Proceedings of the 8th International Conference on Economic Management and Green Development
DOI: 10.54254/2754-1169/103/20242560

Research on the Relationship Between Financial Flexibility and Capital Structure

—Taking Chinese Listed Companies as Example

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Abstract: The acceleration of global economic integration has led to an increasingly uncertain external environment for Chinese enterprises, which are therefore required to master financial flexibility and capital structure. These are two of the basic elements in the corporate financial decision-making field, and their mastery will enable enterprises to survive and develop in this environment. The objective of this paper is to examine the relationship between financial flexibility and capital structure and to explore the potential applications of this relationship in the context of Chinese listed companies. A sample of Chinese listed companies across various industries, spanning the period from 2011 to 2021, has been obtained from the CSMAR database and used to conduct a series of statistical analysis. The software Stata has been employed to perform benchmark regression analysis, heterogeneity testing, and robustness testing on endogenous variables associated with capital structure and financial flexibility in order to gain insight into their respective influences. The results of the charts demonstrate a significant impact of financial flexibility on capital structure. In particular, there is a significant positive impact on debt structure, while growth opportunities have a negative impact. This paper indicates that firms should utilise their debt structures in a rational and strategic manner, and adjust their growth opportunities to enhance their competitive edge.

Keywords: financial flexibility, capital structure, debt structure, Chinese listed companies.

1. Introduction

As global economic integration accelerates, the external environment for Chinese enterprises is becoming increasingly uncertain. In order to survive and flourish in such an environment, enterprises must abandon outdated and obsolete management models and enhance their financial flexibility, particularly [1]. The capital structure is a crucial instrument for the creation, utilisation and acquisition of financial flexibility [2]. It can be argued that financial flexibility and capital structure are two of the most fundamental elements in the field of corporate financial decision-making. Furthermore, [3] Darabi et al. demonstrate that financial flexibility has a minimal impact on the decision to increase or decrease the leverage component of the capital structure. While numerous studies have sought to comprehend patterns of corporate financial conduct with

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respect to the extent of corporate financial flexibility, firm value, and firm-level efficiency indicators, few studies have endeavored to comprehend the relationship between corporate financial flexibility and capital structure, and their practical implications. The objective of this study is to conduct a reliable analysis of the intrinsic relationship between financial flexibility and capital structure, with a particular focus on the specific applications of this relationship in Chinese public companies. This paper mainly discusses how the specific relationship between financial flexibility and capital structure is reflected in Chinese-listed companies and how to effectively use financial flexibility and capital structure to enhance the competitiveness and value of enterprises. The research methodology used is regression analysis: fixed effects model. An in-depth examination of the relationship between financial flexibility and capital structure is of great significance for the understanding of the internal logic of corporate financial behaviour, the optimisation of corporate resource allocation and the enhancement of corporate value.

2. Methodology

2.1. Selection of research method

In this study, we focus on the relationship between financial flexibility and capital structure, and the specific application of this relationship to Chinese listed companies. We will use the software STATA to regress the key variables to discover the intrinsic relationship between financial flexibility and capital structure. Regression analysis: fixed effects model, is used in research methodology. The fundamental idea behind the fixed effects model is to control for individual-specific heterogeneity or unobserved time-invariant factors that may influence the dependent variable [4]. Due to the fact that the economic cycles and market environment are fast-paced and unpredictable, the fixed effects models are best suited to study the relationship between financial flexibility and capital structure in the case of Chinese public companies. Besides, we will use statistical tools such as descriptive statistics and correlation analysis to reveal the intrinsic link between financial flexibility and capital structure. The advantage of this method is that it can provide objective and precise data support, which makes the research results more convincing. Therefore, we get our regression model:

$$\text{Leverage Ratio}_{it} = \beta_0 + \beta_1 \times \text{ROA}_{it} + \beta_2 \times \text{Growth}_{it} + \beta_3 \times \text{Size}_{it} + \beta_4 \times \text{Cash}_{it} + \beta_5 \times \text{Market} - \text{to} - \text{Book ratio}_{it} + \beta_6 \times \text{Debt/Equity ratio}_{it} + \varepsilon_{it}$$

Firstly, i and t represent China's listed companies and years respectively. Capital structure (CS) refers to the proportional relationship between equity capital and debt capital of a firm. We will quantify this variable by calculating the firm's leverage ratio. Characteristics of Listed Companies (CL) : considering the heterogeneity of Chinese listed companies, we will also introduce a series of control variables: firm size (denoted by Size), profitability (denoted by ROA), and growth rate of revenue (denoted by Growth) to more accurately portray the characteristics of the sample. Financial flexibility (FF) refers to a firm's ability to cope with potential risks or seize investment opportunities by effectively managing internal and external resources in the face of uncertainty. We will use a combination of three indicators: cash holdings (denoted by Cash), debt structure (denoted by Debt/Equity ratio) and growth opportunities (denoted by Market-to-Book ratio). The variables are calculated as follows:

1.Return On Asset (ROA) = Net Income/Total Assets
2.Growth rate of sales: Sale (t+1) -Sale t/Sale t
3.Size: ln(Total Assets)
4.Cash: Cash and cash equivalents/Total assets
5.Market-to-Book Ratio= Market Value of Equity/Book value of Equity
6.Debt/Equity Ratio=Total Long-Term Debt/Total Shareholder's Equity

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2.2. Data Collection

The data for this study were mainly obtained from the China Stock Market and Accounting Research (CSMAR) database. Specifically, we selected financial data from 2011 to 2021 as the time frame for the study, which is the most up-to-date and complete data currently available, in order to better capture the impact of changes in the economic cycle and market environment on financial flexibility and capital structure. Besides, the sample comprises publicly traded companies from a range of industries, including finance, manufacturing, real estate, pharmaceuticals and so on. This diversity enhances the reliability and authenticity of our findings, as they are based on the analysis of listed companies from a diverse range of sectors. At the same time, we further stratify the sample based on key indicators such as firms' cash holdings, debt structure, growth opportunities, profitability, etc., in order to explore the differences between firms with different characteristics in greater depth. Finally, we obtained 2620 companies with a total of 26200 observations. With the above data sources and sample selection, we aim to construct a comprehensive and reliable data set to provide a solid foundation for subsequent empirical research.

Titman and Wessels [5] found a significant negative relationship between profitability and leverage. According to the trade-off theory, more profitable firms should use less debt due to their ability to finance operations internally. Rajan and Zingales [6] observed a positive relationship between firm size and leverage in G7 countries. The positive relationship between growth opportunities and leverage suggests that firms with high growth prospects prefer debt financing which aligns with empirical evidence from Harris and Raviv [7]. Thus, this paper then have:

Hypothesis 1 (H1): Negative Relationship Between Profitability and Leverage

Hypothesis 2 (H2): Positive Relationship Between Growth Rates of Revenue and Leverage

Hypothesis 3 (H3): Positive Correlation Between Firm Size and Leverage

Hypothesis 4 (H4): Positive Relationship Between Cash Holding and Leverage

Hypothesis 5 (H5): Negative Correlation Between Growth Opportunities and Leverage

Hypothesis 6 (H6): Negative Relationship Between Debt Structure and Leverage

3. Results

Table 1: Regression

	(1) Lev (Leverage ratio)
ROA	-0.4682***
	(-43.49)
Growth	-0.0000
	(-0.74)
Size	0.0746***
	(45.20)
Cash	0.0322***
	(3.20)
Market-to-Book ratio	-0.0856***
	(-19.71)
Debt/Equity ratio	0.1206***
	(50.85)
Year FE	Yes
ID FE	Yes
_cons	-1.1719***
	(-33.47)
N	23434
r2	0.3294

Note: benchmark regression: A dual fixed effects model is used. Numbers in parentheses are t-statistics. ***, ** and * indicate 1%, 5% and 10% statistical significance levels, respectively.

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According to table 1, the coefficient for profitability (ROA) is -0.4682. This is significant at the 1% level, which suggests that profitability has a notable negative influence on capital structure. For the growth rate of revenue, its coefficient value is 0.0000, suggesting an insignificant relationship between the growth rate of revenue and capital structure. The coefficient for firm size is 0.0746, which is significant at the 1% level. This indicates that there is a positive relationship between firm size and capital structure. For cash holdings, the coefficient is 0.0322, and it is at the 1% significance level, which shows a positive relationship between cash holdings and capital structure. For the growth opportunities, its coefficient value (Market-Book-Ratio) is -0.0856, and it is significant at the 1% level. This statistically significant negative relationship indicates that the firms with higher growth opportunities have a lower leverage ratio. Lastly, the coefficient for debt structure is 0.1206, significant at the 1% level. This result demonstrates that the debt structure has a considerable positive impact on the capital structure. The preceding data indicates that the three indicators of financial flexibility exhibit a 1% significance level, thereby suggesting a significant relationship between financial flexibility and capital structure.

Table 2: Descriptive Statistics

VarName	Obs	Mean	SD	Min	Median	Max
Lev	26200	0.393	0.198	0.008	0.383	3.513
ROA	26000	0.047	0.069	-1.579	0.044	0.969
Growth	26200	0.303	12.183	-2.733	0.096	1878.372
Size	26200	22.160	1.337	17.879	21.936	28.636
Cash	26200	0.052	0.071	-1.788	0.051	0.726
MTB	26000	0.624	0.244	0.032	0.622	1.559
D/E ratio	26200	0.193	0.373	-6.106	0.060	13.450

Table 3: Correlation Analysis

	Lev	ROA	Growth	Size	Cash	MTB	D/E
Lev	1						
ROA	-0.329***	1					
Growth	0.023***	-0.007	1				
Size	0.548***	-0.014**	0.026***	1			
Cash	-0.147***	0.408***	-0.021***	0.065***	1		
MTB	0.406***	-0.235***	0.007	0.512***	-0.135***	1	
D/E ratio	0.557***	-0.196***	0.023***	0.448***	-0.061***	0.334***	1

Note: ***, ** and * indicate 1%, 5% and 10% statistical significance levels, respectively.

Table 2 describes the statistics in detail. In addition, further tests were conducted to assess the relationship between the independent variables, as shown in Table 3. We know that the presence of multilinearity can distort the regression results by exaggerating the standard errors of the coefficients. Therefore, ensuring low multilinearity is crucial for the reliability and validity of the regression results. As anticipated, the six factors showed relatively low correlations with each other, indicating that the regression analyses were statistically reliable.

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Table 4: Heterogeneity Analysis

	(1)SOE=1 Lev	(2)SOE=0 Lev
ROA	-0.6088***	-0.4116***
	(-26.35)	(-31.88)
Growth	0.0032***	0.0009***
	(5.13)	(3.72)
Size	0.0699***	0.0693***
	(26.22)	(31.19)
Cash	0.0560***	0.0069
	(3.83)	(0.52)
BM	-0.0593***	-0.0773***
	(-8.85)	(-13.21)
LER	0.1089***	0.1188***
	(33.93)	(36.53)
_cons	-1.0385***	-1.1006***
Year FE	Yes	Yes
ID FE	Yes	Yes
	(-17.78)	(-23.94)
N	7974	14986
r2	0.3355	0.3446

Note: State-owned enterprises (SOE) is a division of the nature of equity. Equal to 1 is a SOE and equal to 0 is a non-SOE.

It is important to consider any observed statistical heterogeneity in the results when interpreting them. This is because heterogeneity may affect the generalisability of any conclusions drawn from the results [8]. There's significant heterogeneity in terms of company size, with some firms being large state-owned enterprises (SOEs), while others are smaller private enterprises or even foreign-invested companies. The results which can be seen from table 4 indicate that the coefficient of state-owned enterprises is considerable and statistically significant, suggesting the existence of significant heterogeneity within the state-owned enterprise sector.

Table 5: Robustness checks

	(1) Lev
ROA	-0.5586***
	(-42.61)
Growth	0.0360***
	(20.58)
Size	0.0559***
	(35.90)
Cash	0.0452***
	(4.50)
MTB	-0.0852***
	(-21.13)
Debt/Equity ratio	0.2335***
	(72.46)
Year FE	Yes
ID FE	Yes
_cons	-0.7881***
	(-23.95)
N	23434
r2	0.4127

Note: numbers in parentheses are t-statistics. ***, ** and * indicate 1%, 5% and 10% statistical significance levels, respectively.

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The practice of conducting robustness tests is now a common approach in empirical research. These tests examine the behaviour of particular central regression coefficient estimates when the regression specification is modified in some way. This is usually done by adding or removing regressors [9]. According to Bobbitt [10], in the context of data reduction, outliers can be set to a particular percentile of the data. For instance, in 90% winsorisation, all observations exceeding the 95th percentile are assigned a value corresponding to the 95th percentile, while all observations below the 5th percentile are assigned a value corresponding to the 5th percentile. In practice, winsorizing data entails transforming outliers within a data set into values that are less extreme. From table 2, it can be seen that the maximum in several indicators are extremely larger than their mean value. Thus, we use this way to test robustness. According to table 5, following the removal of outliers and the subsequent regression analysis, robust results were obtained.

4. Conclusion

In conclusion, the characteristics of publicly listed entities, as well as the financial flexibility of such entities, exert a significant impact on a listed company's capital structure, or leverage. In comparison, financial flexibility exerts a preponderant influence on the capital structure, as evidenced by the relative insignificance of one of the three endogenous factors of the characteristics of listed companies, while the three endogenous factors of the financial flexibility are all pronouncedly significant. This article examines the relationship between financial flexibility and capital structure based on a sample of Chinese listed companies in different industries from 2011 to 2021. The findings indicate that the level of cash holdings and debt structure in financial flexibility have a significant positive impact on firms' leverage ratio. Conversely, growth opportunities in financial flexibility have a significant negative impact on the firm's leverage ratio. This implies that firms can reasonably and appropriately adjust these three endogenous factors to obtain a leverage ratio that optimises the interests of the firm. For listed companies, financial leverage is a double-edged sword. If the return on investment exceeds the cost of debt, an increase in financial leverage will enhance the return on net assets of the enterprise. Conversely, if the enterprise is unable to repay the capital and interest on time, it will face the threat of a financial crisis. Thus, the precise utilisation of financial flexibility to enhance the leverage ratio of the capital structure can assist firms in attempting to circumvent the assumption of undue risks. Although the sample size of this study is designed to include all industries of listed companies, it is important to note that this study still has limitations. This study is limited to China and does not include other countries. Furthermore, the value of this study in the future is currently unknown due to the ongoing economic changes.

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