Determinants of Capital Structure Empirical Evidence from Financial Services Listed Firms in China

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Abstract

This paper investigates the determinants of capital structure of financial service firms in China. Using a relative regression of accounting data for 36 A-share financial listed companies over the years 2005-2009, an empirical study on determinants of capital structure in financial industry is conducted. The results show that profitability, firm size, non-debt tax shields, earnings volatility and non-circulating shares are significant influence factors in financial sector. Moreover, firm size is positively related to the corporate leverage ratio. It is also found that Chinese institutional characteristic affects the capital choice decision. While it confirmed that capital structure determinant of financial firms are similar to other industry, the largely state ownerships do affect capital structure choices.

Keywords: China, Financial services, Capital structure, Leverage, Financing mix

1. Introduction

Financing and investment are two main activities undertaken by a firm. In the financing decision, the manager is concerned with determining the best financing mix or capital structure for his firm. Capital structure decisions affect a firm in two ways. Firstly, firms of the same risk class could possibly have higher cost of capital with higher leverage. Secondly, capital structure may affect the valuation of the firm, with more leveraged firms, being riskier, being valued lower than less leveraged firms. Thus, capital structure is an important decision for it could lead to an optimal financing mix which could maximize the market price of the firm.

Modigliani and Miller (1958 and 1963) showed that, in theory, without taxes and information asymmetries, capital structure has no impact on firm value. The Modigliani-Miller Theorem proposed that, under perfect market conditions, a firm's financial decisions do not matter. Modigliani and Miller (1958) established the modern theory of capital structure where it stated that a firm's debt-equity ratio does not affect its market value. How a firm choose to finance its investment is irrelevant.

In practice though, capital structure of a firm does matter to the wealth of a firm. Miller (1988) suggested that a firm's value can be affected by financing decisions if (1) different tax regimes exist, (2) information asymmetries between the firm's management and outside investors are present, (3) "real" decisions differ across financing decisions because of agency costs, for example, and/or (4) other frictions, such as costs of financial distress, are introduced. This led to the two famous capital structure theories, the trade-off theory (Scott, 1977) and the pecking order theory (Myers and Majluf, 1984).

Over the years, the gap between theory and practice has narrowed as Rajan and Zingales (1995) concluded "Theory has clearly made some progress on the subject. We now understand the most important departures from the Modigliani and Miller assumptions that make capital structure relevant to a firm's value. The empirical work, Graham and Harvey (2001) echoed this stand, by saying "financial executives are much less likely to follow the academically proscribed factors and theories when determining capital structure".

Most early empirical studies on capital structure focus on firms in the United States and the coverage extended to Europe and Japan in the mid-1980s (Kester, 1986; Rajan and Zingales, 1995; Cornelli et al., 1996). After the Asian financial crisis in 1997, efforts were focused on emerging countries to shed some light on the factors that caused the turmoil in the region. Despite this attempt, there has been limited work done on the Asian region mainly because of the constraints on corporate financial data in the region (Fan and Wong, 2002; Deesomsak et al., 2004; Driffield et al., 2007).

The recent financial crisis of 2008 revealed the importance of capital structure of financial services industry such as banks and financial institutions. Without the optimal capital structure, banks and financial institutions are vulnerable to economic upheavals. During a crisis, fearful clients may withdraw their deposits or capital markets may suddenly become unwilling to roll over an institution's debt and they risk sharp declines in shareholder value or even collapse. This was the fate of Lehman Brothers, Bear Stearns, AIG, Citigroup and Bank of America.

The financial services industry includes firms that deal with the management, investment, transfer and lending of money. Financial institutions actually make money their business; rather than selling a line of physical products, they offer customers their fiscal expertise. The industry itself is very large, encompassing everything from small, local banks to the multinational investment banks regularly featured in news headlines.

This paper investigates the choice of capital structure of financial services companies listed on the two Chinese stock markets. There had been very limited studies performed on this sector especially in China. Most studies focus on the entire firms listed on the stock market or small and medium size enterprises. Since the optimal capital structure mix has been found to differ from industry to industry (Kim, 1997) and also from country to country (Wald, 1999), this paper is motivated to carry out this study on selected financial services firms listed on the Chinese stock exchanges.

This paper is organized as follows: Section 1 describes the modern theories of capital structure; Section 2 provides the literature review of empirical research on capital structure. Section 3 refers to the theoretical framework of capital structure. In Section 4, the current situation of financial industry is discussed. The empirical research and result analysis are presented in Section 5 and 6. Finally, Section 7 concludes the paper with several recommendations.

1.1 Modern Theories of Capital Structure

The MM theory (Modigliani and Miller, 1958) demonstrated that the firm's choice of financing is irrelevant to the determination of its value. They assumed that capital markets are frictionless, individuals can borrow and lend at the risk-free rate, there are no bankruptcy costs, firms issue only two types of claims: risk-free debt and risky equity, all firms are in the same risk class, there is no growth, expectations are homogeneous, there is information symmetry and agency costs are absent.

The trade-off theory (Scott, 1977) claims that a firm's optimal debt ratio is determined by a trade-off between the bankruptcy cost and tax advantage of borrowing. Higher profitability decreases the expected costs of distress and let firms increase their tax benefits by raising leverage. Firms would prefer debt over equity until the point where the probability of financial distress starts to be important. Two versions of the trade-off theories are proposed; static and dynamic trade off.

The static trade-off theory affirms that firms have optimal capital structures which they determine by trading off the costs against the benefits of the use of debt and equity. One of the benefits of the use of debt is the advantage of a debt tax shield. One of the disadvantages of debt is the cost of potential financial distress, especially when the firm relies on too much debt. Already, this leads to a trade-off between the tax benefit and the disadvantage of higher risk of financial distress. But there are more cost and benefits involved with the use of debt and equity. One other major cost factor consists of agency costs. Agency costs stem from conflicts of interest between the different stakeholders of the firm and because of ex post asymmetric information (Jensen and Meckling, 1976 and Jensen, 1986)).

Dynamic trade-off theory states that firms choose their capital structure or leverage ratio by trading off the benefits and costs of debt. In its simplest form, managers of firms are continuously optimizing the leverage ratio as to maximize the value of the firm. Dynamic trade off theory recognized that it is costly to issue and repurchase debt. Firms whose leverage ratios do not coincide with their targets will only adjust their capital structure when the benefits of doing so outweigh the costs of adjustment. In Fischer et al. (1989) and Mauer and Triantis (1994), adjustment costs imply boundaries on leverage beyond which it becomes optimal to adjust capital structure. Both of these models hold investment policy fixed. They assume that the firm's assets are already in place. Subsequent debt issues are motivated by financial policy alone.

In 1984, Myers and Majluf considered the impact of information sources between insiders and outside investors on the corporation investment and financing behaviors. Retained earnings, as the internal funds, dominated the first place in the corporate financing preference, followed by debt financing and equity financing. Pecking Order theory takes account of the asymmetric information and the existence of transaction costs. Since internal funding does not incur any transaction costs, companies prefer internal financing to minimize financing cost. From the asymmetric information perspective, managers, as the insiders, access more relevant and reliable information about firms than the less informed outside investors. With the information advantage, managers, if acting in the best interests of

existing shareholders, tend to have more opportunistic behavior by issuing bonds to avoid adverse signaling information of issuing equity. This theory is usually regarded as a competitor to the Trade-off theory.

Baker and Wurgler (2002) suggested a new theory of capital structure: the "market timing theory of capital structure". This theory argues that firms time their equity issues in the sense that they issue new stock when the stock price is perceived to be overvalued, and buy back own shares when there is undervaluation. Consequently, fluctuations in stock prices affect firms' capital structures. They find that leverage changes are strongly and positively related to their market timing measure so they conclude that the capital structure of a firm is the cumulative outcome of past attempts to time the equity market.

2. Literature Review

Before the celebrated paper of Modigliani and Miller in 1958, traditional view on capital structure lack the theoretical basis for making direct assumptions about the nature of the costs of debt/equity.

The MM theory was revolutionary and it changed market view forever. Although MM theory will not stand in a practical world which is obviously not perfect, it became a foundation for serious development of the currently popular capital structure theories such as Trade-off Theory, Static Trade-Off theory, Dynamic Trade-off Theory, Pecking Order and Market Timing Theory.

Previous studies of capital structure determinants have found that corporate financial leverage is closely related to the business characteristic (Titman and Wessels, 1988; Harris and Raviv, 1991). Bank leverage have positive correlation with fixed assets, non-debt tax shields, future investment opportunities and firm size, but negatively correlated with earnings volatility, profitability, uniqueness, bankruptcy probability and advertising expenditure. The levels of bank capital are much higher than the regulatory minimum (Barth et al. 2005; Berger et al. 2008; Brewer et al. 2008).

Rajan & Zingales (1995) found similar levels of leverage across the G7 group of countries. This is a surprising result because it has been usually asserted that firms in bank oriented countries are more levered than in market-oriented countries. They also show that the determinants of the capital structure that have been previously reported for U.S. data are equally important in other G-7 countries.

The determinants of capital structure choices are such as agency signaling costs (Heinkel, 1982; Poitevin, 1989), bankruptcy (Ross, 1977), taxes (Leland and Toft, 1996), institutional and historical characteristics of national financial systems (La Porta et al., 1997, 2006; Rajan and Zingales, 2003) but the understanding of the determinants of national and international capital structure is still limited and vague (Aggarwal and Jamdee, 2003).

Banks may be optimizing their capital structure, possibly much like non-financial firms, which would relegate capital requirements to second order importance. Flannery (1994), Myers and Rajan (1998), Diamond and Rajan (2000) and Allen et al. (2009) develop theories of optimal bank capital structure, in which capital requirements are not necessarily binding. Non-binding capital requirements are also explored in the market discipline literature. Based on the market view, banks' capital structures are the outcome of pressures emanating from shareholders, debt holders and depositors (Flannery and Sorescu, 1996, Morgan and Stiroh, 2001, Martinez Peria and Schmuckler, 2001, Calomiris and Wilson, 2004, Ashcraft, 2008, and Flannery and Rangan, 2008).

Brunnermeier et al. (2008) also conceptually distinguish between a regulatory and a market based notion of bank capital. When examining the roots of the crisis, Greenlaw et al. (2008) argue that banks' active management of their capital structures in relation to internal value at risk, rather than regulatory constraints, was a key destabilizing factor.

3. Capital Structure Research in China

Capital structure has been the core issue of a large number of corporate finance researches. The majority of the above empirical studies have been restricted on the United States and other developed Western countries. Generally speaking, the history about empirical research on the determinants of capital structure in Western countries is much longer than the domestic. In domestic research arena, Chen (2004) and Huang and Song (2006) are notable studies to assess the capital structure theories in Chinese listed companies. Evaluating the explanatory power of capital structure theories in China is important because China is the largest developing and transitional economy in the world.

Although Booth et al. (2001) have done research in developing countries, those countries using market-based economic models that are similar to developed countries. Chen (2004) provides the first study to examine whether and how the determinants of capital structure investigated in Western countries are also feasible in Chinese economy, where using firm-level panel data of 77 Chinese non-financial listed companies from the year 1995 to 2000. The

methodology and determinants of the research refers to previous studies. Chen (2004) reports that the modern theories of capital structure, such as the trade off theory and the Pecking order hypothesis, are less applicable to the financing choice of Chinese firms. Due to the transitional nature and distinctive institutional features of publicly listed corporations, it seems to appear a new Pecking order for financing in Chinese firms. Internal fund is still the first consideration, then equity financing and lastly long-term debt. Chen (2004) finds that financial leverage in Chinese firms decreases with profitability and it is consistent with existing literature. Additionally, growth opportunities and tangibility are positively related to debt in China.

Huang and Song (2006) exercise a new data set of both market and accounting value to analyze the capital structure models in more than 1000 Chinese listed companies over the period 1994-2000. In their research, they indicate the same findings as Booth et al. (2001) that firms in developing countries tend to have lower long-term debt. Moreover, 'as in other countries, leverage in Chinese firms increases with firm size, non-debt tax shields and fixed assets and decreases with profitability and correlates with industries'. However, results different from others is that debt in Chinese firms have a negative relationship with earnings volatility.

Qian et al. (2007) have examined the six determinants of capital structure for Chinese listed companies over the period of 1999-2004. The static panel-data models showed that firm size, tangibility and state ownership are positively related with firm's leverage ratio. However, factors such as profitability, non-debt tax shields and volatility have a negative relationship with the leverage ratio.

3.1 Determinants of Capital Structure

3.1.1 Profitability

Profitability measures the effectiveness of the business in generating profits. According to the capital structure theory, Myers and Majluf (1984) demonstrated that firms have a pecking order in funding their activities and they prefer internal finance to external finance. This theory predicts that the relationship between profitability and leverage is negative. Generally, firms with higher profitability tend to create more capital flow to enterprises and then the sufficient retained earnings internally generated could be utilized as internal finance. In this process of funding, companies can reduce the amount of debt financing and corresponding decrease the leverage level. In the empirical research, Kester (1986) finds the negative relationship between leverage and profitability in US and Japan. Titman and Wessels (1988) also confirmed the findings from US firms. Rajan and Zingales (1995) studied the G-7 countries, Wald (1999) analyzed the developed countries, Booth et al. (2001) for developing countries and Huang and Song (2006) investigated in China, also find that profitability is negatively related to leverage.

However, the signaling theory predicts the different opinion that profitability and financial leverage is positively correlated. The higher leverage indicates the good performance of business, thus managers and investors are more confident about future operation. Jensen (1986) pointed out that the relationship is likely to be positive and Titman and Wessels (1988) predicted that larger firms may tend to have a higher debt capacity. As the relationship between profitability and leverage is ambiguous, it is better to test the validity between them.

In this study, return on assets (ROA) will be used as the proxy for profitability followed by Titman and Wessels (1988); it is defined as earnings before interest and tax divided by total assets.

3.1.2 Asset Tangibility

Tangible and intangible assets are the main component in enterprise assets. Most of the empirical researches confirm that the tangibility of assets affect the firms' financial leverage. Based on the agency cost theory created by Jensen and Meckling (1976), there is a positive relationship between the fraction of tangible assets and leverage. There is a potential conflict of interests between shareholders and lenders that creditors tend to undertake more risks when shareholders make sub-optimal investment decision. Therefore, lenders have incentives to acquire tangible assets of companies as collateral to diminish their risks (Harris and Raviv, 1991). An enterprise with a high proportion of fixed assets is expected to be associated with high ability to repay their liabilities, thus more opportunities to raise debt financing. Both the theoretical prediction and academic research (Long and Malitz, 1985; Rajan and Zingales, 1995; Wald, 1999; Huang and Song, 2006) have shown that asset tangibility is positively associated with leverage.

The ratio fixed assets over total assets will be the indicator of asset tangibility in this paper. The measurement is same as Rajan and Zingales (1995).

3.1.3 Firm Size

According to the trade-off theory, the relationship between firm size and leverage is expected to be positive. Larger firms turn out to be more diversified than smaller firms; therefore it is less prone to the risk of default. Harris and Ravivs (1991), Rajan and Zingales (1995), Wald (1999), and Booth et al. (2001) provide evidence to support that

large firms are highly leveraged. Moreover, the cost of debt and equity financing is negatively associated with firm size. Large firms are likely to reduce the transaction costs of issuing long-term liabilities (Chen, 2004). Marsh (1982) suggests that large firms usually prefer long-term debt issuance while the small choose the short term. However, Rajan and Zingales (1995) state that if size can be an inverse indicator for the probability of bankruptcy, for countries with low costs of financial distress, the correlation between firm size and leverage is not significantly positive.

Size may also relate to the informational asymmetries between insiders and outside investors. Larger firms tend to disclose more information about their business to the public than smaller companies (Fama and Jensen, 1983; Rajan and Zingales, 1995). Based to the Pecking order hypothesis, the relationship of firm size to total debt is negative. Frank and Goyal (2002) also find that large firms tend to follow the pecking order. Titman and Wessels (1988) confirm the negative link between firm size and the level of gearing.

As with Chen (2004), natural logarithm of total assets will be the proxy for firm size in this paper.

3.1.4 Non-debt Tax Shields

According to Modigliani and Miller (1958), the interest of debt can be treated as expenses to offset the taxation. This interest tax shields give incentives for companies to debt financing. Besides debt, the fixed assets depreciation and investment tax credits are also able to compensate the tax payment. The non-debt tax shields (NDTS) is concerned with the tax deduction for depreciation and investment tax credits. DeAngelo and Masulis (1980) put forward that NDTS could be regard as substitutes for tax benefits of debt financing. As a result, firms with large NDTS are expected to less finance with debt in their capital structure. Wald (1999) confirmed the prediction that leverage is negatively correlated with NDTS. Chen (2004) also found the negative relationship but not statistically significant.

However, Titman and Wessels (1988) do not find any evidence to support the relationship between NDTS and leverage. Huang and Song (2006) conducted the empirical research in China found that non-debt tax shields are positively related to firm leverage, which is consistent with the result of Bradley et al. (1984).

In this study, the ratio of non-debt tax shield will be defined as depreciation divided by total assets.

3.1.5 Growth Opportunities

Theoretically, expected future growth is considered to be negatively associated with leverage. According to the trade-off theory, firms with growth potential of more intangible assets, which cannot be collateralized, are likely to issue fewer debts than firms with more tangible assets (Chen, 2004). In addition, Myers (1977) argued the negative relationship between growth and leverage from the perspective of agency costs. Firms with greater growth potential have more flexibility to have sub-optimal behaviors, thus transferring the wealth from debt holders to shareholders. The conflicts between shareholders and creditors result in high agency costs, for this reason, it also suggests the negative relationship. Furthermore, Myers (1997) illustrated that the agency problem can be mitigated if firms issue short-term debt instead of the long-term bond. The findings of Titman and Wessels (1988), Rajan and Zingales (1995) confirmed that firms with high future growth turn out to use less leverage.

However, the pecking order hypothesis predicts that firms with growth prospects tend to occupy more leverage. Firms with higher growth opportunities indicate the greater demand of capital, thus external fund is preferred through debt financing. The signaling model also suggests the positive prediction. Chen (2004) found growth potential is positively related to debt in China. Titman and Wessels (1988) used the percentage change of total assets as a proxy for growth. In this research, the same indicator for growth opportunities is applied.

3.1.6 Earnings Volatility

Earnings volatility can reflect the corporate business risk. It is generally a proxy for the probability of financial default (Titman and Wessels, 1988). Since leverage increases the risk of financial distress, it is expected that earnings volatility is negatively related with leverage. As Qian et al. (2007) demonstrated, when firms have high volatility, cash will be accumulated during the flourishing period to avoid future underinvestment and thus the negative relationship is advocated from the pecking order hypothesis. Although Hsia (1981) found a positive relationship, Wald (1991) and Booth et al. (2001) showed that business risk is negatively correlated with debt.

In this paper, the standard deviation of return on assets suggested by Booth et al. (2001) is used to measure the earnings volatility.

3.1.7 Ownership Structure

According to the agency theory, Jensen and Meckling (1976) described that total agency costs could be minimized by the optimal structure of leverage and ownership. Though ownership structure is believed to have influence on capital structure, no clear predication is concerned with the relationship related to debt level (Huang and Song,

2006). Leland and Pyle (1977) suggested that 'leverage is positively correlated with the extent of managerial equity ownership' but Friend and Lang (1988) provided opposite results.

Ownership structure is one of the most significant institutional differences between China and the Western countries. After reform of state-owned enterprises (SOE) in China, most of Chinese listed companies are still under the control of the state and intervened by government. This phenomenon directly affects corporate financial leverage.

In China, most shares are non-circulating, including state-owned shares and legal person shares. From the perspective of state-owned shares, firms with more state-owned shares are more likely to obtain support from the state, but the criteria of issuing equity is difficulty for financial listed firms to achieve; therefore, debt financing is employed. The principal of legal person shares usually focus on the long-term development of business. As a result, they have a preference for high leverage (Xu, 2010). Theoretically, firms with more non-circulating shares (NCS) tend to have higher leverage ratio.

In this study, the percentage of non-circulating shares, followed by Qian et al. (2007), is the indicator for the ownership structure of financial listed firms.

4. Methodology

4.1 The Model

Since the 36 Chinese public listed firms from financial industry over the year of 2005-2009 are the sample, the basic regression model can be formulated as follows

$$Y_{it} = a + X_{it}'\beta + \alpha_i + \varepsilon_{it}, i = 1,2,......,36; t = 1,......,5$$

In this model, Y_{it} (LEV and LLEV) represent the leverage ratio of firm i in year t, a is the constant term, X_{it}' is a 1×7 vector of observations on seven explanatory indicators. Specifically,

$$X_{it}' = (PROF_{it}, TANG_{it}, SIZE_{it}, NDTS_{it}, GROWTH_{it}, EVOL_{it}, NCS_{it}) \cdot$$

In addition, β is a 7×1 vector of parameters, α_i is the unobserved firm specific effect, and ε_{it} is the unobserved zero-mean error term. Definition of variables is found on Table 13.

4.2 Data

In this empirical research, the China Stock Market and Accounting Research Database (CSMAR) are applied as the main data source. CSMAR was developed by the Shenzhen GTA Information Technology Co., Ltd which recorded all the trading and financial information from Shanghai Stock Exchange and Shenzhen Stock Exchange.

4.3 Selection of Sample

Initially, all industries of listed companies classified by China Securities Regulatory Commission (CSRC) should be considered in this project. However, the corporations in financial and non-financial industry have different capital structure. Moreover, due to its particularity as well as few empirical studies of financial sector, this study takes all Chinese listed companies in financial industry as samples. This research analyzes a sample consisting of 36 A-share listed firms in financial sector traded on the Shanghai and Shenzhen Stock Exchange over the period of 2005-2009, including banks, insurance and investment companies. All the accounting data are from the CSMAR database over the period of five years. Based on the firms' financial statements and annual reports, the year-end data will be selected.

5. Empirical Results and Analysis

Using the method of multiple linear regressions, all independent variables are entered into the regression simultaneously. To verify the accuracy of the following obtained results, the method of stepwise is also applied. Similar results are obtained from these two approaches.

5.1 Comparison of Models

Model 1 is to test the relationship between total leverage (LEV) and 7 different explanatory variables. The summary results of Model 1 are reported in Table 7 and Table 8.

It can be seen from the Table 7 that the R Square=0.725 and the Adjusted R Square=0.713. It indicates that the goodness of fit index in model 1 is fairly good and the independent variables have strong explanatory power to the dependent variable (LEV). In the ANOVA table 8, F value is equal to 64.627, which is greater than the critical value and p-value = 0<0.05 implies that the overall model is reasonable. In general, the relationship between financial leverage and independent variables is significantly linear.

Model 2 focuses on the long-term leverage (LLEV) with the same independent variables as in model 1. In Model 2, the R Square is only 0.121 and the Adjusted R Square is 0.085. The R Square is extremely low although the F value (3.378) and p-value (0.002) reveal that the model is significant at a 5% critical value.

5.2 Regression Results

The regression results are reported in following Table 11 for Model 1 and Table 12 for Model 2.

These two models can be rewritten as following equations (only including significant variables) :

$$LEV = -0.060 - 0.349 * PROF + 0.084 * SIZE - 3.945 * NDTS - 0.493 * EVOL - 0.076 * NCS + \varepsilon$$
$$LLEV = 0.187 - 0.013 * SIZE - 1.642 * NDTS + \varepsilon$$

The empirical results obtained suggest that the coefficients of profitability, firm size, non-debt tax shields, earnings volatility and non-circulating shares are significant for total leverage at 5% level (Table 11 and Equation 1). However, the coefficients of firm size and non-debt tax shields are significant through the t-test for long-term leverage regression (Table 12 and Equation 2). These two models offer different results in total and long-term leverage regressions. The most considerable one is that the coefficient of size is negative in long-term debt ration while positive in total leverage estimation. The coefficients of size are both significant in these two models, it can be concluded that large firms prefer short-term finance than long-term one, which is consistent with the results of Chen (2004). Overall, the outstanding difference between capital choices of financial industry in China and the Western countries is that Chinese firms prefer short-term debt financing and have a substantially lower amount of long-term one.

5.3 Results Analysis

Focusing on the significant independent variables, it is discovered the following relationships between explanatory variables and leverage levels.

1. There is a negative relationship between profitability and debt level, but not significant in long-term debt.

2. Firm size is positively associated with financial leverage, but negatively related to long-term debt.

3. The relationship between non-debt tax shields and gearing ratio is significantly negative as well as long-term debt ratio.

4. A negative relationship exists between earnings volatility and debt.

5. Non-circulating share is negatively related to leverage.

The negative relationship between profitability and debt in Chinese financial listed companies is consistent with the implication of the pecking order theory and the results found by most prior research, especially Chen (2004) and Huang and Song (2006). As the profitability of financial listed business increase by 1%, the total liabilities ratio will decline by 34.9%. It implies that profitable financial listed firms are less likely to finance with debt. However, as discussed in Section 4.2, the proportion of internal funds within the overall financial industry is substantially lower than external financing. Although retained earnings is the most convenient source of financing, external financing is occupied a leading position in Chinese financial listed companies.

Size is found to have a significant and positive influence on total leverage in financial listed companies. This positive relationship coincides with the prediction of trade-off theory and suggests that larger firms tend to have higher gearing ratios. However, the coefficient of size is significant and negatively associated with long-term debt. As Chen (2004) explained, this negative relationship 'may not be the result of informational asymmetries suggested by Myers and Majluf (1984) because the market capitalization of equity in China is very high'. Xu (2010) also illustrated that the firm size of financial listed companies cannot be a good indicator to measure the level of informational asymmetries in China. Moreover, large firms do not provide more efficient information to the outside. In general, most listed companies in China are state owned and they are not permitted to go bankrupt. Therefore, the negative relationship could be mainly caused by the low bankruptcy costs and the state controlled nature in China.

Non-debt tax shields (NDTS) are estimated to be significantly negative with debt ratio. This result is in line with Chen (2004) but her result is not statistically significant. As mentioned in Section 3.3.4, NDTS could be regarded as substitutes for tax benefits of debt financing, therefore, firms with high level of NDTS will decrease their gearing ratio. In the perspective of long term, an increase in NDTS can affect leverage negatively. It can be predicted that firms are likely to prefer short-term debt when they have high NDTS.

Volatility is found to have a negative impact on corporate leverage ratio, and the coefficient (-0.493) is statistically significant at 5% level. This finding implies that firms with higher volatility as well as higher probability of default

are more likely to have lower gearing ratio. As stated in Section 3.3.3, size can be perceived as the inverse proxy for financial distress, the positive relationship between size and leverage found in this study exactly support the negative relationship referred to volatility and leverage.

It is found that ownership structure has an impact on corporate leverage in Chinese listed companies as predicted. However, the result of negative relationship (-0.076) is inconsistent with the theoretical analysis. In financial industry, firms with higher non-circulating shares tend to have lower total leverage ratio and lower long-term leverage although it is not significant in the long term. This negative relationship is probably because of the problem in corporate governance structure. Since most of the financial listed companies are controlled by the state, it may result in the owner absence and lack of effective management in business. Therefore, managers are more likely to behave on their own interests to pursue lower leverage level.

6. Conclusion

The empirical results show that leverage ratio increases with firm size and decreases with profitability, non-debt tax shields, earnings volatility and non-circulating shares. Although China is still transforming from a command economy to a market-based economy, the determinants of capital structure found in developed countries also have similar influences on Chinese financial listed companies. This illustrates that publicly listed companies in China have followed the fundamental regulations of the market economy.

The most significant institutional characteristic in China is the state controlling ownership, since most of listed companies are still controlled by the state. China's incomplete and immature institutional structure does have an effect on firms' leverage decision. The results of this study also imply that the trade-off theory has limited robust explanatory power for Chinese listed companies. Moreover, the financial listed companies in China seem to follow a different pecking order that external financing is preferred than internal sources, which means debt financing is the priority.

The model has not considered the macroeconomic factors that may affect leverage, so further explore on capital structure choice should include those variables. This study lacks the thorough analysis of China's institutional environment and corporate governance structure, which should be further discussed. Therefore, future research should be carried out to include these factors.

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Table 1. Summaries of Determinants of Capital Structure

In Table 1, the implications and empirical results of the above determinants of capital structure is summarized.

Determinants	Definitions	Theoretical results	Major empirical results
Profitability	Earnings before interest and tax divided by total assets	+/-	-
Asset tangibility	Fixed assets divided by total assets	+	+
Firm size	Natural logarithm of total assets	+/-	+
Non-debt tax shields	Depreciation divided by total assets	-	-
Growth opportunities	Change of total assets ($TA_t - TA_{t-1}$)	+/-	-
Earnings volatility	Standard deviation of the return on assets	-	-
Non-circulating shares	Non- circulating shares divided by total shares	+	+

Note: "+" means that the relationship between the determinant and leverage is positive.

"_" means that the relationship between the determinant and leverage is negative.

Table 2. Percentage of internal and external financing

Year	Internal Sources	External Sources	
	Retained Earnings	Equity Financing	Debt Financing
2005	0.003149	0.037248	0.959602
2006	0.006099	0.044458	0.949442
2007	0.009816	0.049932	0.940251
2008	0.012374	0.045671	0.941955
2009	0.016368	0.037780	0.945853
Average	0.009561	0.043018	0.947421

Source:Data processing from CSMAR

Table 3. The Asset-Liability Ratio of Financial listed companies

Year	Mean value	Maximum value	Minimum value	Standard deviation
2005	0.7685	1.0054	0.1147	0.2529
2006	0.8012	1.2364	0.1514	0.2470
2007	0.8342	1.1371	0.3117	0.1558
2008	0.7992	0.9682	0.2393	0.1707
2009	0.8073	0.9652	0.2536	0.1731
Average	0.8022			

Source:Shanghai and Shenzhen Stock Exchange

Table 4. The quantity distribution of debt ratio during 2005-2009

Year	2005	2006	2007	2008	2009
10%-30%	3	3	0	1	1
30%-50%	2	1	1	1	2
50%-70%	6	6	5	10	5
70%-90%	8	6	14	9	11
90%-110%	17	19	15	15	17
110%-130%	0	1	1	0	0
Sample number	36	36	36	36	36

Source:Shanghai and Shenzhen Stock Exchange

Table 5. Percentage of non-current liabilities

Year	Long-term liabilities/Total liabilities	Long-term liabilities/Total assets
2005	0.063062	0.045669
2006	0.055089	0.040016
2007	0.056748	0.040255
2008	0.049853	0.037400
2009	0.036079	0.025436
Average	0.052166	0.037755

Table 6a. Percentage of non-circulating shares and state-owned shares

Year	Non-circulating shares	State-owned shares
2009	0.402994	0.406621
2008	0.493801	0.312198
2007	0.669151	0.370012
2006	0.646340	0.268464
2005	0.619558	0.169680
Average	0.566373	0.315642

Table 6b. Ownership concentration

Year	Proportion of first shareholding	Proportion of three biggest shareholding
2009	0.336793	0.538301
2008	0.295463	0.505872
2007	0.292108	0.492872
2006	0.366088	0.517777
2005	0.294426	0.438538
Average	0.316976	0.498672

Table 7. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.851a	.725	.713	.108643783
a. Predictors: (Constant), NCS, EVOL, GROWTH, SIZE, TANG, PROF, NDTS				

Table 8. ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.340	7	.763	64.627	.000a
	Residual	2.030	172	.012		
	Total	7.370	179			
a. Predictors: (Constant), NCS, EVOL, GROWTH, SIZE, TANG, PROF, NDTS						
b. Dependent Variable: LEV						

Table 9. Mode2 Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
2	.348a	.121	.085	.049257037
a. Predictors: (Constant), NCS, EVOL, GROWTH, SIZE, TANG, PROF, NDTS				

Table 10. ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
2	Regression	.057	7	.008	3.378	.002a
	Residual	.417	172	.002		
	Total	.475	179			
a. Predictors: (Constant), NCS, EVOL, GROWTH, SIZE, TANG, PROF, NDTS						
b. Dependent Variable: LLEV						

Table 11. Coefficients a

Model		Unstandardized Coefficients		Co linearity Statistics	
		B	Std. Error	Tolerance	VIF
1	(Constant)	-.060	.086		
	PROF	-.349	.100	.455	2.199
	TANG	-.281	.186	.103	9.671
	SIZE	.084	.007	.708	1.413
	NDTS	-3.945	1.805	.101	9.889
	GROWTH	.005	.013	.844	1.186
	EVOL	-.493	.178	.406	2.462
	NCS	-.076	.026	.910	1.099
a. Dependent Variable: LEV					

Table 12. Coefficients

Model		Unstandardized Coefficients		Co linearity Statistics	
		B	Std. Error	Tolerance	VIF
2	(Constant)	.187	.039		
	PROF	-.055	.045	.455	2.199
	TANG	.138	.084	.103	9.671
	SIZE	-.013	.003	.708	1.413
	NDTS	-1.642	.818	.101	9.889
	GROWTH	-.007	.006	.844	1.186
	EVOL	-.025	.081	.406	2.462
	NCS	-.003	.012	.910	1.099
a. Dependent Variable: LLEV					

Table 13. Definitions of variables

Variables	Definitions
Dependent variables	
Total leverage (LEV)	Total debt divided by total assets (TD/TA)
Long-term leverage (LLEV)	Long-term debt divided by total assets (LD/TA)
Independent variables	
Profitability (PROF)	Earnings before interest and tax divided by total assets (EBIT/TA = ROA)
Asset tangibility (TANG)	Fixed assets divided by total assets (FA/TA)
Firm size (SIZE)	Natural logarithm of total assets (Ln(TA))
Non-debt tax shields (NDTS)	Depreciation divided by total assets (Dep/TA)
Growth opportunities (GROWTH)	Change of total assets
Earnings volatility (EVOL)	Standard deviation of the return on assets
Non-circulating shares	Non-circulating shares divided by total shares