Empirical Research on Influencing Factors of Capital Structure of Listed Companies

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Abstract

As an important index in financial analysis, the connotation of capital structure is to reflect the financing combination choice of enterprises in a certain period by explaining the composition and proportion of the capital value of enterprises. To some extent, the relevant ability of an enterprise in operation depends on the capital structure. In order to explore the impact of the capital structure of pharmaceutical enterprises on business performance, the empirical research will be carried out through theoretical research and empirical analysis, taking the data of 145 pharmaceutical listed companies from 2014 to 2020 as the research sample, and put forward relevant suggestions according to the empirical results.

Keywords

Pharmaceutical Enterprises; Capital Structure; Business Performance; Empirical Research.

1. Introduction

Since China's 12th Five Year Plan, China's economic development has ushered in new opportunities, the achievements of economic development have attracted worldwide attention, and the domestic medical and health level has achieved a qualitative leap. At the same time, with the acceleration of the reform process of the domestic medical system, the demand for medical supplies by some domestic pharmaceutical enterprises and medical and health departments has increased rapidly. Moreover, the GDP of China's pharmaceutical industry is growing rapidly at this stage. Therefore, China's pharmaceutical market has gradually developed into the largest pharmaceutical market in the world at this stage. According to the data released by China's National Bureau of statistics, from 2014 to 2020, the annual output added value of China's pharmaceutical enterprises above designated size increased by about 10.60% respectively over the same period, and the annual industrial output of the pharmaceutical industry ranked among the forefront of the annual output of the whole domestic industry. Although the overall growth trend of China's domestic pharmaceutical industry shows a continuous positive trend from 2014 to 2020, compared with developed countries, the development level of China's pharmaceutical industry and the technical content of drugs are still relatively backward.

As an important indicator in financial analysis, capital structure has always attracted the attention of people from all walks of life. It reflects the financing portfolio choice of enterprises in a certain period by explaining the composition and proportion of the capital value of enterprises. Different enterprises have different capital structures, which means that the financing methods and financing proportion of enterprises are different, which will affect the business decision-making and performance of enterprises and bring different economic benefits to enterprises. Therefore, it is necessary for enterprises to study the impact of capital structure on business performance, formulate reasonable fund-raising methods and

proportions according to their own business conditions, and optimize the capital structure of enterprises.

Business performance is an important indicator to reflect the business situation of enterprises, which can be analyzed from many aspects. In order to reflect all aspects of business performance, combined with relevant literature, asset liability ratio, current liability ratio and non current liability ratio are selected as analysis indicators to comprehensively reflect the business performance of enterprises.

2. Literature Review

David Durand (1952) first put forward the capital structure theory, but it has not been widely recognized by the academic community because it has not been verified by data analysis. Although the theory put forward by American economist David Durand has not been widely recognized, scholars in relevant fields all over the world have opened a new chapter and become a high-profile research topic on the relationship between enterprise capital structure and enterprise performance.

Compared with the west, the empirical research on the relationship between capital structure and business performance in China started late. In the early stage, Lu Zhengfei and Xin Yu (1998) took the lead in studying the empirical literature on the relationship between capital structure and business performance. They believe that profitability decreases with the increase of long-term debt ratio [2]. Huang Xian (2009) studied the relationship between the company's capital structure and operating performance, and believed that when the debt exceeds a certain degree, the asset liability ratio of listed companies is negatively correlated with performance [3]. Wang Yi and Xu Huanzhang (2017) screened A-share listed companies in China's manufacturing industry, and found that too high asset liability ratio will reduce enterprise performance after empirically testing the relationship between capital structure and operating performance [4]. Zhang Rong (2021) established a model by analyzing and selecting the relevant data of A-share listed companies in Shandong Province from 2017 to 2019, and tested the model by using fixed effect model method. She believes that asset liability ratio and current assets are negatively related to operating performance [5].

From the 1990s to today, scholars in relevant fields in China have begun to conduct empirical research on capital structure and business performance in various industries. However, due to the late start, the research on the impact of capital structure on business performance is shallow. At the same time, due to the large individual differences and complex situation of various industries, various industries can not obtain unified empirical results [6]. Therefore, the purpose of this empirical study is to make a specific analysis of pharmaceutical enterprises, so as to study the impact of the capital structure of pharmaceutical enterprises on their business performance in combination with the characteristics of the industry, in order to find an effective way to optimize the capital structure and optimize the capital structure of pharmaceutical enterprises [7].

3. Theoretical Analysis and Hypothesis Proposal

3.1. Theoretical Analysis and Research Hypothesis

Asset liability ratio is the percentage of the funds provided by creditors in the enterprise's own funds in the process of enterprise operation. It can objectively reflect the debt structure of the enterprise and measure the operation ability of the enterprise. For a long time, debt financing is an important way for an enterprise to carry out external financing. The outstanding advantage of debt financing is that it can bring capital flow to the enterprise, and debt financing has the function of interest tax credit, which can bring convenience to the enterprise in terms

of tax and so on. However, if the proportion of debt financing is too high, it will bring financial difficulties to enterprises. At the same time, most investors in China believe that only enterprises with poor operating performance will choose to finance through debt financing. Therefore, the greater the proportion of debt financing in total assets, it shows that there are serious problems in the operating performance of enterprises, which is an important signal that the financial situation of enterprises is not optimistic. As an important indicator that can truly reflect the debt structure in the capital structure, the asset liability ratio can reflect the impact of the capital structure on the business performance of enterprises. Therefore, on the basis of the impact of asset liability ratio on business performance, we will put forward hypothesis 1.

Hypothesis 1: the higher the asset liability ratio is, the lower the business performance is, that is, it is negatively correlated.

The current liability ratio can be used to measure the relationship between short-term liabilities and total assets. Short term financing loans can improve the capital liquidity of enterprises and help enterprises overcome the current difficulties. However, the high current liability ratio shows that enterprises rely too much on short-term funds, which will increase the capital cost of enterprises. Generally speaking, the interest rate of short-term funds is high. A higher interest rate will indirectly increase the debt repayment risk of the enterprise, thus increasing the debt repayment pressure and debt repayment risk of the enterprise, which may indirectly reduce the profitability of the enterprise. The reduction of profitability will lead to the reduction of business performance. Therefore, it can be seen from the above analysis that the current liability ratio has an impact on the operating performance of enterprises. Based on this theory, we propose hypothesis 2.

Hypothesis 2: the higher the current liability ratio, the lower the business performance, that is, there is a negative correlation.

Liabilities in the non current liability ratio refer to long-term liabilities, which are not repayable in a short time. Generally, the total amount of borrowings is large, which reflects the proportion of liabilities that need to be repaid for more than one year or more than one business cycle in the total assets of the enterprise. Scholars believe that the long repayment period of non current liabilities can not only solve the difficult problem of capital turnover faced by enterprises, increase production and operation funds for enterprises and improve the operation efficiency of enterprises, but also improve the operation efficiency of enterprises, reduce the debt repayment pressure of enterprises, and reflect the independence and stability of the capital source structure of enterprises from the side. Therefore, we propose a new hypothesis, hypothesis 3.

Hypothesis 3: the higher the non current liability ratio, the higher the business performance, that is, there is a positive correlation.

4. Research Design

4.1. Sample Selection and Data Source

By searching the relevant literature on capital structure and business performance at home and abroad, and combined with the analysis of the current situation of China's pharmaceutical industry, it is decided to take China's pharmaceutical industry as the research object, select the relevant variables respectively, and define the variables.

The screening conditions for the selection of sample enterprises are as follows: (1) select the sample of A-share pharmaceutical enterprises. (2) Select a sample of non ST pharmaceutical enterprises. (3) Eliminate the samples of pharmaceutical enterprises with incomplete data. Finally, the relevant data of 145 listed companies in the pharmaceutical industry from 2014 to 2020 were selected through guotai'an, wind, Ifind and other databases and websites.

4.2. Definition of Variables

In order to better analyze the relationship between capital structure and business performance, the business performance of 145 listed companies in the pharmaceutical industry from 2014 to 2020 was selected as the explanatory variable and recorded as roe.

Enterprise operating performance (ROE) is mainly reflected in profitability, debt repayment ability and other aspects. It is an important index to measure the operating benefits and operating performance of enterprises in a certain period of time. Traditional business performance evaluation methods are mainly based on accounting profit indicators. There are usually single indicator methods, such as return on total assets, return on net assets, etc. and comprehensive indicator methods, such as Tobin's Q-value method and balanced scorecard [8]. In addition, the starting point of DuPont analysis method is the rate of return on net assets, which is the strongest indicator to evaluate the comprehensive financial ability of an enterprise and reflects the profit generated by its net assets, that is, equity capital. At the same time, the return on net assets is also an index to evaluate the specific operation, investment and financing activities of the enterprise, and to measure the satisfaction of the enterprise to the operating performance. Therefore, by combining the index selection of enterprise business performance with DuPont analysis, the return on net assets is finally selected to define enterprise business performance (ROE).

After rigorous theoretical analysis, it is considered that it is more appropriate to select the asset liability ratio, current liability ratio and non current liability ratio of 145 listed companies in the pharmaceutical industry from 2014 to 2020 as explanatory variables, which are recorded as Dar, SAR and lar respectively.

Asset liability ratio (DAR) is a measure of the proportion of the company's total liabilities in the company's total assets. The higher the ratio, the less guaranteed the creditor's rights.

Current liability ratio (SAR) refers to the proportion of debt repaid by an enterprise in total capital within one year or one business cycle. The high current ratio indicates that the company needs to strengthen the improvement of capital liquidity, appropriately adjust its debt level and maintain the equity multiplier at a reasonable level, so as to reduce the overall leverage level of the company.

Non current liability ratio (LAR) refers to the proportion of debts repaid by the enterprise in the total capital within one year or more business cycles. The higher the ratio of non current liabilities to assets, it shows that the proportion of assets obtained by the company through liabilities increases, and the risks faced by the enterprise in the future also increase.

To sum up, asset liability ratio, current liability ratio and non current liability ratio can better reflect the capital structure of an enterprise.

The enterprise scale and operating income growth rate of 145 listed companies in the pharmaceutical industry from 2014 to 2020 are selected as control variables, which are recorded as size and OIR respectively.

Enterprise size refers to the size of the business category and capital category formed after the continuous development of the enterprise. The continuous expansion of the scale of an enterprise means that the management scope of the operator also increases, and all kinds of risks faced by the enterprise also increase, which affects all aspects of the indicators of the enterprise, including capital structure and business performance. Generally speaking, when financial leverage acts on the scale of enterprises, it is easy to reduce the operating performance of enterprises due to the negative impact of liabilities [9].

Operating income growth rate (OIR) is an important indicator to measure the status and market share of enterprises and predict the trend of enterprise business expansion. If the operating revenue growth rate (OIR) is positive and the operating revenue growth rate (OIR) shows an increasing trend year by year, it indicates that the company's operating revenue growth has an

obvious increasing trend and the future development prospect is better; If the operating income growth rate (OIR) is negative, it indicates that the company is facing certain business risks, which need to be adjusted in time and take measures. Therefore, the level of operating income growth rate (OIR) affects the explained variables and explanatory variables to a certain extent.

To sum up, enterprise size and operating income growth rate can be used as the control variables of the research object. In order to more intuitively summarize the above variable selection analysis, the final summary results are shown in the table below:

4.3. Model Construction

According to the above theoretical analysis and research design, the following models are finally constructed:

Model 1: $ROE=\alpha1+\beta1*DAR+\beta2*SIZE+\beta3*OIR+\varepsilon$
Model 2: $ROE=\alpha1+\beta1*SAR +\beta2*SIZE+\beta3*OIR+\varepsilon$
Model 3: $ROE=\alpha1+\beta1*LAR +\beta2*SIZE+\beta3*OIR+\varepsilon$

5. Empirical Analysis

5.1. Descriptive Statistics

The following data are obtained by modeling with Stata software, as shown in the table below:

Table 1. Descriptive Statistics

Variable	Mean	Std.Dev	Min	Max
ROE	0.1301	0.8520	-0.1787	0.2822
SAR	0.2424	0.1569	0.0012	0.5468
DAR	0.3473	0.1753	0.1102	0.6440
LAR	0.0831	0.0699	0.0012	0.2698
SIZE	9.7725	0.7255	8.0067	10.9227
OIR	0.1731	0.2374	-0.6677	0.7763

According to the descriptive statistical analysis in Table 2, the average value of the return on net assets of the pharmaceutical enterprises in the selected sample is 0.1301, which is small, indicating that the return brought by the capital structure of the pharmaceutical enterprises in the selected sample is low, the standard deviation is 0.8520, and the minimum and maximum values are -0.1787 and 0.2822 respectively, It shows that there are differences between pharmaceutical enterprises in the selected sample. According to the data in the table, the average value of the asset liability ratio of the pharmaceutical enterprises in the selected sample is 0.2424, the value is small, and the standard deviation is 0.1569, indicating that there are obvious differences in the asset liability ratio between the sample enterprises. Then the current liability ratio is analyzed. The current liability ratio is higher than the non current liability ratio, indicating that the sample enterprises have a high proportion of current liabilities and the level of leverage efficiency needs to be adjusted. For the enterprise scale of the pharmaceutical enterprises in the selected sample, the average value is 9.7725, the scale is large, and the standard deviation, minimum value and maximum value are 0.7255, 8.0067 and 10.9227 respectively. The range value of the variable size value indicates that there are differences in enterprise scale between the sample enterprises. Finally, by analyzing the growth rate of the operating income of the pharmaceutical enterprises in the selected sample, we can

see that the average value is 0.1731 and the standard deviation is 0.2374. Both values are small, indicating that the operating income of the pharmaceutical enterprises in the sample not only grows slowly, but also has a difference that can not be ignored.

5.2. Correlation Analysis

In order to study the relationship between variables, the correlation coefficient values of each index are obtained by Using Stata software, as shown in the following table:

Table 2. Correlation Analysis

	ROE	SAR	DAR	LAR	SIZE	OIR
ROE	1.0000					
SAR	-0.3084** (0.0207)	1.0000				
DAR	-0.2910** (0.0296)	0.8084*** (0.0000)	1.0000			
LAR	-0.3569*** (0.0069)	0.3160** (0.0177)	0.6204*** (0.0000)	1.0000		
SIZE	-0.2175 (0.1074)	0.5758*** (0.0000)	0.5837*** (0.0000)	0.5747*** (0.0000)	1.0000	
OIR	0.4461*** (0.0006)	-0.2131 (0.1149)	-0.3193** (0.0165)	-0.2719** (0.0426)	-0.4024*** (0.0021)	1.0000

*p<0.1, **p<0.05, ***p<0.01

From the correlation analysis in Table 3, it can be seen that at the level of 0.05, the coefficient of asset liability ratio of pharmaceutical enterprises in the sample with respect to business performance is negative, that is, there is a negative correlation between the two, so hypothesis 1 is true; Similarly, under the condition that the significance level is 0.05, the model coefficient of the current liability ratio of pharmaceutical enterprises in the sample on the business performance is also negative, that is, the two are also negatively correlated, so hypothesis 2 is true. At the same time, under the premise that the significance level is 0.01, the business performance of pharmaceutical enterprises in the sample is negatively correlated with the current asset liability ratio. Therefore, hypothesis 3 is invalid and needs further verification.

5.3. Regression Analysis

The results of regression analysis and Hausman hypothesis test of the established model by Using Stata software are shown in the table below:

After the Hausman test of the fixed effect model, the data in Table 5 are obtained. Through analysis, it can be seen that: under the condition of significance level of 0.05, the model coefficient of the pharmaceutical enterprises in the sample related to operating performance and asset liability ratio is -0.162, that is, the asset liability ratio and enterprise operating performance interact with each other, which is unfavorable to the development of the enterprise, which verifies the correctness of hypothesis 1; Similarly, at the significant level of 0.05, the coefficient symbol of the current liability ratio of pharmaceutical enterprises in the sample is also negative, that is, too high current liabilities will bring debt risk to the enterprise and reduce the operating performance of the enterprise. Therefore, the correctness of hypothesis 2 is verified; In addition, under the condition that the significant level of enterprise operating performance and non current liability ratio of sample companies in the

pharmaceutical industry is 0.05, the coefficient of non current liabilities is negative, that is, there is a non positive correlation, indicating that hypothesis 3 is invalid.

Table 3. Regression analysis results

	model 1	model 2	model 3
DAR	-0.1620** (0.037)		
SAR		-0.120** (0.035)	
LAR			-0.043** (0.046)
SIZE	-0.046 (0.272)	-0.049 (0.141)	-0.050 (0.136)
OIR	0.078** (0.019)	0.081** (0.027)	0.086** (0.017)
—cons	0.618* (0.053)	0.620* (0.054)	0.610* (0.064)
F-test (P-value)	0.000	0.000	0.000
Hausman test (P-value)	0.000	0.000	0.000
Model category	*fixed effect model*	*fixed effect model*	*fixed effect model*

*p<0.1, **p<0.05, ***p<0.01

6. Conclusions and Suggestions

6.1. Conclusion

Through the descriptive statistics, regression analysis and Hausman test of the model by Using Stata statistical software, the following conclusions are drawn: when the debt reaches a certain value, too high asset liability ratio will reduce the ability of all aspects of enterprise operating performance; At the same time, both current liability ratio and non current liability ratio have a negative effect on enterprise performance.

6.2. Suggestion

In line with the basic principles of being more capable, efficient, simple and practical and reducing levels, adjust the existing regions of the sales department, continue to deepen the adjustment of organizational structure and marketing reform, highlight mechanism innovation, accelerate the ability of key products to the market, strengthen the development ability of business channels and the penetration and development ability of marketing market, And the promotion and sales ability of academic research and product development, so as to cultivate new business growth points for the company's economic growth and business development.

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