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Determination of capital structure: China non-stated-owned enterprises

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by

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Abstract

This article uses a new database containing accounting data from more than 5,000 Chinese non-state-owned listed companies (2010-2016) to study their capital structure characteristics. I follow Liu's regression model and the result shows that the leverage ratio of Chinese companies increases as the company's income and fixed assets increase, but decreases as the company's size increases. This may be because profitable companies will borrow more as they want to reduce their tax. Also, Chinese companies have a concentrated ownership structure which may lead to big companies to have a low leverage ratio.

Keywords: Capital structure, leverage ratio, internal characteristics, non-state owned companies.

JEL Classification: M2, M4

1. Introduction

This article takes Chinese non-state-owned listed companies as research objects and analyzes the factors that affect the capital structure. The capital structure mainly refers to the proportion of each company's capital occupying the total assets of each other, which determines the fund-raising portfolio of the enterprise within a certain period. It mainly reflects the financial relationships within the enterprise under the market economic system. The internal capital structure of an enterprise largely determines the financing ability of the enterprise and the future direction of the enterprise and is an important indicator of the healthy financial status of the enterprise. This article uses leverage ratio to measure a company's capital structure.

In previous studies, many studies use a large number of theoretical models and empirical evidence to analyze the capital structure. Most of the research select the big companies as their object of study, but most of these articles are focus on the study of Western and European countries, the shares of those companies are dispersed in the hand of many small shareholders, control of the company are concentrated in the hands of some managers (Berle and Means, 1932). These countries and China have a very different economic system, economic policy, market conditions, laws, and regulations. From many previous articles, they confirm that China's economy is in the process of transformation, a growing number of shares gradually concentrated to the hands of large shareholders(La Porta et al., 1999, Claessens et al., 2000, Faccio and Lang, 2002). Under this background, Chinese companies produce different capital structure, studies of Western and European countries cannot be directly applied to the Chinese

companies. This article will analyze the company's capital structure in the Chinese market and select non-public enterprises as the research object.

This article will mainly study the effect of the company's internal characteristics on the capital structure to develop the relationship between the company's internal characteristics and capital structure. I focus on the research of the company's profitability, company size, and assets structure. I also need to consider other factors. Like most Asian countries, Chinese companies have a more concentrated distribution of equity which means more ownership is controlled by a small group of people (Booth et al. 2001). Other related factors that need to be considered are the laws and regulations of the Chinese market. China doesn't have perfect laws and regulations, either in protecting investors or supervising the whole market. There is still a lot of room for improvement (Kato and Long 2005). Besides, I also need to consider the equity division reform of China, this reform changes the ownership structure of listed companies in China. And it eliminates the differences of non-tradable shares and tradable shares affect the company's capital structure decision.

In the study of profitability and capital structure, there are two different points of view. The pecking order model believes profitability is negatively correlated with the company's capital structure. According to this model, the company will convert profit into investment funds first, only in a few cases will issue the bond. Moreover, this view is supported by many other scholars, Friend and Lang (1988), and Titman and Wessels (1988), in their research of listed companies in the United States, they get the same conclusion. Kester (1986) also took advantage of the pecking order model when he is researching the capital structure of Japanese

companies and he also confirms that profitability and leverage are negatively related. Rajan and Zingales (1995), Wald (1999), Booth et al. (2001), Wiwattanakantang (1999) are also agree with this finding. But there is another view believes a positive correlation between these two exists. Jean (2003) mentions in her thesis that for large profitable companies, banks are willing to provide more loans. Under this background, the company's borrowing will become more convenient, which will lead to an increase in leverage ratio as the company's profitability increases.

Previous research papers provide many perspectives on the relationship between company size and leverage. Some people believe that large companies tend to have high leverage. Marsh (1982) believes that large companies will have a large number of long-term loans. These companies can enjoy the advantages of their huge size. So, they have more power when they are negotiating with creditors and can borrow more. The larger the company, the lower the cost of borrowing. Also, compared with small companies, the cash flow of large companies will be more stable. In this background, the probability of bankruptcy of large companies will be lower and they will have a better ability to repay debt, and they will have a higher leverage ratio. But there are also some researchers advocate that the size of the company is negatively related to the leverage ratio. This phenomenon can be explained by the fact that large companies have better access to information and the risk of information asymmetry is lower, resulting in lower leverage. Another reason is that when the company's equity is concentrated in the hands of a small number of people, the company's capital structure is often affected by large shareholders which sometimes will lead to low leverage.

Jensen and Meckling (1976) think the company's tangible assets can be used as collateral to reduce the cost of debt risks. For this reason, companies with a high tangible assets ratio tend to adopt a high leverage ratio. Harris and Raviv (1990) and Williamson (1988) study the relationship between tangible assets and capital structure from the aspect of bankruptcy. The value for tangible assets is higher than intangible assets when a company is doing bankruptcy liquidation. With the increase of liquidation value, leverage will increase accordingly.

This article will make a contribution to the study of the capital structure of Chinese companies. I adopt the newest data in the Chinese market and focus on Chinese non-state owned companies. Not only draw information from previous studies but also provide some new ideas and discussion.

The remainder of this paper is arranged as follows. Section 2 is the literature review of previous studies that provide a background of capital structure and the basic framework of my research. Section 3 is the research design which indicates the data collection and regression model. Section 4 is the empirical results that analyze the regression results and the relationship between variables and capital structure. Section 5 is the conclusion which summarizes the main idea of this paper and indicates some limitation.

2. Literature Review

Pettit (2009) believes that the information on the company's prospects is implicit in the capital structure. Various corporate value signals are transmitted to the capital market by means

of different capital structures, and internal staff or managers transmit the quality signals of the enterprise to the market at the appropriate time by means of the capital structure and minimize the transmission of negative information. This shows the importance of capital structure, which also indicates the meaning to study capital structure. The research on the determinants of capital structure is relatively comprehensive, both from the analysis of profitability, company size, and other corporate characteristics, as well as from corporate governance aspects such as equity structure. From the research conclusions, the existing researches agree that there is a different relationship between capital structure and industries, profitability, non-debt tax shield, the size of the company and the proportion of tangible assets and growth. The differences in these conclusions are not only due to the different samples selected but also from the different definitions of variables in the above studies. Hong (2012) and Shen (2011) use the average number of main business income to indicate growth and total assets; Lu (2005) and others use the growth rate of total assets to reflect the growth of the company and the log of the main business income to reflect the enterprise scale.

An (2012) argues that taxation plays an important role in capital structure decisions. He uses a difference-in-differences approach to determine whether FIEs responded to China's new Income Tax Law by rising debt ratios. By analyzing the Chinese Industrial Enterprises Database from 2002 to 2008 to, he finds when the government removed the preferential tax treatments offered to foreign investment enterprises (FIEs) and unifying the corporate income tax regime for FIEs and Chinese domestic enterprises (DEs), FIEs have responded to the law by raising debt ratios. Wu and Heng (2007) also focus on taxation. They investigate whether listed firms in China adjust their capital structure in response to an increase in the corporate

tax rate. Their results indicate that firms that had received local government tax rebate(LGTR) policy increased their leverage. Huang and Song (2005) mention in their paper that Chinese companies consider the tax effect of long-term debt financing. Also, Chinese companies are subject to different income tax rates based on the nature of the ownership and on where they are run.

Another factor related to the capital structure is The Split Share Structure Reforms (SSSR) in China. This reform aims at reducing the agency problems between state owners and non-state shareholders through the conversion of state-owned non-tradable shares into tradable shares, making state-owned shares sensitive to the stock market (He and Kyaw 2018). The evidence supports that the Split Share Structure Reform positively affects the leverage adjustment speeds of all firms after the share conversion and will promote capital structure adjustment towards target leverage to maximize firm value. Boateng, Cai, Borgia, Bi and Ngwu (2017) argue that the split share structure reform appears to have a negative and significant influence on the debt ratio.

Huang, Kabir, and Zhang's (2018) research key word is government ownership. They find that the impact of government ownership on leverage is dependent on whether the government is the largest shareholder in a firm and whether the government ownership is through a parent state-owned enterprise. They document that the largest non-government shareholder positively influences leverage. Chang, Chen, and Liao (2014) mention that firms ultimately controlled by the state tends to have lower leverage. According to Paligorova and Xu's (2012) research,

pyramids companies have significantly higher leverage than non-pyramids and that the use of debt in pyramids is associated with the risk of expropriation. Michaely and Vincent (2013) focus on the impact of institutional investors. According to their paper, a change in institutional holdings causes an opposite change in leverage. They find that firms lower their leverage in response to increased institutional holdings by becoming more likely to issue equity, and less likely to increase debt.

Other research also talks about many other factors. Morellec, Nikolov, and Rhoff (2012) develop a dynamic tradeoff model to examine the importance of manager–shareholder conflicts in capital structure choice. Chang, Chou, and Huang's (2014) study found that both overleveraged and underleveraged firms with weak governance will adjust slowly toward their target debt levels. Huang and Song (2005) document that larger firms with less asymmetric information problems should tend to have more equity than debt and thus have lower leverage. Petacchi (2015) also confirmed this idea in his research paper. Gombola, Liu, and Chou (2018) explain that firms facing greater variability in real investment opportunities will adjust capital structure more rapidly. Given the rapid growth in the Chinese economy, Chinese firms require more external financing to fund investment to keep up with economic growth and face greater variability in those investment needs. Cho, Ghoul, Guedhami, and Suh (2013) find robust evidence that strong creditor rights are associated with low long-term leverage across countries which means that strong creditor protection discourages firms from making long-term cash flow commitments to service debt because managers and shareholders avoid the risk of losing

control in the case of financial distress. Dudley (2012) argues that lumpy investment projects provide firms with the opportunity to adjust leverage at low marginal cost.

The theory of control rights explores the issue of control rights from the perspective of corporate operator preference in the capital structure. Because of the individual's preference for control rights, business operators use the capital structure to influence the distribution of control rights to change the market value of enterprises. The agency cost theory proposes that the enterprise is a composed community of various stakeholders in the company, and all the stakeholders connect with each other through a set of contracts. However, due to incomplete contracts, asymmetric information, and other reasons, sometimes the interests of various stakeholders of the company are inconsistent, it is mainly manifested in the occurrence of conflicts of interest.

China's economic system and other countries' economic system are very different, China has a unique socialist market economic system, that is, multi-ownership economic system with public ownership as its main body. Given this special background, I will draw on previous studies to study the determination of Chinese listed non-stated companies' capital structure. I have three hypotheses 1) There is a positive relationship between profitability and leverage ratio. 2) There is a positive relationship between a firm's size and its leverage ratio. 3) There is a positive relationship between a firm's tangible assets and leverage ratio.

3. Research design

3.1 Sample collection

I will select all Chinese non-state owned listed companies excluded financial firms, firms with negative equity and firms who don't have a complete data. In April 2005, the China Securities Regulatory Commission (CSRC) began to carry out the Split Share Structure Reforms to reengineer the domestic capital market in the system. The capital structure of Chinese companies has shown different characteristics after the reform. Therefore, this study will choose the sample period after 2005. After getting rid of missing data and integration of data, I get the information from 2010-2016.

3.2 Regression models and variables

I follow Liu's (2014) regression framework and choose LEV as my capital structure measure:

$$LEV_{i,t} = \beta_0 + \beta_1 ROA_{i,t} + \beta_2 LARGEST_{i,t} + \beta_3 LARGEST^2_{i,t} + \beta_4 FSI_{i,t} + \beta_5 ASSET_{i,t} + \varepsilon_{i,t}$$

I use the firm's leverage ratio (LEV) as capital structure measure and it is the dependent variable of my research model which is the total liabilities divide by total assets. Based on previous empirical research I compute the following independent variables. Largest shareholding (LARGEST) represents the shares that According to Liu (2014), I also need to consider LARGEST² to study the non-linear relationship between the largest shareholding LEV. I also employ several firm characteristics related to capital structure. Asset Structure

(ASSET) is the total tangible asset divide by the total asset. Size equals to log 10 of total assets and profitability (ROA) is the ratio of pre-tax divided by total assets.

4. Empirical results

Table 1 presents the descriptive statistics of non-state-owned companies. For non-state-owned companies, their average leverage is 50.1%. It also shows that the average largest shareholding of non-state-owned companies was quite high, at 28.5% which indicates that Chinese listed companies have a concentrated ownership structure.

Table 1. Descriptive statistics of main variables

Variable	Obs	Mean	Min	Max
LEV	5731	.501	0	29.45
ROA	5731	4.13	-51.95	23.4
Largest	5731	.285	0	.89
Size	5731	9.425	4.71	12.34
Asset	5731	0.41	0	0.97

Table 2 shows the regression results. The coefficient of profitability is positive and significant for leverage. This result is consistent with my first hypothesis. Kester (1986), Rajan and Zingales (1995), Rajan and Zingales (1995) and Wald (1999) believe that there is a

negative relationship between leverage and profitability. However, Song's (2006) work supports my idea. High profitability means high income, which also causes companies to pay a lot of taxes to the state. The Chinese government imposes a tax rate of about 5% to 15%. Compared with state-owned enterprises, non-state-owned enterprises usually aim at making profits, and they want to reduce the taxes as much as possible. These companies reduce income taxes by increasing borrowings, which will lead to a higher leverage ratio. This also means those companies have a high operating capacity which means those companies have a better ability to pay the debt, and they are less likely to go bankrupt. To reduce the cost of capital, listed companies must increase the proportion of debt financing. Because debt financing has a "tax shield effect". Listed companies should make full use of the "tax shield effect" to increase the company's cash flow and create more value for shareholders. In addition, although the cost of equity financing of listed companies in China is currently lower than the cost of debt financing, as higher-level requirements for financing eligibility become stricter, such as the cash dividend status of listed companies as a necessary condition for equity refinancing, this makes equity financing costs are beginning to show a gradual upward trend. In this case, the listed company should rationally design the ratio of debt financing and equity financing to optimize the company's capital structure.

Results also indicate that the largest shareholding has a statistically significant negative relationship with the LEV of Chinese firms. By observing the results of the data, we can also see that there is a negative correlation between the largest and largest shareholders and the company's leverage, and this phenomenon points to agency conflicts. Agency conflicts often exist within large companies, often because of potential conflicts in the interests of agents and

owners. The company owners give the professional managers the right to operate the asset which means the separation of direct ownership and control. When shareholders give management rights to managers, an agent relationship emerges. Agents acting as managers and they are responsible for making decisions to increase shareholder wealth. Shareholders expect managers to work hard to achieve the goal of maximizing their wealth. Managers use their human capital to create value for shareholders. They see the company as a source of remuneration and self-realization. To achieve their goals, managers sometimes make decisions at the expense of shareholder wealth to maximize their interests. In reality, shareholders do not fully understand the company's management activities and investment opportunities. The managers know more about the company's production, income and costs than the owner of the company. Therefore, under this circumstance, managers may make decisions that deviate from maximizing shareholder wealth to maximize their own interests. At the same time, shareholders must also bear the agency costs caused by this kind of behavior lead to agency problems.

The size of the company will also have an impact on the capital structure. The credit conditions of large-scale and small-scale enterprises and the degree of recognition by investors in the capital market are different. Certainly, there will be different considerations when choosing a financing method. Many studies have shown that the company's leverage ratio is positively related to the size of the company, and some studies show that the transaction costs of issuing debt and stocks of the company are negatively related to the size of the company. From the result, the coefficient of firm size is negative and significant for the leverage which is inconsistent with my second hypothesis and the trade-off model (Robichek,1967). Booth et al. (2001), Marsh (1982), Rajan and Zingales (1995), and Wald (1999), all confirm the ideas

that there is a positive relationship between the leverage and company size. However, Fama and Jensen (1983) argue that there is a negative correlation between the two. Large companies will give more information to the outside world. Rajan and Zingales (1995) agree with this view. Compared with large companies, small companies disclose relatively less information, and information asymmetry will occur. In market economic activities, different people have a different levels of access to relevant information. Those who have sufficient information are often in a more favorable position, while those with poor information are in a disadvantaged position. Information asymmetry will bring certain risks. According to Huang (2005), these risks are usually manifested in the following three situations in corporate governance: first is the violation of an agreement and the use of funds is changed without permission; second is borrower many conceal investment income and avoids payment; third is that borrowers are irresponsible to the use of funds, resulting in loss of funds. In this background, small companies will receive less investment, so they tend to use debt financing. In contrast, large companies can get more investment. They do not need a lot of debt to support the company's operations, which leads to low leverage. Myers and Majluf (1984) explain the negative correlation between company size and leverage from a different perspective. They believe that the market capitalization of Chinese companies is very high so that the value of new shares invested by investors will rarely be underestimated. Also, because large companies have good profitability, they have a better reputation in the market. Compared with small companies, they will get more attention from investors and get more investment. This means that large companies tend to finance by obtaining investment. Besides, he also mentions that the laws and regulations of the Chinese market are not very complete, and the cost of the bankruptcy of many companies is

very low. As a result, creditors are in a disadvantageous position during the process of company bankruptcy. These reasons lead to a low leverage ratio for large companies. A listed company should determine a reasonable debt ratio and internal structure of debt, and reasonably choose the source of capital, in accordance with its size, asset collateral value, and development opportunities. Facing future growth opportunities, listed companies should use corporate bond markets to raise long-term bond funds or issue equity to raise equity funds to minimize short-term debt funds.

From the regression result, the correlation between leverage and asset structure is positive. It is consistent with my third hypothesis. Jensen and Meckling (1976) argue that agency costs exist within many companies. For this reason, the investment the company received will decrease. At the same time, the problem of agents is generally accompanied by asymmetric information. To reduce agent costs, the company can use tangible assets as collateral, so that the creditor's agent costs will be reduced. This explains why the company's leverage increases as tangible assets increase. Harris and Raviv (1990) mention that in the process of bankruptcy liquidation, the value of tangible assets will be higher than of intangible assets. The higher the liquidation value, the higher the leverage. This proves the positive correlation between intangible assets and capital structure. Williamson(1988) argues that the use of tangible assets as collateral can reduce transaction costs because their degree of asset specificity is relatively lower, and creditors' risks are relatively smaller.

Table 2. Regression results

	(1) LEV
ROA	0.006*** (0.000)
Largest	-1.039*** (0.004)
largestsquare	1.745*** (0.001)
Size	-0.421*** (0.000)
Asset	0.03*** (0.000)
_cons	4.489*** (0.000)
Obs.	5731
R-squared	0.494
year FE	YES
industry FE	YES

Standard errors are in parenthesis

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

While studying the influencing factors of the capital structure, it's also necessary to think about how to optimize the company's capital structure. Industry characteristics are important factors affecting the company's capital structure, and different industries present different capital structures. The optimization of listed companies' capital structure must first consider the company's industry characteristics and the average status of companies in the same industry. The capital structure of different industries in China is very different. This is mainly due to the different strategies and methods used by different industries in the use of financial leverage. Also, the profit margin, financing environment and return on investment of various industries

also different. Due to the large differences, the choice of capital structure of listed companies should consider various conditions, such as the company's historical level, income and expenditure status, business cycle, profit level, financing environment, and other factors, then combining this factors to determine and select the capital structure that is suitable for company's needs.

The financing function of the bond market needs to be fully performed. Bank loans are indirect financing instruments and bonds are direct financing instruments. Bond's financing costs and raising methods are very different from bank loans. As a standardized contract, corporate bonds must be subject to the supervision of regulatory authorities and the evaluation of market investors, which is extremely binding. Vigorously developing the bond market, improving corporate bond management methods, supporting the development of credit rating agencies, and improving the quality of corporate bonds are a shortcut for government departments to help companies development.

Remove obstacles to capital markets and increase effectiveness. A sound capital market uses stock prices to reflect the company's basic information, such as the company's profitability, asset growth rate, and management capabilities. It is impossible to fully realize the effectiveness of the capital market, but the efficiency of the capital market and the optimization of the capital structure are closely related. Therefore, government departments should improve the efficiency of the capital market as much as possible, improve the standardized basic system of listed companies, promulgate and implement relevant laws in the capital market, and optimize the financing environment for corporate equity. The government needs to reform the

method of reviewing the issuance of corporate bonds, change the formation mechanism of corporate bond interest rates, and gradually realize the marketization of corporate bond pricing, develop commercial credit bonds. China also has to gradually improve the legal system of China's capital market, formulate a special Investor Protection Law, and use legal means to protect investor rights. Strengthen the legislation on the protection of creditors' interests, earnestly protect the interests of creditors. Further, revise and improve the current Bankruptcy Law, and establish a more complete bankruptcy mechanism.

Financial theory points out that reduce the weighted capital cost of a company is also a way to increase the market value of the company. The management of listed companies has made the financing process more transparent, and the securities regulatory authorities have tightened the supervision of the financing qualifications of the financing parties. The cost of equity financing will gradually rise, and the increase in equity financing will undoubtedly increase the weighted average cost of capital. Because debt financing has a tax shield effect, adopting a moderate debt financing ratio can reduce the company's weighted average capital cost, thereby reducing the financial risk of listed companies, which is an effective way to optimize the capital structure.

5. Conclusion

This article mainly analyzes the basic theories and concepts of capital structure, conducts a concentrated study on the determinants of the capital structure of non-state listed companies

in China, and conducts an empirical test on the determinants of the capital structure of non-state listed companies in China. The main conclusions in this article are: The capital structure of China's non-state-owned listed companies is significantly and positively related to the company's operating capacity and asset tangibility, which is consistent with my assumption. The capital structure of China's non-state listed companies is significantly negatively related to the size of the company, which is inconsistent with my assumptions.

There are still many limitations in this article. There are some shortcomings in the data collection of this article. The sample data used for the research is extracted and organized from the annual report of listed companies, resulting in a small number of observations. This article does not classify the industry. There is no way to show the specific characteristics of each industry. In addition, the selection of variables in this article is subjective and limited. The multicollinearity between different indicator data may affect the interpretation of variables. Secondly, there are some shortcomings in the study perspectives of this article. The developed countries such as the United States and Germany have relatively sound macro legal systems and are in a relatively stable economic state. The external legal system and financial environment of enterprises have become a severe problem. The capital structure of an enterprise can be understood as a trade-off between benefits and costs among the various stakeholders in the enterprise. The institutional environment and capital market conditions faced by listed companies in China are very different from those in mature western markets. The formation of their capital structure will be affected by institutional changes. Therefore, the research on the capital structure of Chinese enterprises needs to consider the changes in capital market conditions and regulatory constraints. This article does not study those aspects.

There are other factors that will affect the capital structure include the tax system, investor legal protection, the type of financial system, and state control over the financial system. The shortcomings of China's listed companies' capital structure are mainly narrow financing channels, single financing methods, and low financing efficiency. This article does not discuss these related factors in-depth, but only focuses on the relationship between the internal characteristics of the enterprise and the capital structure.

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