Analysis of The Relationship Between Equity Structure and Financing Efficiency of Listed Companies in My Country Based on Information Technology

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Abstract: With the advent of the era of knowledge economy, information technology has become the core strategic resource of modern business. Using information technology to improve business efficiency and enhance the core competitiveness of enterprises is the key to building modern business. Information technology is an inexhaustible driving force in the process of business modernization. This paper locates the research object as Shanghai and Shenzhen A-share listed companies, uses 2020 data as an empirical medium, uses information technology to verify and analyze the mechanism of ownership structure and institutional investors on financing efficiency, and explores whether there are differences between the two. Based on the perspective of the era of big data economy, this paper analyzes the influence of institutional investors under the background of different ownership structures.

Keywords: information technology, Financing efficiency, Listed companies, Big data economy

1 Introduction

China has gradually entered the era of big data economy. Big data economy refers to a new economic form that takes digital knowledge and information as the key production factors, digital technology innovation as the core driving force, modern information network as an important carrier, continuously improves the digital and intelligent level of traditional industries through the deep integration of digital technology and real economy, and accelerates the reconstruction of economic development and government governance mode [1]. Digital economy refers to a series of economic activities with the use of digital knowledge and information as key production factors, modern information network as an important carrier, and the effective use of information and communication technology as an important driving force for efficiency improvement and economic structure optimization. At present, a new round of scientific and technological revolution represented by the new generation of information technology is in the ascendant, and the Internet has increasingly become the leading force of innovation driven development. The cross integration of information technology and biotechnology, new energy technology and new material technology is triggering a group technological breakthrough characterized by green, intelligent and ubiquitous. The Internet promotes industrial reform and the transformation of industrial economy to information economy. A new system of division of labour in China is taking shape. Digital economy, as the product of information development, has not only brought

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about Internet plus transformation of traditional industries [2]. The application of new generation of information technology has promoted the change of information infrastructure and information industry, and more importantly, it has reflected the integration of information technology and economic development. It has become an important pillar of national economic development. The advent of the era of big data economy is bound to have a new and huge impact on the development of information technology and even the whole economy and society [3].

In the practice of Chinese enterprises, the problem of financing efficiency has gradually attracted the attention of scholars in the last ten or twenty years [4]. People realize that strengthening the research on financing efficiency is not only conducive to the good development of micro enterprises, but also conducive to a comprehensive understanding of the efficiency of national resource allocation. In fact, there is a close relationship between financing and investment, which will affect each other, and the research on the investment and financing efficiency combining the two is of more practical significance. With the implementation of the split share structure reform and the reduction of state-owned shares, the ownership structure of China's listed companies has also changed, the proportion of circulating shares has gradually increased, the proportion of state-owned shares has gradually decreased, and the shareholding proportion of senior management has also increased year by year. As a part of the corporate governance mechanism, the ownership structure has a significant impact on the investment and financing efficiency of enterprises. Earlier scholars have done more research on the impact of the ownership structure on the investment and financing efficiency of enterprises, especially the impact of the shareholding proportion of senior executives as a long-term incentive on Enterprise Performance and investment efficiency. However, with the change of China's ownership structure, it is necessary to study the relationship between the shareholding ratio of the first largest shareholder and the shareholding ratio of senior management on the investment and financing efficiency of enterprises under the new situation of ownership structure. Investors transfer their monetary funds to fund demanders by buying stocks. At this time, the funds become the form of monetary capital. After the internal allocation of the market, it is transformed into industrial capital, and then put into actual production through external reconfiguration to create effective output and return to investors through redistribution [5].

2 Basic concepts

2.1 Ownership structure

Ownership structure refers to the proportion of shares of different natures in the total share capital of a joint-stock company and their relationship [6]. The right that can be claimed against the company based on the status of shareholders is equity. Ownership structure is an important factor in the formation of corporate governance mechanism and the basis of corporate governance structure. The internal governance mechanism and the internal governance mechanism of the company have always been concerned about. Different ownership structure determines the different organizational structure of enterprises, which further determines the different governance structure of enterprises, and finally determines the different financial policy choices of enterprises, which affects the performance of enterprises and the efficiency of investment and financing. The attribute of equity composition reflects which shareholder groups with different backgrounds hold the shares of the company. In China, it is mainly divided into state-owned shares, corporate shares, social public shares, insider shares and other shares. Each company has different equity composition. On the one hand, shareholders with different attributes have different effects on corporate governance; On the other hand, due to China's unique economic characteristics, there are certain differences in industrial policies due to different equity composition of enterprises, which will further affect the effect of equity composition on enterprise performance and investment and financing efficiency. Therefore, we should analyse the nature of enterprise equity, especially the nature of controlling shareholders. This paper makes a comparative study of state-controlled and non-state-controlled enterprises, and divides the studied enterprises into state-controlled enterprises and non-state-controlled enterprises. The state-owned holding enterprises refer to enterprises in which the capital stock of the state accounts for a high proportion and are controlled by the state [7]. Including absolute holding enterprises and relative holding enterprises. State owned absolute holding enterprises refer to enterprises with a proportion of national capital greater than or equal to, including state-owned enterprises that have not been restructured. The state-owned relative holding enterprise refers to the enterprise with insufficient proportion of national capital but relatively higher than the proportion of other economic components in the enterprise, or the enterprise that is not greater than other economic components but is controlled by the state according to the provisions of the agreement [8]

2.2 Financing efficiency

From the perspective of the subject of economic activities, efficiency is reflected by the performance of a single transaction subject [9]. Resource allocation efficiency refers to whether resources can be concentrated to the subject that can give full play to its efficiency. The efficiency of the subject is a kind of individual efficiency, and the efficiency of resource allocation is the overall efficiency. When the subject efficiency can be verified, the resource allocation efficiency can generally be verified. Financing, in a narrow sense, is the behaviour and process of raising funds from investors and creditors through various ways and channels based on reasonable prediction according to the current situation of their own production and operation and capital ownership, in order to meet the needs of future development [10]. Under this definition, financing is basically financing. However, in fact, financing should not only include financing, but also include the efficiency of fund-raising. That is, financing in a broad sense includes the integration and outflow of funds at the same time. Financing not only includes the financing behaviour referred to in the financing category, but also includes the transfer of rights caused by capital flow. The reason why financing can have an important impact on enterprises is that it can change the property right structure of enterprises. The purpose of financing is for more efficient investment, and investment is the purpose and result of financing. As the first allocation of resources, financing aims to obtain higher profits through investment than the capital holder's own operation, and carry out the second allocation of resources, that is, investment. At the same time, more importantly, the internal governance mechanism and control arrangement formed by financing behaviour play a decisive role in the efficiency of investment [11].

3 Research hypothesis

3.1 Hypothesis of equity attribute and financing efficiency

Before the split share structure reform in China, the national stock right representative appointment system was not established [12]. In addition, some other factors make the information symmetry not very high, and there is also the agency problem of too high risk. Therefore, in the process of equity financing, the major shareholders of state-owned shares in the above-mentioned listed companies usually regard the maximization of the share price represented by state-owned shares as the business goal of the company for their own personal interests, which is obviously contrary to the healthy and long-term development of the enterprise. In the long run, it may weaken the ability of Listed Companies in capital accumulation; Moreover, such acts will also threaten the interests of minority shareholders. However, after the share reform, the state has taken some measures to reduce the above results. In addition, with the guidance of some policies and guidelines of the government, the disadvantages of state-owned shares have been curbed to a certain extent, and they still have certain advantages in financing. When corporate shares use equity for financing, they will consider their own production and operation strategy. They are more willing to make external long-term investment to obtain stable cash flow than short-term speculation. When corporate shareholders participate in corporate governance, they mainly use the way of "voting by hand" to improve corporate governance and improve the efficiency of equity financing. We propose hypothesis 1. Hypothesis 1: the proportion of corporate shares is positively correlated with financing efficiency.

3.2 Hypothesis of ownership concentration and financing efficiency

The shareholders will bear the cost of supervision, but it is obvious that all shareholders will bear the cost of supervision [13]. However, in comparison, enterprises with concentrated equity are generally less likely to encounter obvious problems, and the more concentrated enterprises are, the less free riding will occur. In addition, from the previous literature, we can see the advantages of equity concentration in improving financing efficiency. Major shareholders can get all kinds of benefits brought by supervision when the company's performance is improved, and the shareholding proportion of the largest shareholder changes in the same direction as the supply of supervision. In addition, when the management is supervised and the supervision is effective, it can replace the incompetent managers in time to curb the opportunism of the management. Therefore, we propose hypothesis 2. Hypothesis 2: there is a positive correlation between ownership concentration and financing efficiency.

3.3 Hypothesis of equity balance and financing efficiency

Equity balance refers to the decision-making that the control right is shared by several major shareholders, which makes any major shareholder unable to control independently through internal containment to achieve the equity arrangement mode of mutual supervision of major shareholders, which can not only retain the advantage of relative concentration of equity, but also effectively restrain the infringement of major shareholders on the interests of listed companies. After research, many scholars believe that the greater the ability of other major shareholders to check and balance the controlling shareholders, the more proportional it is to the operating performance of the company. Equity balance is beneficial to the improvement of corporate governance. The ability of check and balance can promote the effectiveness of governance and has advantages in improving performance. In this way, the existence of equity check and balance can enhance the check and balance relationship between the first few major shareholders and the largest shareholder [14]. When the shareholding ratio of other shareholders increases, the supervision ability and motivation of the largest shareholder will be improved, the company's performance will be improved, and the corresponding enterprise financing may be more convenient. Therefore, hypothesis 3 is put forward. Hypothesis 3: there is a positive correlation between equity checks and balances and financing efficiency, that is, Z index is negatively correlated with financing efficiency [15].

4 Research design

4.1 Sample selection

In view of the research purpose of this paper, aiming at the hypothesis and the analysis of the different impact of industrial policy on investment and financing efficiency in state-owned holding and non-state-owned holding enterprises, 351 observations of state-owned holding enterprises and 1205 observations of non-state-owned holding enterprises in 2020 are taken as the research objects respectively; For the hypothesis and the research on the impact of the shareholding ratio of the largest shareholder on the investment and financing efficiency of enterprises, the observed values of enterprises with clear supporting industrial policies and those without clear supporting industrial policies are taken as the research objects respectively. In order to avoid financial anomalies, I only study non-ST samples. We checked out companies in the financial and insurance industries from the sample. The main reason is that most of the income of Companies in the financial industry does not come from on balance sheet, and most of the income comes from off balance sheet business. The data obtained from the financial statements cannot truly reflect the real state of the financial industry. Adding it will reduce the reliability of the data, form interference in the data and cause errors; Through the operation of the above method, we obtained a total of 1556 research samples. It should be added that when collecting data, the database selected in this paper is Guotai'an database.

4.2 Variable definition

Explained variable: Financing efficiency reflects the ratio of input to output, which reflects a kind of functional efficiency. We can use this ratio to reflect the income created by listed companies using the funds raised. Expanding business scale and investing funds in projects that can bring benefits and market competitiveness are measures conducive to enterprise development. They are the purpose of listed companies' financing in the capital market, and all these are to serve an ultimate goal, that is, the promotion of value. Based on the above analysis, this paper preliminarily selects financial performance indicators as alternative variables of financing efficiency, namely Tobin’s Q value and return on net assets. The relationship between the value created by enterprises using corresponding resources and the amount of capital invested at the beginning reflects the brief concept of Tobin Q theory.

Explanatory variable: Equity attribute. After the split share structure reform, most of the circulating shares of China's listed companies have reached 100%. Therefore, here, we divide the equity attribute measurement indicators into the proportion of state-owned shares and the proportion of corporate shares. In this paper, we use SSR to represent the proportion of state-owned shares.

Ownership concentration. Previous empirical studies mainly selected the shareholding ratio of the largest shareholder, H1 index, the shareholding ratio of the top five shareholders and the shareholding ratio of the top ten shareholders to measure the equity concentration. Considering the problem of collinearity, based on the above analysis, in this paper, we chose the shareholding ratio of the largest shareholder as the index to measure the equity concentration.

Equity balances. In academic circles, the measurement index of equity check and balance is Z value. This paper uses the same method for reference. In this paper, the calculation formula of Z value is the ratio of the shareholding proportion of the first largest shareholder to that of the second largest shareholder. It should be added that if the Z value is large, the degree of equity check and balance is low, and if the Z value is small, the degree of equity balance is high.

Control variable: The control variables in this paper are as follows: Lev represents the asset liability ratio. If the enterprise operates well, the borrowed foreign debt must be returned to the creditor according to the agreement, which will inhibit the operator's motivation to obtain their own private interests. If the index is high, it indicates that the enterprise is more dependent on debt financing. The financing efficiency of enterprises will not rise; We use size to express the company's scale, which specifically means the natural logarithm of the total assets at the end of the period. Generally speaking, if the enterprise has a large scale of assets, the enterprise will face less information asymmetry and agency problems, the enterprise is unlikely to go bankrupt, and the cost of enterprise financing is low. In addition, when large companies conduct long-term debt financing, large companies have relatively more flexibility in the agreement on repayment, which can reduce the cost of bearing long-term debt, and the larger the scale of enterprises will improve their financing efficiency. The income growth rate is represented by growth, and the growth of listed companies after equity financing can be reflected by this index. Age stands for the years of listing. The longer an enterprise goes on the market, the more well-known it can be. At the same time, enterprise financing is easier to obtain; We use the symbol MSR to represent the shareholding ratio of management. The increase of the shareholding ratio of senior executives is beneficial to the improvement of corporate governance and performance.

4.3 Establishment of regression model

To test the above hypothesis, we constructed the following three models. In order to test hypothesis 1, we constructed model 4.1

$$Y = \alpha_0 + \alpha_1 SSR + \alpha_2 LSR + \alpha_3 Lev + \alpha_4 Size + \alpha_5 Growth + \alpha_6 MSR + \alpha_7 Age + \sum Industry + \sum Year + \varepsilon$$

In order to test hypothesis 2 and hypothesis 3, we constructed model 4.2

$$Y = \alpha_0 + \alpha_1 CR1 + \alpha_2 Z + \alpha_3 Lev + \alpha_4 Size + \alpha_5 Growth + \alpha_6 MSR + \alpha_7 Age + \sum Industry + \sum Year + \varepsilon$$

5 Empirical research

5.1 Correlation research of equity attribute and financing efficiency

Enterprises with a proportion of national capital greater than 50% will become state-owned enterprises with absolute control, including some state-owned enterprises that have not been restructured. According to this standard, enterprises with a state-owned shareholding ratio of more than or equal to 50% are divided into state-owned holding enterprise groups, and enterprises with a state-owned shareholding ratio of less than 50% are divided into non-state-owned holding enterprise groups. In this way, after the above grouping, we will make licensing statistics on the relevant data obtained, as shown in Table 1, which is the descriptive statistical table after grouping.

Table 1. Regression results of financing efficiency of state holding company and non-state-holding company

Variable	State holding company	Non-state-holding company
INV	0.078 (1.237)	0.042*** (3.524)
Size	0.154** (1.957)	0.093*** (7.652)
Lev	-0.092 (-1.230)	-0.007 (-0.524)
Growth	0.009 (0.124)	0.005 (0.463)
MSR	0.131 (1.658)	0.04*** (3.204)
Age	0.028 (0.328)	-0.016 (-1.251)
N	351	1205
Adj-R2	0.01	0.01
F	1.594	13.25***
Durbin Watson	2.203	1.951

Note: Value inside the () is T. ***, **, * respectively represent at 1%, 5% and 10% level.

5.2 Correlation research of ownership concentration and financing efficiency

Both institutional investors in high equity concentration group and low equity institutional investors have a significant positive relationship with financing efficiency, but the promotion effect of institutional investors in high equity concentration group on enterprises is more obvious. Therefore, hypothesis a is true, but hypothesis B is not true. We believe that the hypothesis B is contrary to the empirical results. The author believes that this is due to the interference of China's special economy, market environment and the differences between different companies. It is also possible that institutional investors prefer to cooperate with shareholders who have obtained control. Now, the professionalism of institutional investors has gradually improved and the personal mission has increased, perhaps cooperation with shareholders with high shareholding ratio will make the enterprise develop more long-term and benign.

Table 2. Regression results of financing efficiency of state holding company and non-state-holding company

Variable	High equity concentration group	Low equity concentration group
INV	0.014 (6.852)	0.018*** (2.234)
Size	0.256** (5.257)	0.184*** (3.652)
Lev	0.251*** (-4.230)	0.452** (4.524)
Growth	0.005 (0.324)	0.005 (1.463)
MSR	0.06*** (1.218)	0.124*** (2.314)
Age	0.05*** (2.328)	-0.016 (0.751)
N	221	1335
Adj-R2	0.01	0.04
F	15.152***	6.189***
Durbin Watson	2.287	3.561

Note: Value inside the () is T. ***, **, * respectively represent at 1%, 5% and 10% level.

5.3 Correlation research of equity balance and financing efficiency

We can see that most of the variables have significant relationships. As for the main variable data, the relationship between state shares and financing efficiency is not significant, but has a positive relationship, that is, the greater the State Shareholding, the greater the financing efficiency. There is a significant same direction relationship between corporate shares and financing efficiency. Specifically, when the proportion of corporate shares is high, the financing efficiency will be improved; The correlation coefficient between Z value and financing efficiency is negative, which means that equity balance can promote the improvement of financing efficiency, but it is not significant; The sign of the correlation coefficient between institutional investors and financing efficiency is a positive value, which preliminarily determines the positive role of institutional investors in financing efficiency; In terms of control variables, the larger the enterprise scale, the financing will be convenient, the listing years will have a reverse effect on the financing efficiency, and executive shareholding has significant advantages for enterprise financing.

Table 3. Regression results of financing efficiency of high equity balance and low equity balance

Variable	High equity balance group	Low equity balance group
INV	0.062 (3.852)	0.042*** (1.264)
Size	0.225*** (11.157)	0.083*** (6.652)
Lev	-0.256*** (-11.230)	0.451** (1.524)
Growth	0.005 (0.324)	0.005 (0.463)
MSR	0.06*** (3.658)	0.04*** (2.354)
Age	0.05*** (2.328)	-0.016 (-0.851)
N	417	1139
Adj-R2	0.07	0.01
F	35.812***	7.125***
Durbin Watson	2.219	1.958

Note: Value inside the () is T. ***, **, * respectively represent at 1%, 5% and 10% level.

6 Conclusion

The proportion of shares held by the state has no significant positive impact on the financing efficiency, the state ownership only plays a little positive role in the financing efficiency; The shareholding of the first largest shareholder has a significant negative correlation with financing efficiency, ownership concentration can clearly promote financing efficiency. When the shareholding ratio of the first largest shareholder is low and high, there is a significant positive correlation between institutional investors and financing efficiency, but when the shareholding ratio of the first largest shareholder is high, the role of institutional investors in promoting financing efficiency is more significant, which shows that in China's listed companies, "dominance of one share" has financing advantages, Appropriately increasing the shareholding ratio of the largest shareholder may be more convenient for enterprise financing.

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