	0.035030	0.010063	3.481107	0.0006

Effects Specification

Cross-section fixed (dummy variables)

Weighted Statistics

R-squared	0.993023	Mean dependent var	89.59615
Adjusted R-squared	0.990362	S.D. dependent var	81.85418
S.E. of regression	5.182213	Sum squared resid	4645.973
F-statistic	373.0961	Durbin-Watson stat	2.155910
Prob(F-statistic)	0.000000		

Fig. 1：Model test results

Therefore, removing the insignificant independent variables and substituting the coefficients of the significant explanatory variables into the regression equation model, the following linear regression model can be obtained:

Y=-223.459+12.158X1-0.158X2+1.593X3-0.045X4 +0.010X5+ε

3.3.2 Regression analysis

From the regression results, it can be seen that the size, growth, and market competitiveness of enterprises are positively correlated with the financing capacity of SMEs in Shandong Province, while the profitability and solvency are negatively correlated with their financing capacity. Among them, the larger the scale of the company and the more actual assets, the easier it is for the company to obtain financing; and the stronger the growth of the company, the better the development prospects, so it is easier to obtain financing.

4. CONCLUSION AND SUGGESTIONS

Through empirical analysis, the author concludes that enterprise scale, profitability, growth, solvency and market competitiveness are significant factors that affect the financing efficiency of small and medium-sized enterprises in Shandong Province. Based on this analysis, the author believes that the management of SMEs should take the following measures to enhance the availability of SME financing through reform and innovation.

4.1 Strengthen self-construction

Small and medium-sized enterprises should establish modern management systems and improve corporate governance mechanisms. Make reasonable plans for the future development of the company, expand the scale of operations, introduce technological and innovative talents, and actively carry out technological innovations, so as to enhance the ability of sustainable development.

4.2 Improve product service quality and diversity

Improving the quality of products and services can enhance the market competitiveness of enterprises, and diversity can meet the diversified needs of consumers so as to increase the operating profits of enterprises. Therefore, SMEs can well strengthen their financing capabilities through this approach.

4.3 Enhancing corporate integrity awareness

SMEs should establish correct concepts of credit and return the borrowed money in a timely manner. And strengthen communication with banks, attach importance to corporate financial management capabilities, and strengthen corporate information disclosure, so that banks can fully understand companies, thereby optimizing bank-enterprise relations and solving the problem of bank-enterprise information asymmetry.

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