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An Exploration on Motivations of Listed Firms' Zero-Debt Behavior in China

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Abstract: Classical capital structure theory holds that firms can promote their value through debt financing. However, in reality, many firms choose zero-debt capital structure, it has become more and more general to avoid debt financing, and the appearing of zero-debt firms have become an international phenomenon. What has motivated firms to avoid debt financing despite of the benefits of it? Using a panel of Chinese A-share listed firms from 2007 to 2015 as the research object, this paper studies the motivations of firms' zero-debt strategy from several perspectives. The empirical analysis shows that firms may choose to be debt-free due to financial constraints or out of financial flexibility and investment opportunities. Besides, firms with sufficient internal funds tend to be debt-free. Based on the conclusions, we can draw enlightenments of reference value from two aspects: SME financing and financial flexibility of listed firms.

1. Introduction

Since Modigliani and Miller put forward the MM theory in 1958 and started a new era in the study on capital structure, studies on this field have emerged one after another. As one of the two main claims of modern capital structure theory, the Trade-Off Theory holds that debt financing can produce a tax shield effect and bring the effect of tax deduction for company. On the other hand, the Pecking Order Theory holds that compared to equity financing, the risk of debt financing is lower and so is the cost of asymmetric information, thus debt financing is in priority in the case of insufficient internal financing. The two classic theories both believe that when internal financing cannot be met, holding appropriate debt can help companies achieve value enhancement. According to the Trade-off Theory, the zero-debt strategy is not the best choice for the company. However, more and more studies have found that it has become a trend for companies to choose to abandon debt financing and become a zero-debt company, whether in China or abroad.

The phenomenon of zero-debt has always been an unsolved mystery in the field of corporate finance. Strebulaev and Yang were the first to explicitly study the phenomenon of zero debt in 2006. They use listed companies in the US as the research object. They find that the proportion of zero debt companies has been increasing significantly in the past two decades. In 1990, the ratio of zero debt companies is only 8%, which has risen to 20% by 2004. They call this abnormal financial conservative phenomenon the zero-leverage mystery.

The study of Bessler et al. (2013) shows that extreme debt conservatism is an international

phenomenon, and it becomes more and more common over time. In 1989, only 5.17% of the companies in the G7 member states were zero-debt companies; by 2010, this proportion had risen to 13.64%. Research by Tang Qiming and Huang Kun (2016) shows that since 2006, the proportion of zero-debt companies in my country has increased year by year. By 2011, nearly 10% of listed companies were zero-debt companies. The zero-debt financing structure has not only become more common in developed capitalist countries, it has also become a development trend in my country's emerging capital markets.

At present, the research on zero-debt behavior mostly takes listed companies in developed countries of Europe and America as the research object. There are few researches focusing on emerging market countries such as China, and most of the research focuses on the testing of the factors affecting zero-debt phenomenon. Based on the research of relevant domestic and foreign literature, this paper conducts an empirical analysis of the zero-debt behavior of Chinese listed companies from multiple dimensions such as financing constraints, financial flexibility, insufficient investment, and internal capital adequacy, and tries to find out the motivations that explain the company’s choice of zero-debt strategy to enrich domestic research on zero debt behavior.

The paper is organized as follows. In section 2, I review conclusions of the existing literature. In section 3, I review potential theoretical explanations and give three hypotheses. In section 4, I introduce the source of data, the definition of variables and the empirical model. In section5, I analyze the results of multivariate analysis. In section 6, I draw conclusions and provides suggestions based on the conclusions.

2. Literature Review

Both Miller (1977) and Graham (2000) define the phenomenon of financial conservatism. Financial conservatism means that the company’s leverage ratio is lower than the leverage ratio corresponding to the optimal capital structure that maximizes the company’s value. This definition is based on the static trade-off model. After that, the static trade-off theory is gradually improved and developed into a dynamic trade-off theory. Goldstein et al. (2001) and Morellec (2004) find that the optimal leverage ratio based on the dynamic trade-off theory was lower than that obtained by the static model, which can explain the low leverage behavior of some financially conservative companies but cannnot fully explain the company’s motivation for adopting zero-debt strategy. Korteweg (2010) proves that if a debt-free company raises the company's leverage to the ratio of the optimal capital structure through debt financing, the company's value will increase by 5.5%, which shows that studying the company’s motivation to adopt zero-debt strategy is of great significance for a comprehensive understanding of the zero-debt phenomenon.

Devos et al. (2012) conduct a study on zero-debt phenomenon in the United States. The study reject the hypothesis that the company adopts the zero-debt strategy for Managerial Entrenchment, but find evidence supporting the assumption of financing constraints. Byoun and Xu (2013) also study the zero-debt phenomenon in the United States, and find that companies adopt extremely conservative debt strategies for two reasons: one is due to corporate financing constraints, and the other is due to the company’s good equity market reputation. In addition, they also find that large zero-debt companies tend to pay higher cash dividends, small companies can build their good reputation in the equity market by paying high cash dividends, while for large companies, high cash dividends can alleviate the dilution of equity financing on the stock price of old shareholders. Strebulaev and Yang (2013) study zero-debt behavior from the perspective of CEOs. The study shows that the number of shares and tenure of CEOs will affect the choice of zero-debt policy, and family businesses are more likely to choose zero-debt policy. Dang (2013) chooses British companies as the research object and shows that the phenomenon of zero debt is more common in the UK than in the US. Also, it is found

through the research that although the zero-debt phenomenon is widespread, zero-debt companies are not homogeneous. By using the dividend policy as a proxy variable for the degree of financing constraints, it is found that the highly constrained companies adopt the zero debt policy due to financing constraints, and companies with a low degree of constraint actively choose a zero-debt strategy in order to alleviate the company's investment distortions. In addition, macroeconomic factors will also affect the choice of zero-leverage policies, especially for companies with low levels of restraint.

Research on Chinese listed firms' zero-debt behavior starts relatively late. Zhao Pu and Sun Aiying (2004) are the first to conduct a systematic study on the phenomenon of financial conservatism. They examine the financial conservative behavior of listed companies in my country from the three aspects of industrial organization, capital market and governance structure, and find that the internal financing ability It is an important factor that affects debt conservative behavior, and the stock price situation of my country's capital market causes companies to prefer equity financing, which in turn leads to debt conservative behavior. Feng Tieying (2006) find that due to China's economic transition, listed companies have different capital structure preferences, excessive debt and debt conservative phenomena are common, and capital structure and corporate performance are negatively correlated. Contrary to trade-off theory. Zhang Botao et al. (2008) integrate behavioral finance theory and capital structure theory to establish a capital structure decision model in their research, and find that the psychological cognition bias of corporate capital structure decision makers and the low cost of financial distress are important reasons for corporate financial conservativeness. Zhang Honghui et al. (2011) use a dynamic panel data model to prove that the conservativeness of corporate debt is for future project investment, not the result of product market competition.

Zhang Xindong and Zhang Li (2013) are the first to study the zero-debt behavior of listed com

Panies in my country. They used private companies with a pyramid equity structure in China as the research object and found that my country's zero-debt companies are smaller in scale and more profitable than other companies. Stronger, higher growth, weaker guarantee ability. Zhang Xindong and Chen Xiang (2013) conduct research on the zero-debt phenomenon of listed real estate companies in my country. The empirical results show that zero-debt companies are smaller in scale than natural financing that tends to equity financing, short-term borrowing and no leverage. High growth characteristics, and more sensitive to macroeconomic changes. Tang Qiming and Huang Kun (2016) conduct a research on the financial indicators of zero-debt companies in my country. They found that in addition to their unique financial characteristics, zero-debt companies are generally subject to financing constraints. Wang Jinxiang et al. (2016) believe that the theory of financing constraints is difficult to reveal the zero-debt behavior of listed companies in my country, and that zero-debt behavior is a strategic behavior of companies to maintain financial flexibility.

In this paper, I will synthesize the capital structure theory in previous studies and study the zero-debt behavior of China's listed companies from multiple perspectives. The reason why zero-debt companies are chosen to represent financial conservative behavior, rather than "low leverage" companies with a leverage ratio lower than the optimal capital structure, is because the definition of "low leverage" is very vague in previous studies. Minton and Wruck (2001) define "low leverage" as a company with a leverage ratio of less than 5%. However, in the actual calculation of the company's leverage ratio, the calculation using book value and market value will result in a large difference, which will affect the research results. Referring to the research process of Byoun and Xu (2013), the use of a company with zero leverage, that is, a zero-debt company, can effectively avoid the above problems. Therefore, this article chooses a zero-debt company to represent a company that adopts an extreme debt-conservative strategy, and passes zero A comparison of the financial indicators of indebted companies and indebted companies explores the motivation behind the company's zero-debt behavior.

3. Theoretical Analysis and Research Hypothesis

3.1 Sufficient internal funds--based on pecking order theory

Myers and Majluf (1984) applied the theory of adverse selection to the study of capital structure and proposed the pecking order theory. The theory believes that in the stock market, there is information asymmetry between the company's managers and investors. When managers consider maximizing the interests of shareholders, then only when the company's stock price is overvalued, will the net present value be positive. Since the company's equity financing is likely to be regarded by investors as a signal that the company's stock is overvalued, the company's stock price will be lowered and the company's market value will drop. Therefore, equity financing should be the last financing method considered. The use of internal funds has the least restrictions and the lowest cost, and should be considered the highest priority. The order of the company's financing should be internal financing first, debt financing second, and equity financing last.

Based on the pecking order theory, when the company's internal funds are sufficient to support its investment in some projects with a positive net present value, the company does not need external funds. Companies like this are not uncommon. Microsoft, Apple, and Wrigley are all companies that have not conducted debt financing due to sufficient internal funds. The study of Booth et al. (2001) believes that companies with higher profits will generate sufficient cash flow and reduce external financing needs. It can be seen that the adequacy of internal funds will affect the company's external financing needs, which in turn affects whether the company chooses a zero-debt strategy.

In this paper, I use a dummy variable to test the assumption of sufficient internal funds. When the company has sufficient internal funds and no external financing needs, the dummy variable takes the value 1, otherwise the value is 0. When the company's profitability is high and internal funds are sufficient, the external financing demand is zero, which means that the company has zero debt behavior. Therefore, based on the perspective of optimal financing theory, the following hypotheses are proposed:

Hypothesis 1: The possibility that the company chooses a zero-debt policy is positively related to the possibility that the company has no external financing needs.

3.2 Financing constraints

In an imperfect market, the difference between external financing costs and internal financing costs is called financing constraints. At this time, the capital structure of a company is not only determined by the company's demand for capital, but also depends on its ability to raise funds from outside, that is, the supply of funds. Market friction will prevent some companies from obtaining sufficient external funds to invest in projects with a positive net present value, resulting in projects with a positive net present value from obtaining sufficient external capital investment. In particular, when there is information asymmetry, the company may face credit rationing, because lenders cannot easily assess the quality of the company's investment projects, resulting in increased financing costs. The higher the degree of information asymmetry, the higher the cost of external financing and the greater the constraints on external financing.

I use the SA index to measure the degree of financing constraints of a company. The smaller the SA index, the greater the degree of restriction and the greater the possibility of choosing zero debt behavior. At the same time, according to the research of Byoun and Xu (2013), the company size and the ratio of tangible assets can also be used as proxy variables for the degree of financing constraints. According to the theory of financing constraints, the larger the company, the lower the cost of information disclosure. The company will disclose more information to alleviate the information asymmetry with the lender. The degree of financing constraints will be reduced, and the possibility

of choosing a zero-debt strategy will change. Small; the higher the company's tangible asset ratio, the increase in the amount of collateral that can be used for debt financing, which will also reduce the constraints on external financing and reduce the possibility of choosing a zero-debt policy. On the contrary, a company with a small scale and a low ratio of tangible assets may not obtain the required funds in the credit ration due to information asymmetry or insufficient collateral, and then abandon debt financing due to constraints. In summary, based on the perspective of financing constraints, the following hypotheses are proposed:

Hypothesis 2: The Company's tendency to choose a zero-debt policy is negatively correlated with the SA index, and also negatively correlated with the company's size and the ratio of tangible assets.

3.3 Financing flexibility and investment opportunities

The financial resilience hypothesis holds that when there is friction in the market, high-growth companies will reduce debt financing and hold a large amount of cash in order to maintain financial flexibility, improve their ability to respond to emergencies and grasp future investment opportunities. If the company conducts a large amount of debt financing, the accumulated debt will expose the company's creditors to greater risks. The company's financial distress costs and agency costs will increase accordingly. The company will lose part of its flexibility in investment, financing and dividend distribution, causing the company to face the dilemma of insufficient financial flexibility. Therefore, if the company is temporarily unable to raise enough external funds for projects with a positive net present value, it should maintain a low level of leverage to improve the company's investment ability in the future, so that once the company has new investment opportunities in the future, You can immediately issue bonds and give up the zero-debt strategy to obtain future investment opportunities.

Myers (1997) proved that companies with higher growth value and investment opportunities, if there are more risky debt backlogs, will have incentives to underinvest in projects with positive net present values. Because when investment opportunities increase, the degree of information asymmetry between shareholders and creditors intensifies, and there is a conflict of interest between the two. The research of Gul (1999) shows that although high investment opportunities bring growth value to the company, it also leads to agency problems. When shareholders find that a large part of the remuneration of a new project may be attributed to creditors, there will be incentives to refuse to invest in such projects, leading to underinvestment in the company. In order to avoid the problem of underinvestment, managers will use equity financing to replace debt financing, leading to zero debt for companies with high investment opportunities.

I use cash holdings and book-to-book ratio as indicators to measure financial flexibility and investment opportunities. According to the theory of financial flexibility and investment opportunity, companies holding large amounts of cash are often for the purpose of maintaining financial flexibility. At this time, companies are more likely to adopt a zero-debt strategy. The high market value book ratio indicates that the market value of the company's assets is higher than the book value, the company's growth opportunities and investment opportunities are more valuable, the shareholder's insufficient investment incentives are greater, and the company is more likely to replace debt financing with equity financing. It is more likely to adopt a zero-debt strategy. In summary, based on the perspective of financial flexibility and investment opportunities, the following hypotheses are proposed:

Hypothesis 3: The Company's tendency to choose a zero-debt policy is positively correlated with the company's cash holdings, and is also positively correlated with the company's market-to-book ratio.

4. Research Design

4.1 Sample and Data Sources

This paper examine annual data of China's A-share listed companies from 2007 to 2015. Data is collected from CSMAR and WIND. After obtaining the samples needed for the research, the samples are processed as follows: First, I remove financial insurance companies and public utility companies, because the financial statements of financial insurance companies are different from other companies, and the selection of capital structure of public utility companies may be controlled by different regulations, and it is impossible to make independent decisions based on the capital market and the internal situation of the company; secondly, I eliminate ST and PT companies; finally, I conduct winsorization on all continuous variables at 1% and 99% to eliminate the impact of outliers.

4.2 Measurement of Variables

A company's capital structure can be divided into a broad sense and a narrow sense. The narrow sense refers to the company's long-term capital structure, while the broad sense includes not only the long-term asset allocation relationship, but also the short-term capital structure. Drawing on the research of Byoun and Xu (2013) and Strebulaev and Yang (2013), this paper uses the company's long-term borrowing rate and book leverage ratio to measure the company's zero debt behavior. Long-term borrowing ratio is the ratio of long-term borrowings to total assets, and the book leverage ratio is the ratio of total liabilities to total assets. When the company's long-term borrowing ratio and book leverage ratio are both 0, the company is a zero-debt company. Whether the company adopts a zero-debt strategy is represented by the variable ZD. ZD is a dummy variable. When the company's long-term borrowing rate and book leverage ratio are both zero, ZD equals to 1; otherwise, ZD equals to 0.

The test of the financing constraint theory draws on the practices of Ju Xiaosheng et al. (2013) and Xu Shoufu et al. (2016), and uses the SA index established in the study by Hadlock and Pierce (2010) as a measure of the degree of financing constraints a company is subject to. The calculation method of the SA index is shown in Equation 1, where the company size is the natural logarithm of the company's total assets, and the company age is the difference between the year-end and the listing date after the annualization. The lower the SA index, the greater the degree of financing constraints the company is subject to.

$$SA=-0.737\times Size+0.043\times (Size)^2-0.04\times Age \quad (1)$$

The adequacy of internal funds is measured by dummy variables, and there is no need for external financing. Drawing lessons from Durnev and Kim's (2005) calculation method of external financing demand, external financing demand is equal to the difference between the company's total asset growth rate and sustainable growth rate. Among them, the calculation method of sustainable growth rate is shown in Equation 2. The variable without external financing demand is a dummy variable. When the calculated external financing demand is less than or equal to 0, the company is considered to have no external financing demand, and the dummy variable takes the value 1, otherwise the value is 0.

$$\text{Sustainable growth rate} =(\text{Retained yield}\times ROE)/[1-(\text{Retained yield}\times ROE)] \quad (2)$$

Financial flexibility and investment opportunity hypotheses are tested with cash holdings and growth. There are two commonly used measures of cash holdings. One is that in Dang (2013), the ratio of the sum of monetary funds and short-term investments to total assets is used to express cash holdings; the other is Bates et al. (2009) and Ang and In the research of Smedema (2011), cash and

cash equivalents accounted for the ratio of net assets to express cash holdings. At the same time, according to the research of Byoun and Xu (2013), the book-to-market ratio is used to measure the company's growth.

Table 1 Definitions of Variables

Variable	Proxy
Zero-debt behavior(ZD)	Dummy variable that equals 1 for firms with zero long-term loan rate and zero book leverage and 0 otherwise
SAindex	According to SAindex established by Hadlock and Pierce(2010), the lower the SAindex, the greater the financial constraints received by firm
Cashholding1	=(monetary funds + short-term investment) / total assets
Cashholding2	=Cash and cash equivalents/net assets (Among them, net assets = total assets-cash and cash equivalents)
Growth(MBraio)	=MBratio= Stock market value/ Owners' equity
External	Dummy variable that equals 1 for firms without external financing needs and 0 otherwise
Profitability(ROA)	= net profit/total assets
Indmid	The median annual debt of each industry
Tangibility	=(Net fixed assets + net inventory)/total assets
Blockshare	The largest shareholder's shareholding ratio
Size	Natural logarithm of the company's total assets
Assetgrowth	=(Ending value of total assets-Beginning value of total assets) / Beginning value of total assets
SOE	Dummy variable that equals 1 for state-owned enterprises and 0 otherwise (private, foreign-funded, etc.)
Dividend	Company's dividend payout ratio
Taxes	Corporate income tax rate
NTDS	The natural logarithm of the company's depreciation expense
Cashflow	=Net cash flow from operating activities/total assets
Industry	Dummy variable to control the industry fixed effect
Year	Dummy variable to control the year fixed effect

After determining the main explanatory variables needed for the research, since the zero debt phenomenon studied in this article is part of the capital structure research of listed companies, it is also necessary to select the factors affecting the capital structure of the company as the control variables for empirical testing. The choice of control variables in this paper refers to the research conclusions of Chang et al. (2014). They apply Frank and Goyal's (2007) method of identifying factors influencing the capital structure of American companies to Chinese listed companies, and obtain the results that affect the capital structure of Chinese listed companies. Stable and reliable factors. The specific method is to combine the research of Frank and Goyal (2007) with the specific conditions of listed companies in China, and identify 25 variables that affect the capital structure of listed companies in China. These variables are identified through the BIC information criteria, and the seven major ones are identified. Core variables: profitability, median industry debt, tangible asset ratio, shareholding ratio of the largest shareholder, company size, growth rate of total assets, and nature of equity. These seven core variables can also have a stable effect on the capital structure of Chinese A-share listed companies when the test method, research sample or research period changes, and can explain most of the changes in the observable capital structure. In addition, factors such as corporate income tax rates and non-debt tax shields are also factors that affect the capital structure, but they are less reliable and are classified as secondary variables. Based on the above research, this

paper selects seven core variables and four secondary variables, namely dividend payment, tax rate, non-debt tax shield and cash flow, which may have an impact on zero debt behavior as the control variables of the study. In addition, we also add industry and year dummy variables to control the influence of industry and year on dependent variables. The definition and calculation method of all variables are detailed in Table 1.

4.3 Model

The multiple regression model is shown in Equation 3:

$$P(ZD=1|\mathbf{X})=1/[1+e^{-(\alpha+\beta\mathbf{X})}] \quad (3)$$

Among them, the explained variable ZD is a dummy variable, and the value is 1 when the company is a zero liability company in a certain year, and 0 otherwise. X is the main explanatory variable and control variable for zero debt behavior. α is a constant term and β is a coefficient vector.

5. Data Processing and Empirical Test

5.1 The Logistic Regression

Table 2 shows the results of Logistic multiple regression. The Logistic models in columns (1) to (6) test different hypotheses, and the variables included are also different. Column (1) is the result of regression of the zero debt variable ZD on all control variables, which examines the influence of the company's capital structure determinants on the company's zero debt behavior; columns (2) to (6) are the main explanations added separately The regression results after the variables mainly examine whether the empirical results support the three main hypotheses of this article.

In the regression results in column (1), the company's profitability and cash flow are positively correlated with the company's tendency to choose zero debt, and the coefficients are both significant at the 1% level, indicating that the stronger the profitability, the richer the cash flow. The greater the possibility of a company choosing zero debt, it is in line with the prioritized financing theory. The tangible asset ratio and company size are negatively correlated with the company's tendency to choose zero debt, and the coefficients are both significant at the level of 1%, indicating that the lower the tangible asset ratio, the smaller the company size, the greater the probability that a company will choose zero debt. Assumption 2. In addition, the coefficient of the nature of equity is significantly positive, indicating that state-owned enterprises are more likely to adopt zero-debt behavior; the coefficient of equity concentration is significantly positive, indicating that the higher the proportion of shares held by the largest shareholder, the possibility that the company chooses zero debt Higher; the median industry debt is significantly negative, indicating that the lower the median debt of the company's industry, the greater the possibility that the company will choose zero debt. The test results of these three indicators are consistent with the research of Chang et al. (2014) on capital structure. The coefficient of dividend payment is significantly positive, indicating that companies with higher dividend payment rates are more likely to choose zero debt; the coefficient of income tax rate is significantly negative, indicating that companies with lower income tax rates lack the ability to explore the tax shield effect of debt financing Incentive, the greater the possibility of choosing zero debt; the coefficient of total asset growth rate is significantly positive, indicating that the faster the asset growth rate, the greater the possibility of the company choosing zero debt. The test results of these three indicators are consistent with the research results of Dang (2013) and Byoun and Xu (2013). The coefficient of non-debt tax shield is contrary to the test results in related studies of US listed companies. The non-debt tax shield of zero-debt companies is smaller, but the rationality of this result can be proved by Wu Yi (2011). It has been elaborated in univariate analysis. In addition, in

columns (2) to (6), the directions of the control variables' coefficients are consistent with those in column (1), indicating that the model after adding the main explanatory variables does not have serious multicollinearity problems.

Table 2 The Logistic Regression

	(1)	(2)	(3)	(4)	(5)	(6)
SAindex		-0.539*** (0.049)				
External			0.307*** (0.063)			
Cashholding1				5.042*** (0.232)		
Cashholding2					1.653*** (0.090)	
Growth						0.104*** (0.017)
Profitability	6.251*** (0.544)	3.679*** (0.541)	4.903*** (0.525)	5.212*** (0.544)	5.454*** (0.536)	5.205*** (0.593)
Indmid	-0.165** (0.004)	-0.209** (0.006)	-0.149** (0.002)	-0.642** (0.012)	-0.016* (0.001)	-0.164** (0.004)
Tangibility	-2.819*** (0.206)	-2.647*** (0.204)	-2.989*** (0.204)	-0.973*** (0.230)	-1.609*** (0.218)	-2.726*** (0.216)
Blockshare	0.012*** (0.002)	0.013*** (0.002)	0.010*** (0.002)	0.010*** (0.002)	0.010*** (0.002)	0.012*** (0.002)
Size	-0.625*** (0.054)	-1.907*** (0.420)	-0.561*** (0.053)	-0.657*** (0.056)	-0.631*** (0.056)	-0.484*** (0.059)
Assetgrowth	0.231*** (0.068)	0.224*** (0.062)	0.111*** (0.064)	0.604*** (0.066)	0.771*** (0.073)	0.237*** (0.063)
SOE	0.169*** (0.068)	0.171*** (0.070)	0.171*** (0.070)	0.100** (0.071)	0.088** (0.071)	0.162*** (0.071)
Dividend	0.799*** (0.086)	0.821*** (0.087)	0.883*** (0.086)	0.675*** (0.090)	0.716*** (0.089)	0.910*** (0.087)
NDTS	-0.384*** (0. 046)	-0.406*** (0.046)	-0.373*** (0.046)	-0.257*** (0.048)	-0.259*** (0.048)	-0.378*** (0.048)
Taxes	-0.675*** (0.200)	-0.692*** (0.200)	-0.694*** (0.198)	-0.817*** (0.203)	-0.709*** (0.201)	-0.607*** (0.212)
Cashflow	1.450*** (0.067)	1.452*** (0.067)	1.458*** (0.067)	1.118*** (0.069)	1.157*** (0.070)	1.418*** (0.070)
Constant	15.565*** (1.116)	6.185*** (1.453)	14.151*** (1.083)	13.639*** (1.099)	13.724*** (1.091)	12.140*** (1.247)
Year	Control	Control	Control	Control	Control	Control
Industry	Control	Control	Control	Control	Control	Control
Number of Obs	15729	15510	15729	15729	15727	15052
Pseudo R^2	0.2963	0.2954	0.2897	0.3270	0.3167	0.3014

***, **, * are significant at the level of 1%, 5%, and 10% respectively, and standard errors are in parentheses

The regression test in column (2) is the theory of financing constraints. The regression result in column (2) shows that the coefficient of the SA index is negative and significant at the 1% level. Combining the SA index explained by Hadlock and Pierce (2010), we can see that the smaller the SA index, the degree of restraint on the company The greater the value, the greater the possibility of choosing a zero-debt policy, that is, the company is subject to greater financing constraints, which can be used as a motivation to explain the company's zero-debt behavior. The test results are consistent with the results of univariate analysis, and both support Hypothesis 2.

The regression test in column (3) is the internal fund adequacy theory. The coefficient of the dummy variable of no external financing demand is positive and significant at the 1% level, indicating that the greater the possibility that the company has sufficient internal funds, the greater the possibility that it will choose a zero-debt policy. The test results are consistent with the univariate analysis results, and both support Hypothesis 1.

The regression test from column (4) to column (6) is the theory of financial elasticity and investment opportunity. In columns (4) and (5), the coefficients of cash holdings measured by two different formulas are both significantly positive, indicating that the more cash the company holds, the company adopts a zero-debt policy in order to maintain financial flexibility The more likely it is. In column (6), the market value-to-book ratio coefficient, which measures company growth, is significantly positive, indicating that companies with higher growth are more likely to adopt a zero-debt policy in order to avoid underinvestment caused by information asymmetry. In summary, the test results in columns (4) to (6) are consistent with univariate analysis, and they all support hypothesis 3.

5.2 Endogeneity

Due to the strong correlation and complexity between the company's financial indicators, the error term may include some variables that are not disclosed in the annual report or unobservable company-level factors, leading to the endogenous problem of missing variables in the model. This article uses the method of lagged terms to alleviate the endogenity of the model, and uses the explained variables to perform Logistic regression on the lagged first-order terms of the explanatory variables. The other settings are the same as before. The regression results of the explanatory variables lagging one order are shown in Table 3. The coefficients of the main explanatory variables are still significant and still conform to the three hypotheses.

Table 3 Regression results of the first-order lag of the explanatory variable

	(1)	(2)	(3)	(4)	(5)	(6)
L.SAindex		-0.544*** (0.053)				
L.External			0.278*** (0.067)			
L.Cashholding1				5.273*** (0.255)		
L.Cashholding2					1.722*** (0.096)	
L.Growth						0.125*** (0.019)
L.Profitability	4.478*** (0.536)	4.219*** (0.551)	4231*** (0.539)	4.633*** (0.560)	4.781*** (0.552)	3.331*** (0.608)
L.Indmid	-0.136** (0.001)	-0.110** (0.001)	-0.138** (0.002)	-0.185*** (0.001)	-0.144** (0.004)	-0.100** (0.002)
L.Tangibility	-2.411*** (0.213)	-2.446*** (0.217)	-2.424*** (0.213)	-0.213* (0.247)	-1.965*** (0.231)	-2.526*** (0.229)
L.Blockshare	0.011*** (0.002)	0.011*** (0.002)	0.011*** (0.002)	0.010*** (0.002)	0.011*** (0.002)	0.011*** (0.002)
L.Size	-0.623*** (0.057)	-1.832*** (0.455)	-0.610*** (0.057)	-0.733*** (0.060)	-0.718*** (0.060)	-0.499*** (0.062)
L.Assetgrowth	0.019** (0.062)	0.011** (0.063)	0.066*** (0.065)	0.425*** (0.068)	0.547*** (0.076)	0.035** (0.064)
L.SOE	0.144** (0.073)	0.142** (0.073)	0.146** (0.073)	0.082** (0.074)	0.070** (0.074)	0.180** (0.075)
L.Dividend	0.762*** (0.094)	0.741*** (0.095)	0.795*** (0.094)	0.566*** (0.100)	0.605*** (0.099)	0.830*** (0.096)
L.NDTS	-0.299*** (0. 048)	-0.321*** (0.049)	-0.303*** (0.048)	-0.168*** (0.051)	-0.157*** (0.051)	-0.277*** (0.051)
L.Taxes	-0.908*** (0.210)	-0.927*** (0.210)	-0.922*** (0.210)	-1.123*** (0.215)	-0.990*** (0.212)	-0.815*** (0.223)
L.Cashflow	1.272*** (0.068)	1.292*** (0.069)	1.256*** (0.068)	0.880*** (0.072)	0.930*** (0.073)	1.250*** (0.072)
Constant	16.488*** (0.892)	5.461*** (0.802)	16.197*** (0.894)	15.148*** (0.922)	15.361*** (0.914)	13.197*** (1.042)
Year	控制	控制	控制	控制	控制	控制
Industry	控制	控制	控制	控制	控制	控制
Number of Obs	13451	13249	13451	13451	13449	12925
Pseudo R^2	0.2508	0.2475	0.2524	0.2935	0.2856	0.2576

***, **, * are significant at the level of 1%, 5%, and 10% respectively, and standard errors are in parentheses

In addition, in order to eliminate the endogenous problems caused by the heterogeneity of the zero debt company and the debt company, this paper uses the nearest neighbor matching method and the radius matching method in the propensity score matching method (PSM) to obtain the similarity to the zero debt company. The matched liability company conducts a balance test on the matching result to obtain the average treatment effect of each main explanatory variable. Drawing on the research of Dang (2013), this paper selects company size, income tax rate, tangible asset ratio, year and industry as the matching criteria. The results of nearest neighbor matching and radius matching are shown in Table 4. The test group is the group of zero liability companies, and the control group is the group of

liability companies obtained by matching. According to Table 4, in the results of the two matching methods, the SA index of the zero-debt company is significantly lower than that of the debt-free company, and the zero-debt company's no external financing needs, cash holdings, and growth opportunities are significantly higher than those of the debt company. The research results and the three hypotheses are consistent.

Table 4 Results of Propensity Score Matching

		Test group	Control group	ATT	SE	T-Statistics
Nearest neighbor matching, NNM	SAindex	3.293	3.295	-0.002	0.036	-0.06***
	External	0.357	0.281	0.076	0.016	4.64***
	Cashholding1	0.345	0.236	0.109	0.006	18.32***
	Cashholding2	0.631	0.362	0.269	0.016	16.31***
	Growth	3.705	3.175	0.530	0.085	6.25***
Radius matching	SAindex	3.292	3.293	-0.001	0.030	-0.04***
	External	0.358	0.288	0.070	0.013	5.52***
	Cashholding1	0.345	0.227	0.118	0.004	26.43***
	Cashholding2	0.631	0.336	0.295	0.013	22.61***
	Growth	3.706	3.196	0.510	0.062	8.16***

***, **, * are significant at the level of 1%, 5%, and 10% respectively, and standard errors are in parentheses

6. Conclusion

In this paper, I choose A-share listed companies from 2007 to 2015 as the research object, and examines the possible motivations of China's listed companies' zero-debt behavior through multivariate logistic model regression. The empirical results show that: First, the number of zero-debt companies in China has generally shown an upward trend over time, and zero-debt companies are mostly distributed in the service industry and information technology industry; second, the zero-debt behavior of listed companies in China is not only forced by financing constraints It may also be that the company actively chose not to carry out debt financing due to consideration of financial flexibility and investment opportunities, resulting in zero company debt. In addition, companies with sufficient internal funds are more inclined to choose a zero-debt policy.

According to the research conclusions, small and medium-sized enterprises choose zero-debt behavior more than large enterprises, and small and medium-sized enterprises still face certain financing constraints. This shows that capital market is not yet complete and the barriers to entry are high in China. In order to alleviate the financing difficulties of SMEs, the multi-level development of the capital market should be promoted to further meet the different needs of various enterprises for financial services in the capital market. Small and medium-sized enterprises should also improve their internal financial systems, strengthen financial management, and better raise funds for enterprise development.

In addition, in the context of more frequent product updates, shorter and shorter industry life cycles, and frequent economic crises, listed companies should appropriately reduce the proportion of debt, maintain an appropriate amount of cash reserves, improve the company's financial flexibility, and maintain its own access Unblocked capital market channels to seize future investment opportunities and avoid missing investment projects with positive net present values.

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