

INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each original is also photographed in one exposure and is included in reduced form at the back of the book.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.



Bell & Howell Information and Learning
300 North Zeeb Road, Ann Arbor, MI 48106-1346 USA
800-521-0600

**The Determinants of Corporate Capital Structure:
Evidence from Listed Companies in China**

Tong Liu

A Thesis in the Faculty of Commerce and Administration

**Presented in Partial Fulfillment of the Requirements
for the Degree of Master of Science at
Concordia University
Montreal, Quebec, Canada**

April 15, 1999

© Tong Liu, 1999



National Library
of Canada

Acquisitions and
Bibliographic Services

395 Wellington Street
Ottawa ON K1A 0N4
Canada

Bibliothèque nationale
du Canada

Acquisitions et
services bibliographiques

395, rue Wellington
Ottawa ON K1A 0N4
Canada

Your file Votre référence

Our file Notre référence

The author has granted a non-exclusive licence allowing the National Library of Canada to reproduce, loan, distribute or sell copies of this thesis in microform, paper or electronic formats.

The author retains ownership of the copyright in this thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without the author's permission.

L'auteur a accordé une licence non exclusive permettant à la Bibliothèque nationale du Canada de reproduire, prêter, distribuer ou vendre des copies de cette thèse sous la forme de microfiche/film, de reproduction sur papier ou sur format électronique.

L'auteur conserve la propriété du droit d'auteur qui protège cette thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.

0-612-39089-6

Concordia University
School of Graduate Studies

This is to certify that the thesis prepared

By: Tong Liu

Entitled: **The Determinants of Corporate Capital Structure:
Evidence from Listed Companies in China**

and submitted in partial fulfillment of the requirements for the degree of

Master of Science in Administration

Complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

Signed by the final examining committee:

_____ Chair

_____ Examiner

_____ Examiner

_____ Supervisor

Approved by _____
Chair of Department or Graduate Program Director

_____ 19 _____
Dean of Faculty

To My Parents

ABSTRACT

The Determinants of Corporate Capital Structure: Evidence from Listed Companies in China

Tong Liu

There is a vast amount of literature on corporate financial policy determinants. Whereas existing studies focus on firms in developed countries, there is little work on how firms design their corporate financial policy in emerging markets. This study attempts to fill this gap by analyzing the determinants of capital structure for listed Chinese firms.

We use data from Chinese public firms that were listed on two national stock exchanges during 1992-1997. These data provide us with a unique opportunity to examine the relationship of debt ratio with factors that may affect capital structure. We also study the relationship between ownership structure of equity and leverage.

We find that industry classification influences the capital structure in China. Firms in more asset-intensive industry, such as manufacturing, have more leverage compared to other industries. Debt ratio has a positive relationship with firm size, proportion of tangible assets and growth rate of assets and is negatively related profitability. Evidence suggests that ownership structure is not important in explaining part of the capital structure design of listed Chinese firms.

Overall, the results suggest that factors that influence debt ratio in China are similar to those in developed countries. Consistent with the evidence in developed financial markets, capital structure of listed Chinese firms is impacted by agency and bankruptcy costs.

ACKNOWLEDGEMENTS

I would like to respectfully thank Dr. Harjeet Bhabra, whose assistance, guidance, and most of all his supervision were the keys to the successful completion of this paper.

I would also like to express my gratitude to Dr. Doğan Tirtiroğlu who despite his busy schedule, committed both time and energy to provide valuable input and guidance to this project.

I am also grateful to Ms Loretta Hung and Ms Andrea Everard for their assistance in editing this document and help with computer tools.

TABLE OF CONTENTS

1. INTRODUCTION	1
1.1 BACKGROUND OF THE RESEARCH	1
1.2 OBJECTIVES OF THE PAPER	1
1.3 SUMMARY OF THE RESULTS	2
2. CHINA STOCK EXCHANGES AND LISTED COMPANIES.....	3
2.1 STOCK MARKET	3
2.2 TYPES OF SHARES	3
2.3 LISTED COMPANIES.....	5
3. LITERATURE REVIEW	6
3.1 CAPITAL STRUCTURE	6
3.2 THE MODIGLIANI AND MILLER PROPOSITIONS.....	7
3.3 AGENCY COSTS THEORY.....	8
3.4 BANKRUPTCY COSTS THEORY.....	9
3.5 EVIDENCE FROM EMPIRICAL RESEARCH.....	10
4. HYPOTHESES AND VARIABLES	13
4.1 INDUSTRY MEMBERSHIP HYPOTHESIS	14
4.2 FIRM SIZE HYPOTHESIS	14
4.3 TANGIBLE ASSETS HYPOTHESIS	15
4.4 PROFITABILITY HYPOTHESIS.....	16
4.5 GROWTH RATE OF ASSETS HYPOTHESIS.....	17
4.6 OWNERSHIP STRUCTURE HYPOTHESIS.....	19
5. MEASURES OF CAPITAL STRUCTURE	21
6. DATA AND RESEARCH METHODOLOGY	23
6.1 DATA DESCRIPTION	23
6.2 RESEARCH METHODOLOGY.....	24
7. DESCRIPTIVE STATISTICS.....	27
8. RESULTS AND DISCUSSION	30
8.1 CORRELATION ANALYSIS	30
8.2 EVIDENCE ON INDUSTRY CLASSIFICATION.....	31
8.3 EVIDENCE ON THE RELATIONSHIP BETWEEN FIRM CHARACTERISTIC AND LEVERAGE.....	31
8.4 EVIDENCE ON INDUSTRY CLASSIFICATION AND FIRM CHARACTERISTIC VARIABLES	33
8.5 EVIDENCE ON OWNERSHIP CONCENTRATION	34
8.6 EVIDENCE ON ALL THE FACTORS.....	35
9. CONCLUSION	35
BIBLIOGRAPHY.....	52

LIST OF TABLES

<i>Table 1: Distribution of Firms in the Sample.....</i>	<i>37</i>
<i>Table 2: Descriptive Statistics by Year.....</i>	<i>38</i>
<i>Table 3: Descriptive Statistics by Industry, 1992-1997.....</i>	<i>39</i>
<i>Table 4-a: Descriptive Statistics on Ownership Structure by Year</i>	<i>40</i>
<i>Table 4-b: Descriptive Statistics on Ownership Structure, 1992-1997</i>	<i>41</i>
<i>Table 5: Pearson Correlation Analysis in 1997.....</i>	<i>42</i>
<i>Table 6: Leverage and Industry Classification</i>	<i>43</i>
<i>Table 7: Leverage and Firm Characteristic Variables</i>	<i>44</i>
<i>Table 8: Leverage, Industry Classification and Firm Characteristic Variables</i>	<i>45</i>
<i>Table 9: Leverage and Ownership Concentration</i>	<i>47</i>
<i>Table 10: Leverage, Ownership Concentration and Firm Characteristic Variables</i>	<i>48</i>
<i>Table 11: Leverage and All Factors.....</i>	<i>50</i>

1. INTRODUCTION

1.1 Background of the research

In recent years, the economic and financial markets in China have been growing rapidly with a large number of companies going public each year. More than 800 companies were listed on the two national stock exchanges until the end of 1998. The growth of listed companies on the exchanges provides an excellent opportunity for foreign corporations to find a Chinese firm as a partner and enter the Chinese market. Many foreign companies prefer to operate as joint ventures. Thus, it is important to understand the issues regarding corporate financial policy of listed Chinese firms. The large number of publicly listed companies provides a forum for the study of issues related to corporate financial policy since firms are required to disclose all accounting information (balance sheets and income statements).

Although there is a vast amount of literature on corporate financial choice in developed countries over the last three decades, little work has focused on Chinese companies. To date, there is no evidence on the determinants of capital structure for listed Chinese firms. There is no empirical evidence to answer important questions such as: “What is the type of capital structure used by the average Chinese company?”, “What factors influence the debt ratio?”, “Is capital structure in Chinese firms affected by the same factors as those in developed countries, especially in the U.S.?” This paper attempts to provide answers to such questions.

1.2 Objectives of the paper

This paper assesses the determinants of the capital structure in the following domestic Chinese industries: manufacturing, trade, utility, real estate and conglomerate. The primary

objective is to establish the profile of the capital structure in these industries and find the common factors influencing capital structures in these industries. The secondary purpose is to examine whether the factors, that are found to influence the capital structure for the U.S firms, have any significant impact on the capital structure for Chinese firms.

Although China has been changing from a planned economy to a market economy since 1979, the economic system and the business culture in China are very different from those in the western countries. The results in this paper are useful to understanding whether the theories and models of capital structure that apply to firms in western countries are relevant in China.

1.3 Summary of the results

Results from our empirical analyses show that industry classification has a significant influence on long-term debt. Firms in industries that are more asset-intensive, such as manufacturing, have more leverage than the firms in other industries. Tangible assets and firm size, have a positive significant impact on long-term debt ratio while profitability has a negative impact. Growth rate of assets is found that to be significant in only a few of the years studied. We also find that ownership structure is not important in explaining the amount of long-term debt used by Chinese listed companies. There is no significant relationship between long-term debt ratio and percentage shares held by individual investors, the State, and institutional investors.

These findings, largely consistent with the previous studies, suggest that the factors that affect capital structure in listed Chinese firms are similar to those in developed countries.

2. China Stock Exchanges and Listed Companies

2.1 Stock Market

As a part of the market-oriented economic reform, China reopened its stock markets in 1990s nearly 50 years after they were closed in 1949. The People's Bank of China-China's central bank- assumes the overall responsibility to regulate the stock market. It is responsible for supervising the listing of stocks and dividend distributions, licensing financial institutions and foreign agents, and taking disciplinary actions. Through its local branches, the People's Bank of China guides and co-ordinates the activities of stock exchanges, such as authorizing new stock issues and listings.

There are two national stock exchanges now: Shanghai and Shenzhen Stock Exchanges. They began their operations in December 1990 and July 1991, respectively. Both stock exchanges have expanded dramatically. There were only 8 companies listed in the Shanghai Stock Exchange in 1990; 30 companies in Shenzhen in 1991. The number of listed companies increased to 307 on the two stock exchanges by the end of 1995. By the end of 1997, there were 747 companies listed in the Shanghai and Shenzhen Stock Exchanges combined. The total capitalization reached US\$56.6 billion as of December 31, 1997.

2.2 Types of shares

According to differences in shareholders' residency and nationality, common stock shares are classified into four categories: A, B, H and N shares. A shares are by far the largest segment of the stock market. They are sold only in Chinese currency-that is Renminbi (Chinese Yuan)- to domestic investors, both individuals and institutions and a few foreign institutions. Chinese

commercial banks are prohibited from investing in the stock market. Only a few financial institutions, such as mutual funds and trusts or investment companies, are allowed to invest in the stock market. Therefore, investors in China, contrary to the investors in the western countries, are mostly individuals.

B shares are sold to foreign investors as well as some large authorized domestic financial institutions. B shares are priced and traded in U.S. dollars on the Shanghai Stock Exchange and in Hong Kong dollars on the Shenzhen Stock Exchange. Like the B shares, H shares are issued and traded on the Hong Kong Stock Exchange for all investors in the world except for those who hold a Chinese passport. N shares are listed on the New York Stock Exchange.

There are four different types of A shares, depending on the ownership arrangement. They are the state shares, the legal person shares, the employee shares, and the tradable A shares. The central government and the local governments own the state shares. The state-owned asset management bureau manages these shares. The state shares are not allowed to trade on the two official stock exchanges, but sometimes are transferable to domestic institutions. The legal person shares are held by domestic institutions. These shares are also not allowed to trade on stock exchanges, but are transferable between two institutions. The employee shares are offered to the staff of a listed company at a substantial discount. Employees normally can sell their shares only a year after the firm's initial public offering. The tradable A shares are issued when a firm transforms itself to a publicly held corporation from a state-owned firm and are purchased only by Chinese investors. So, most shareholders of tradable A shares are individual investors though some domestic institutions may also be shareholders in these securities.

2.3 Listed companies

The listed companies are from finance, manufacturing, trade, utility, real estate and conglomerate sectors. Most listed companies were transformed from formerly state-owned enterprises. Some were from joint ventures or corporate enterprises. A listed company can be established by a “share off”. In a share off, the first step is to separate the not-for-profit assets from the total assets. In China, state-owned companies usually have two types of assets. The first type of assets are those that are used in manufacturing commodities. The second type is the assets that are not directly used to manufacture products but are investments in clinic; day-care facilities, and the payroll of all retired workers who still remain on the newly listed companies. The second step involves hiring an accounting firm to audit the last three years’ financial statements of these candidate companies. If the listed company is formed by a state-owned enterprise, the state-owned assets are transformed to state shares in the newly listed company. If the listed company is formed from a joint-venture or a corporate enterprise, those assets are transformed to legal person shares. Sometimes, other related enterprises and some financial institutions are willing to buy legal person shares to become legal person co-founders. The rest of the shares are offered to employees and public investors through IPOs (including A, B and H shares). As a final step, a corporation is established.

In order to investigate the determinants of the capital structure in Chinese firms as clearly as possible, we use data that are taken from 'Annual Reports of Chinese Listed Companies', the 'Statistics Year Book' issued by Shanghai and Shenzhen Stock Exchanges, as well as 'China Listed Company Reports' issued by China ChengXin Securities Rating Co., Ltd. The data set consists of corporate financial statements and supplementary information for all listed companies

on the two national stock exchanges during 1992-1997. There are a total of 747 companies from six industries.

3. Literature Review

3.1 Capital structure

A firm's capital structure has an important influence on its profitability and stability. A high proportion of debt may make a company highly profitable as it is growing, but it may also increase the probability of financial distress and bankruptcy, especially when the firm's growth rate slows down or temporarily becomes negative.

How should a firm choose its debt to equity ratio? More generally, what is the better capital structure for a firm? Whether or not an optimal capital structure exists is one of the most important issues in corporate finance.

Capital structure is the proportion of the long-term sources of funds used by a firm. It includes debt, preferred stock and common equity. A firm can choose any capital structure as it wishes. It is the result of deliberate choice on the corporate management, investors' attitudes and market conditions for long-term funds. A firm could increase or decrease its debt/equity ratio by either issuing some debt to buy back stock or issuing stock to pay debt. The objective of managing capital structure is to mix the financial sources used by the firm in a way that will maximize the shareholders' wealth and minimize the firm's cost of capital. This proper mix of funds sources is called optimal capital structure. (Ross, Westerfield, Jordan, and Roberts, 1996)

Haugen and Senbet (1988) argue that capital structure is strongly related to the choice between internal and external financial instruments. Thus, optimal capital structure will be

impacted by the expected costs of financial distress either direct cost, such as the costs in the case of bankruptcy, or indirect costs, such as lost sales. Therefore, financial distress is an important criterion for capital structure decisions

3.2 The Modigliani and Miller Propositions

Interest in the capital structure of a firm increased greatly as a result of the debate started by Modigliani and Miller (1958). In a path breaking paper, Modigliani and Miller argue that capital structure is irrelevant to the value of a firm under perfect capital market conditions with no corporate taxes and no bankruptcy costs. This implies that the firm's debt to equity ratio does not influence its cost of capital. A firm's value is only determined by its real assets, and it cannot be changed by pure capital structure management. It is impossible to create value for a firm by changing the paper claims on the firm's real assets. Consequently, it means that there is no optimal capital structure.

However, there is a fundamental difference between debt financing and equity financing in the real world with corporate taxes. Dividends paid to shareholders come from the after-tax profits. By contrast, interest paid to bondholders comes out of the before-tax profits. Thus, Miller and Modigliani (1963) argue that in the presence of corporate taxes, a value-maximizing company can obtain an optimal capital structure. In other words, if the market is not perfect, as a result of, say, the existence of taxes, or of underdeveloped financial markets, or of inefficient legal systems, the choice of capital structure has an influence on the value of the firm. In this case, firms must consider the costs entailed by these imperfections. A proper decision on capital structure can be helpful to minimize these costs.

3.3 Agency costs theory

The goal of the firm is the maximization of its shareholders' wealth. In reality, an agency problem may interrupt the achievement of this goal. The separation of management and ownership in a corporation causes the agency problems. Because management and shareholders each attempt to act in their own self-interests, managers may make decisions that are not in line with the goal of maximization of shareholders' wealth. They sometimes do not work hard as they are supposed to do and attempt to benefit themselves in terms of salary and perquisites at the expense of shareholders. This usually results in conflicts in interest between the managers and the shareholders. The shareholders will have to incur monitoring cost in order to ensure that the manager acts in their interest. Such costs, associated with agency problems between the shareholders and the managers, are called agency costs of equity, which tend to increase with more equity financing. There is one market mechanism that can be used to relieve agency problems. That is the take-over process. However, in reality, agency problems generate a reduction in market value if the markets for financial and human capital are unable to resolve the problem costlessly. In imperfect market, agency problems do exist.

In addition, there are conflicts in interest between shareholders and bondholders. Shareholders may be interested in management decision that results in a wealth transfer from the bondholders. The costs associated with agency problems between the shareholders and the bondholders are called agency costs of debt, which tend to increase as more debt financing is used (Ross, Westerfield, Jordan, and Roberts 1993; Copeland and Weston 1988).

Jensen and Meckling (1976) argue that these relationships between the agency costs of debt and the amount of the debt may result in an optimal capital structure. This optimal capital structure can be achieved in two distinct ways. First, agency costs of debt may offset the tax

advantage of debt financing. There is a trade-off between the tax benefits and agency costs since both the tax benefits and agency costs of debt are positively related to the amount of the debt employed. Secondly, an optimum proportion of outside debt and equity may be chosen in order to minimize total agency costs. In other words, there is another type of trade-off that can cause an optimal capital structure. This is the trade-off between agency costs of debt and agency costs of equity, even in a world without taxes.

3.4 Bankruptcy costs theory

According to financial theory, a firm can get tax benefits from debt financing. However, the firm may face increasing pressure from using debt. This is because interest and principal debt payments are obligations of a firm. If these obligations are not met, the firm may face some sort of financial distress while may lead to bankruptcy. When it occurs, the ownership of the firm's assets will be legally transferred from shareholders to bondholders. The obligations of debt are basically different from the obligations of equity. Bondholders have priority on the firm's assets. That means that although shareholders like and expect dividends, they have to be legally entitled to dividends after bondholders are legally entitled to interest and principal payments. In theory, a firm has to go bankrupt if the value of its assets equals to the value of the debt. When this happens, the equity has no value. As a result, shareholders leave the control of the firm to the bondholders. As long as bankruptcy takes place, the bondholders hold assets whose value is at maximum exactly equal to what is owed on the debt. In reality, it is expensive to go bankrupt. Thus, the tax benefits from using debt may be eventually offset by the bankruptcy costs resulting from debt financing. There are two categories of bankruptcy cost, named direct bankruptcy cost and indirect bankruptcy cost.

When the value of a firm's assets equals to the value of its debts, the firm is economically bankrupt in the sense that the equity has no value. There are legal and administrative costs to bankruptcy and some fraction of the firm's assets disappears in the legal process of going bankrupt. These costs are referred to as direct bankruptcy costs. On the other hand, when firms are close to bankruptcy, normal operations are disrupted. Valuable employees leave, there are declines in revenue and profitable investments are not undertaken. These and similar costs are indirect bankruptcy costs (Ross, Westerfield, Jordan, and Roberts 1996).

A firm borrows because the interest tax shield is valuable. It can get tax benefits from debt financing. At relatively low debt level, the probability of bankruptcy and financial distress is low, and the benefits from debt outweigh the costs. At very high debt levels, the possibility of bankruptcy or financial distress is a chronic, ongoing problem for the firm, so the benefits from the debt financing may be more than offset by the financial distress costs. Based on above the discussion, it would appear that an optimal capital structure exists somewhere between these extremes. Copeland and Weston (1988) argue that the both of direct and indirect costs associate with bankruptcy may cause the value of the firm in bankruptcy to be less than the discounted value of the expected cash flows from operations. This fact can also be used to explain the existence of an optimal capital structure.

3.5 Evidence from empirical research

Whether or not an optimal capital structure even exists has raised a lot of discussion among financial scholars. An important concern for researchers to investigate involves the factors that influence the capital structure position of a firm. If analysts have the ability to find the major determinants of capital structure, managers of a company can make a sound decision

about the capital structure of the firm with the help of the information of those determinants. Empirical evidence indicates that firm size, growth rate of assets, proportion of tangible assets, industry classification, and profitability, as well as ownership concentration are important determinants of capital structure choice (Rajan and Zingales 1995; Moh'd, Peery and Rimbey 1998). Evidence also shows that the differences in the capital structure in both developed and developing countries can be largely attributed to agency problems that are caused by managers' opportunistic behavior in many countries (Titman and Wessels 1988; Saa-Requejo 1996; and Mohamad 1995).

Many studies have examined the influence of industry classification on the capital structure. Empirical evidence presented by Aggarwal (1981) and Titman and Wessels (1988), among others, shows that industry class influences the financial structure of a firm. On the other hand, Remmers, Stonehill and Wright (1974) have presented dissenting evidence on the effect of industry membership. They argue that the industry factor is less significant. Aggarwal (1981) concludes that since the volatility of a firm's income stream is a determinant of maximum debt limits, this volatility should be influenced by a firm's industry classification. Thus, industry classification should be related to the capital structure choice. Titman and Wessels (1988) also suggest that firms that make products requiring the availability of specialized servicing and spare parts will find liquidation especially costly. This indicates that firms manufacturing machines and equipment should be financed with relatively less debt. The results from Mohammad (1995) show that there is a significant inter industry difference in capital structure among large Malaysian companies during the period of 1986-1990. Furthermore, Allen and Mizuno (1989), using a set 13 industry dummy variables, show that there is an industry effect on the capital structure choice in Japan.

Other variables, such as firm size, growth rate of assets, proportion tangible assets, and profitability have also been extensively researched as to their effects on capital structure of a firm. Scott and Martin (1976), Titman and Wessels (1988) and others present empirical evidence that size is a major determinant of capital structure. But, Aggarwal (1981) shows that firm size by itself, or in conjunction with other variables, is not a significant determinant of capital structure. However, since a firm's size can be considered a good proxy for its business risk, large and multi-product firms should generally be found to be less risky compared to small, single-product firms. Thus, large firms, on average, can sustain higher debt levels compared to smaller firms. Consequently, a lot of research papers conclude that debt ratio is positively related to the size of a company. Warner and Abg (1986) and Chua and McConnell (1988) show that large firms on average are more highly leveraged. They argue that direct bankruptcy costs appear to constitute a large proportion of a firm's value for smaller firms. It is also the case that relatively large firms tend to be more diversified and less prone to bankruptcy.

Despite, different countries having different business climates and risks, institutional structure, tax rates, and bankruptcy reorganization procedures, norms of capital structure seem to be similar across countries. Rajan and Zingales (1995) test the capital structure of firms in the G-7 countries. They find that factors such as tangibility (proportion of tangible assets to total assets), firm size, and profitability have significant influence on capital structure across the G-7 countries. Mohammad (1995) reports that a firm's size and industry classification plays an important role in determining a firm's capital structure in Malaysian firms. He also concludes that capital structure behavior in the Malaysian financial market exhibits similarities to those in developed and less developed financial markets. Using data for the largest 500 European

industrial companies, Aggarwal (1981) shows that industry classification is a determinant of capital structure.

Agency conflicts between the shareholder and the managers of a firm imply that equity ownership should affect debt levels. Mohd, Perry and Rimbey (1998) find that institutional shareholders play a disciplinary role on the debt in the capital structure. There is a negative relationship between institutional equity and debt levels. They also argue that outside shareholders have little influence on debt levels when outside ownership is diffused. Consistent with these arguments, Kim and Piman (1998) show that equity ownership of the financial and foreign institutions has a significant negative effect on the debt levels of Japanese firms.

Hence, it seems that in the presence of market imperfections, capital structure matters, and that different firms may achieve optimal capital structure at various proportions of debts. This means that the optimal capital structure can be influenced by many business-related variables. However, empirical investigation of how these variables impact capital structure for Chinese listed companies has not been studied to date.

4. HYPOTHESES AND VARIABLES

A major purpose of this paper is to estimate the relative importance of factors affecting Chinese firms' choice of capital structure. The theories suggest that firms select capital structure depending on attributes that determine the various costs, especially agency and bankruptcy costs, and benefits associated with debt and equity financing. Financial theory and empirical results identify a number of variables that influence a firm's debt position. Most attention has been given to variables such as firm size, growth rate of assets, proportion of tangible assets, industry classification, profitability and ownership structure. I draw upon current capital structure theories

and existing evidence, and the environment in which Chinese companies operate, to establish hypotheses about the determinants of capital structure of the Chinese companies in our sample.

4.1 Industry Membership Hypothesis

H1: The debt ratio of firms is a function of the industry membership. Specifically, firms in industries that are more asset-intensive, such as manufacturing, are hypothesized to be more leveraged than the firms in other industries.

To measure whether industry classification influences Chinese firms' debt ratio, in our analysis, we include a set of control dummy variables similar to Xu and Wang (1997). Xu and Wang document that industry classification, such as manufacturing, trade, utility, real estate, and conglomerate, has a significant effect on the financial performance of the listed companies in China.

According to the industry classification of listed companies on the two national stock exchanges, we set variables DUM_i , $i=1,2,3,4,5$, for manufacturing, trade, utility, real estate, and conglomerates, respectively. The element d_{ij} of DUM_i , refers to firm i in industry j , and $d_{ij}=1$ if firm j is in classification i and $d_{ij}=0$ otherwise. We set manufacturing industry as the intercept.

4.2 Firm Size Hypothesis

H2: Firm size is hypothesized to be positively relate to the debt ratio for listed companies in China.

The State is the largest shareholder of some of the listed, especially large, firms in China. Furthermore, the Chinese government supports large or medium-sized firms through state funds and policies. The employment levels in these large or medium sized companies are very high. If they were to go bankrupt, it would significant impact the Chinese economy, the government and the society. The presence of the state's support (or perception of that) may be a reason for the large Chinese firms to face a lower cost of financial distress resulting in a higher proportion of debt. This is somewhat similar to the "too big to fail" argument often proposed for large U.S. banks. Hence, it is why it is expected that, firm size will have a positive association with the debt ratio in Chinese companies. This research uses the natural logarithm of sales as an indicator of the firm size as in Titman and Wessels (1988).

4.3 Tangible Assets Hypothesis

H3: The relationship between the degree of tangibility (ratio of fixed assets to total assets) and debt ratio is ambiguous.

According to extant literature, tangibility, defined as ratio of fixed assets to total assets, can have either a negative or a positive influence on capital structure. There are two opposite arguments regarding the influence of tangibility. On the one hand, since increase in tangible assets secure the debt of a firm, its asset structure is expected to influence the level of debt financing. These tangible assets easily serve as collateral and can be used to repay the debt. Thus, firms with a higher percentage of tangible assets to secure debt financing can usually support higher debt levels.

On the other hand, Berger and Udell (1994) show that firms having a close relationship with creditors need to provide less collateral, because the relationship (and the increased monitoring by creditors) can substitute for physical collateral. This latter argument seems to be particularly more applicable to Chinese firms. In China, publicly listed companies either have better performance in their industry or are recommended to public by local governments. They usually have very good relationship with banks that sometimes have to follow the policies adopted by local governments. Consequently, the publicly listed Chinese firms usually can borrow more from banks, even if they offer less collateral.

Therefore, the relationship between tangibility and debt ratio is ambiguous. Following Rajan and Zingales (1995), the ratio of the fixed assets over total assets is used as an indicator of tangibility of assets.

4.4 Profitability Hypothesis

H4: The more profitable the firm, the lower is the amount of leverage expected to be used by the firm.

Myers (1984) suggests that companies may have a 'pecking order' and prefer internal financing to external financing. If external financing is required, debt type securities are issued before the equity type. This behavior may be due not only to the costs of issuing new equity, but also the result of signaling future performance. Thus, the past profitability of a firm, and hence the amount of earnings available to be retained, should be an important determinant of its capital structure. Titman and Wessels (1988) show that profitability had a negative impact on the

leverage of U.S. companies during the period of 1974-1982. Rajan and Zingales (1995) report that profitability negatively influenced the debt ratio for firms in G-7 countries except Germany.

Using a large sample, Singh (1995) finds that firms in developing countries rely heavily on external funds. If more financing is required, they often resorted to issuing new shares. This is because the relative cost of equity capital was lower. Singh argues that, this together with the increase in the cost of debt capital, made equity issues relatively more attractive for financing corporate growth in developing countries.

The latter argument appears to be more relevant to Chinese firms. If external financing is required, firms in China seem to prefer equity financing to debt financing. This is because the Chinese stock markets have emerged and individual investors have shown great interest in investing in stocks. Firms, especially the small ones, are finding that obtaining funds from the stock market is easier than doing so from banks.

Although 'pecking order' may not be completely applicable in China, one can argue that profitable firms should first use internally generated funds followed by external equity and finally debt. Therefore, it is projected that the amount of earnings retained by Chinese firms will be negatively related to the amount of debt used. Since retained earnings are a future of profitability, it is expected that profitability has a negative influence on the debt levels. Following Titman and Wessels (1988), the ratio of operating income over total assets is used as the indicator of profitability.

4.5 Growth Rate of Assets Hypothesis

H5: The rate of growth of assets is hypothesized to be negatively related to the leverage ratio.

There are two different arguments about how growth rate affects leverage. Since growth can enhance the firms' borrowing ability in the future, this would suggest that the more the growth, the more the assets, and therefore the more the leverage. Gupta (1969) suggests that a company with rapid growth will tend to finance the expansion with debt. Ginn and Young (1995) point out that Gupta's argument is consistent with 'pecking order' theory. Thus, studies suggest that rapidly growing firms should have higher leverage.

But Myers (1977) argue that firms with higher growth rates tend to use less and or short term debt in their capital structure to reduce the agency costs. Titman and Wessels (1998) also note that firms usually attempt to invest in sub-optimal projects in order to transfer wealth from bondholders. Since costs related to this type of agency problem is higher in rapidly growing firms, then firms use less debt in order to avoid this cost. For this reason, growth rate should have a negative relationship with debt.

Singh (1995) argues that firms in developing countries use more equity capital to finance the growth of their assets. Since China is also an emerging market with characteristic similar to other developing market, Chinese firms are also expected to prefer equity to debt financing. There appear to be same indication from the Chinese capital market that this is indeed the case. In addition, probably agency problems between the managers and the shareholders are more severe in China as a result of a lack of sophisticated monitoring systems and a market-driven economy and significant government interference. That may result in higher agency costs for the Chinese firms that are growing rapidly to preserve flexibility in their future investment. For this reason, firms with higher growth rate of assets may choose lower debt levels. The indicator of the growth rate of assets is the percentage change in total assets on announced basis (Titman and Wessels 1998).

4.6 Ownership Structure Hypothesis

The agency theory argues that there is a natural conflict of interest between shareholders and managers of a firm. It will produce the possibility where managers may take sub-optimal decisions that improve their own welfare at the expense of shareholders or consume excessive perquisites.

Mohd, Perry and Rimbey (1998) point out that recognizing the effect of these conflicts between shareholders and managers, the market makes unbiased estimates of such costs and reduces the value of a firm's stock accordingly. This loss, as noted earlier, is the agency cost of equity. Because ownership represents a source of power that can be used either to support or oppose existing management of the firm, the concentration or dispersion of the structure of ownership has become a relevant determinant of capital structure of a firm.

Although the theory appears to be clear, the empirical evidence is not. Aggrawal and Mandelker (1987) and Mehran (1992) find a positive relationship between the percentage of shares held by insiders and firms' debt levels. Friend and Hasbrouk (1988) and Jensen, Solberg and Zorn (1992) report a negative relationship. The results from Mohd, and Perry and Rimbey (1998) indicate that both insider ownership and outsider ownership, such as institutions and number of outstanding shareholder, have significant negative relationships with debt ratio. Kim and Piman (1998) find that financial and foreign institutions have a significant negative relationship with debt ratio for firms listed on the Tokyo Stock Exchange for the 1980-1991 period.

This study also examines the effect of ownership concentration on the capital structure of the Chinese firms, especially the composition of equity ownership as a determinant of overall

capital structure. Because insider ownership is very low in listed Chinese firms, the influence of insider ownership is not considered to be of any significant impact.

H6.1: Percentage of A shares that are held by individual investors is not expected to have a significant relationship with debt ratio.

Rozeff (1982) suggests that the greater the number of shareholders, the more diffused the ownership, hence a negative or insignificant relationship should be expected between the number of shareholders and debt ratio. In China, A shares are held by individual investors. It represents diffused ownership. The more the number of A shares, the more will be the number of shareholders. In addition, the vast majority of A shareholders are small individual shareholders and few are in the list of the ten largest shareholders. Almost no individual shareholder has any seats on the boards. Thus, it is expected that percentage of A shares should not have a significant relationship with the debt ratio. The proportion of A shares is relation to the total number of shares for each firm is calculated to measure the influence of ownership concentration on the debt ratio.

H6.2: Percentage of state shares that are held by the government is projected to positive relate with the debt ratio.

If employment is one of the government's objectives, the more shares held by the State, the more stable the employment environment resulting in a lower probability of bankruptcy. Hence, Chinese companies, in which the State is a large shareholder, will face a lower financial distress cost because the state will come to their rescue in financial distress. In addition, firms in

which the State is a major shareholder have more access to the debt markets or banks. Thus, it is expected that the percentage of State shares should have a significant positive relationship with debt ratio in China. To measure this ownership concentration, the proportion of the State shares in relation to the total number of shares for each firm is calculated.

H6.3: Percentage of legal person shares that are held by institutional investors is hypothesized to have a negative relationship with the debt ratio.

Grier and Zychowicz (1994) argue that institutional investors may substitute for the disciplinary role of debt in the capital structure. Studies on firms in developed countries find a negative relationship between concentration of institutional ownership with debt levels. These same arguments may apply in China. The shares held by institutions are called “legal person share”. Xu and Wang (1997) suggest that legal person shareholders have a stake considerably larger than individual investors do. They play a positive role in monitoring the management and improving the firms’ performance, so long as they have a large enough interest in the firm. Consequently, the need for minority by debtholders is considerable reduced. To measure this ownership concentration, the proportion of legal person shares in relation to the total number of shares for each firm is calculated.

5. MEASURES OF CAPITAL STRUCTURE

We use two different measures of leverage to study our hypotheses. DR1 is defined as long-term debt divided by total assets (book value) and DR2 is defined as long-term debt divided by total debt plus market value of equity (MVE) while $MVE = Price * (Total\ Number\ of\ Shares - Number\ of\ H_Share - Number\ of\ B_share)$. Since B and H shares account for only

about 5% of total shares outstanding. We ignore the number of B and H shares when calculating the market value of equity.

The broadest definition of leverage is the ratio of total debt to total assets. It provides insight to a firm's policy for both short-term debt and long-term debt. Ferri and Jones (1979), and many others have used this leverage measure in their empirical studies. They argue that as a firm increases its use of debt, its financial leverage and risk also increases. This ratio can also be viewed as a proxy of what will be left for shareholders in the case of liquidation, assuming that shareholders will not be engaged in a transfer of wealth by large cash distribution before the firm will fall into distress. It represents a means of transferring control from shareholders to bondholders when the firm is in financial distress.

However, Rajan and Zingales (1995) argue that total debt may overstate the level of leverage. Total debt has items like accounts payable that may be used for transaction purpose rather than for financing. Thus, it is not a good indicator of whether the firm is at risk of default in the near future. According to these authors, a more appropriate definition of leverage is the ratio of long term debt to total assets.

Since few publicly listed Chinese companies issue debt securities, it is almost impossible to estimate the market value of debt. Data limitation forces us to measure debt in terms of book value rather than market value, even though, we recognize that market value of debt might be a better measure than book value of debt (Titman and Wessels 1998). However, Bowman (1980) demonstrates that the cross-sectional correlation between the book value and market of debt is very large. Hence, the miss-specification from using book value measures of debt is probably not large. While the distributions of the total debt as a proportion of asset are also provide in Table 2

large. While the distributions of the total debt as a proportion of asset are also provide in Table 2 and 3, we limit our cross-section analysis about the determinant of capital structure only to ratios long-term debt.

6. DATA AND RESEARCH METHODOLOGY

6.1 Data description

The data used in this paper are from 'Annual Reports of Listed Company in China' and 'Statistics Year Book' issued by Shanghai Stock Exchange, Shenzhen Stock Exchange, the China Securities Association, and 'China Listed Company Reports' issued by China ChengXin Securities Rating Co., Ltd. All data are from the financial statements including balance sheet, income statement, and sources and uses of funds statements. The data set includes all public companies listed on the two national stock exchanges during 1992-1997. They are from six different industries: finance, manufacturing, trade, utility, real estate, and conglomerates. We eliminate financial firms such as banks, trust, and insurance companies from the sample, because their debt is not strictly comparable to the debt issued by non-financial firms.

There is one potential source of bias. Publicly listed companies, represent only a small subset of China's enterprises-a clean and perhaps better performing group of enterprises which were chosen to be listed on the two stock exchanges. They are usually large or medium-size firms compared with the size of the non-listed companies. The listed companies started more or less on an equal basis, since they undertook the same restructuring process, as mandated by China Securities Regulatory Commission (CSRC) before their initial public offering. Accounting systems are to be converted to international standards, and the information disclosure has to meet

CSRC's requirements. These companies have a similar degree of autonomy as to what to produce and how to price their products and services. Clearly, they are not representatives of all enterprises (state or non-state) in China. In other words, our empirical study suffers unavoidably from a sample selection bias. Therefore, the results of this analysis need to be interpreted with caution as they may apply only to large and medium size corporations (Xu and Wang 1997).

6.2 Research methodology

Ordinary-least-squares (OLS) regressions are employed to determine whether relations exist between long-term debt ratio and determinants such as industry classification, firm size, proportion of tangible assets, profitability, growth rate of assets and ownership concentration. The regression analysis using consecutive yearly observations for each firm would reveal whether those determinants have a persisting effect to capital structure. On the other hand, the regression analysis using cross-sectional data would reveal whether the determinants in different industries effect to capital structure to a different degree and also the overall impact of other firm specific factors on capital structure.

The first regression analysis with four dummy variables is undertaken to examine industry classification effect with the manufacturing industry as the intercept. DR (Firm i) is the dependent variable in all regression models. It represents the two long-term debt ratios for each firm i, and DUM₁ to DUM₄ represent the four industry dummies trade, utility, real estate, and conglomerate, respectively. Therefor, the estimated coefficient on each dummy variable is equal to the difference of leverage between the particular industry and manufacturing industry.

$$\text{DR (Firm i)} = \alpha + \beta_1 \text{DUM}_1 + \beta_2 \text{DUM}_2 + \beta_3 \text{DUM}_3 + \beta_4 \text{DUM}_4 + \varepsilon \quad (1)$$

The second regression analysis is undertaken to estimate whether firm characteristic variables, discussed in the hypotheses, influence leverage. The variables employed are defined as follows:

Tangibility = Fixed Assets/Total Assets; Firm Size = LOG (Sell);

Growth Rate = Change of Total Assets; Profitability = Operating Income/ Total Assets. So:

$$\text{DR (Firm i)} = \alpha + \beta_1 \text{Tangibility} + \beta_2 \text{Firm Size} + \beta_3 \text{Growth Rate} + \beta_4 \text{Profitability} + \varepsilon \quad (2)$$

The third regression model including both industry dummies and firm characteristic variables is developed to provide an indication of whether firm characteristic are significant in explaining the choice of leverage level after controlling for variation across industries.

$$\text{DR (Firm i)} = \alpha + \beta_1 \text{DUM}_1 + \beta_2 \text{DUM}_2 + \beta_3 \text{DUM}_3 + \beta_4 \text{DUM}_4 + \beta_5 \text{Tangibility} + \beta_6 \text{Firm Size} + \beta_7 \text{Growth Rate} + \beta_8 \text{Profitability} + \varepsilon \quad (3)$$

The fourth regression analysis including ownership concentration variables such as percentage of the individual investor shares, percentage of the legal person shares and percentage of the State shares is employed to investigate the relationship between the ownership structure and level; of debt used.

$$\text{Dr (Firm i)} = \alpha + \beta_1 \text{A_Share} + \beta_2 \text{S_Share} + \beta_3 \text{L_Share} + \varepsilon \quad (4)$$

The fifth regression model, including firm characteristic variables and ownership concentration variables, is developed to examine the influence of firm characteristic factors and ownership concentration on the capital structure choice.

$$\begin{aligned} \text{DR (Firm } i) = & \alpha + \beta_1 \text{ A_Share} + \beta_2 \text{ S_Share} + \beta_3 \text{ L_Share} + \beta_4 \text{ Tangibility} \\ & + \beta_5 \text{ Firm Size} + \beta_6 \text{ Growth Rate} + \beta_7 \text{ Profitability} + \varepsilon \quad (5) \end{aligned}$$

Finally, a regression analysis with an all inclusive model that include industry classification dummies, firm characteristic variables and ownership concentration is examined to test the overall influence of these factors in explaining the capital structure choice by listed firms in China.

$$\begin{aligned} \text{DR (Firm } i) = & \alpha + \beta_1 \text{ DUM}_1 + \beta_2 \text{ DUM}_2 + \beta_3 \text{ DUM}_3 + \beta_4 \text{ DUM}_4 + \beta_5 \text{ A_Share} \\ & + \beta_6 \text{ S_Share} + \beta_7 \text{ L_Share} + \beta_8 \text{ Tangibility} + \beta_9 \text{ Firm Size} \\ & + \beta_{10} \text{ Growth Rate} + \beta_{11} \text{ Profitability} + \varepsilon \quad (6) \end{aligned}$$

In all of the above regression, we have not included any interaction variables, while it would be a good idea to include interaction variables, such as the product of industry dummies and firm characteristic, to have a better understanding of temporal variation with an industry. We decided to limit our analysis to the broad cross-sectional determinants of debt ratios. Since the variations in the mean of the firm characteristic variables across industries appear to be low, give one desire firm investigating broader determinants, it was decided to limit the cross product

terms. It is however recognize that exclusion of interaction terms certainly limit ore ability to get a better understanding of the firm determinants of leverage choice.

7. DESCRIPTIVE STATISTICS

Table 1 reports the number of listed Chinese companies from 1992 to 1997. The number of listed companies increased substantially during the six years. There were only 45 listed companies on the two national stock exchanges (Shanghai Stock Exchange and ShenZhen Stock Exchange) in 1992. The number of listed companies increased to 747 in 1997. The table shows that the economic and financial markets in China have been growing rapidly and that there is visible transformation towards a market driven economy. There are more and more companies going public each year. Firms in trade and manufacturing are exploding while firms in finance and real estate have shown little change during the sample period.

Table 2 provides descriptive statistics for the variables used in this paper for each of the six years from 1992 to 1997. The definitions for the four measures of leverage are as follows: Leverage1 is total debt divided by total assets (book value). Leverage2 is total debt divided by total debt plus market value of equity (MVE) while $MVE = Price * (Total\ Number\ of\ Shares - Number\ of\ H_Share - Number\ of\ B_share)$. Leverage3 is long term debt divided by total assets (book value). Leverage4 is long term debt divided by total debt plus market value of equity (MVE).

We find that the mean value for leverage 1 is 0.4376 during 1992-1997, which is higher than the debt ratio found for G-7 countries. For example, it is 0.31 in US and 0.35 in Japan (Rajan and Zingales 1995). We also find that the debt ratio of Chinese firms is close to the debt

ratio of large Malaysian companies. The mean debt ratio is 0.4438 for Malaysian firms during 1986-1989 (Mohamad1995).

We also find that the mean for leverage 3 is 0.0692 during 1992-1997 and is low for each of the sample years. Most of the debt on the balance sheet for Chinese firms is therefor short-term debt

Tables 3 presents the descriptive statistics for the variables for each of the five industries for a pooled sample considering all years from 1992 to 1997. The mean value for leverage 1 is 0.4406, 0.4338, 0.3598, 0.5472 and 0.4517, in manufacturing, trade, utility, real estate and conglomerate, respectively. The mean value for leverage 3 is 0.0757, 0.0501, 0.1269, 0.0516, and 0.0487. We find that real estate firms have the highest mean for leverage 1, but almost all is in short-term debt. It has the lowest value for the tangibility ratio compared with the tangibility ratio of other industries. Utility firms have the highest amount of tangible assets on their balance sheet. They also use the lowest amount of short-term debt and the highest amount of long-term debt financing compared with other industries.

Tables 4-a and 4-b report ownership structure statistics for each of the six years and a pooled sample. These tables document the percentage of A shares, B shares, H shares, Liquidable shares, State shares, Legal person shares, Employee shares and unliquidable shares to total shares, respectively. As was mentioned earlier, depending on different shareholders' residency and nationality, shares are classified into four categories: A, B, H and N share. A shares are restrictedly sold in Chinese currency-Renminbi (Chinese Yun) to domestic investors, mostly individuals and some institutions. There are four different types of A shares, depending on ownership; they are State shares, legal person shares, employee shares and tradable A shares. B shares are sold only to foreign investors and some large authorized domestic financial

institutions. B shares are priced and traded in U.S. dollars on Shanghai Stock Exchange and in H.K. dollars on Shenzhen Stock Exchange. Like B shares, H shares are issued and traded on Hong Kong Stock Exchange for all investors in the world except for Chinese who hold a Chinese passport. N shares are listed on the New York Stock Exchange.

The results in tables 4-a and 4-b show that the mean State shares ratio decreased slightly each year during the five years from 33.82% in 1992 to 29.43% in 1997. The tables also shows that not only more and more non State firms appear to go public each year, but also that the government is gradually withdrawing control on the listed State firms. The mean A shares ratio increased slightly each year during the five years from 21.81% in 1992 to 30.96% in 1995 and then appears to have stabilized. It shows that shares are eventually moving from government to individual or institutional investor. However, the mean B shares ratio decreased for each year of the six years from 12.22% in 1992 to 3.84% in 1997. In contrast to the decline in the percentage of B shares over the six year period, the percentage of H shares increased, probably H shares are more convenient compared with B shares. At the same time, the mean employee shares ratio increased from 1.99% in 1992 to 4.47% in 1997. It may suggest that shares are becoming an important part of employee compensation in China, possibly driven by the fact that more companies use equity share to motivate their employees.

8. RESULTS AND DISCUSSION

8.1 Correlation analysis

The results of the Pearson correlation analysis for the 1997 sample are shown in Table 5. We find that tangibility has a significant positive correlation with growth rate of assets and percentage of the State shares and a significant negative correlation with profitability and percentage of the legal person shares. The firms with higher tangibility, such as utility firms, have higher growth rates, greater State control and lower profitability. Firm size has a significant positive correlation with the growth rate of assets, profitability and the percentage of the shares held by the State and a significant negative correlation with the legal person shares and A shares. Evidence also suggests that there are fewer individual and institutional shareholders in the large firms that are controlled by the State. Growth rate of assets has a significant positive correlation with profitability. This means that firms with higher growth rates are more profitable. The results also indicate that profitability has a significant negative correlation with the percentage of the State shares and positive correlation with the percentage of legal person shares. The greater the number of shares held by the State, the less profitable is the firm. But, firms with higher the percentages of institutional shareholders are more profitable. The percentage of individual shareholders is significantly negatively correlated with the percentage of State shares and significantly positively correlated with the percentage of legal person shares. The percentage of legal person shareholders has a negative correlation with the percentage of State shareholders. It appears, both individual and institutional investors are willing to invest in firms that are less controlled by the State.

8.2 Evidence on industry classification

The industry membership hypothesis is supported, as industry classification appears to significantly affect leverage levels. The results of cross-sectional analysis using industry classification dummies are shown in Table 6. We set the manufacturing industry as the intercept. Table 6 reports that the difference of long term debt is significant between the firms in manufacturing and the firms in other industries. Long term debt (both book and market value) of the firms in trade and conglomerate is significantly lower than that of the firms in manufacturing. The difference is significant in sample years 1993-1996 for trade firms and significant in 1993 and 1995 for conglomerate firms. Long term debt (both book and market value) of the firms in utility is significantly higher than that of the firms in manufacturing. The difference is significant in 1995 and 1996 for conglomerate firms. Evidence supports the hypothesis that the firms that are in more asset-intensive industries have more leverage.

8.3 Evidence on the relationship between firm characteristic and leverage

The results in Table 7 provide support for the firm size, tangible assets, and profitability hypotheses. They do not support the growth rate of assets hypothesis. Firm size has a positive impact on the debt ratio in Chinese companies. The coefficient is significant using the market value measures of leverage, DR2, for 1993-1996. The result is consistent with those of Warner and Abg (1986) and McConnell (1988). They suggest that large firms on average are more highly leveraged. Therefore, our evidence supports the argument that large Chinese companies may face a lower cost of financial distress and find it easier to raise financing through long-term debt. This may also be driven by the fact that the government is the largest shareholder in most of these large firms and that it will come to their rescue in case of financial distress.

Table 7 shows that profitability is significantly related to leverage ratio. It is significant at greater than the 5% level in all sample years on DR2 and in 1993-1995 on DR1. The results in Table 7 provide information to support the profitability hypothesis. Similar results are obtained by Timan and Wessels (1988) and Rajan and Zingales(1995). Although the 'pecking order' may not completely apply to Chinese firms, they appear to select financing sources starting with retained earnings, followed by external equity financing and then external debt. Issuance costs most likely detract the use of external financing by long-term debt.

Evidence in Table 7 also shows that tangibility (ratio of fixed assets to total assets) has a significant positive relationship with the debt ratio. The coefficient on tangibility is positive using both DR1 and DR2 for all years, except in 1997. It is significant at greater than the 5%.

This suggests that physical collateral is an important factor in raising long term debt capital in China. This finding is consistent to evidence reported by Rajan and Zingales (1995). They report that tangibility has a significant positive relationship with debt ratio (using both book and market values) capital in G-7 countries.

Berger and Udell (1994) argue that firms having a close relationship with creditors need to provide less collateral, because the relationship (and more information monitored by creditors) can substitute for physical collateral. Chinese firms can borrow more short-term money using less physical collateral by developing good relationships with the government and/or banks. This means that the relationship can only substitute physical collateral when raising short-term debt for Chinese firms. Though not reported in this study, when we use the proportion of total debt as the measure of leverage (which is mostly composed of short-term debt), we find a negative relationship between tangibility and debt ratio. In addition, agency problems of the managers who sometimes are appointed by the government and shareholders will produce a tendency for

the managers to consume more than the optimal level of perquisites in Chinese companies. This tendency may produce a negative relationship between collateral and total debt levels. Our evidence is also similar to that of Grossman and Hart (1982). They suggest that managers of highly leveraged companies will be less able to consume excessive perquisites since debt holders are inclined to closely monitor such companies. The costs associated with this agency relationship may be higher for companies with assets that are less likely to secure as collateral because monitoring the capital outlays of such companies is probably more difficult. For this reason, companies with less collateral may choose higher debt levels to limit their managers' consumption of perquisites.

The results from Table 7 do not support the growth rate of assets hypothesis. We find a positive relationship between leverage and growth rate of assets in all sample years, except in 1993. It is significant at 5% level in 1995 using DR1 and significant in 1995 and 1997 using DR2. There two potential explanations. First, in China, there is some evidence to suggest that banks are the major providers of debt to rapidly growing companies. Secondly, from Table 5, we find that the firms with higher growth rate are utility firms. These firms get more support from the State under the Chinese government's current policies. Thus, they have more access to fund, especially long term debt from banks.

8.4 Evidence on industry classification and firm characteristic variables

The result using industry classification and firm characteristic variables such as tangibility, firm size, growth rate of assets and profitability, are reported in Table 8. Long term debt in the trade and conglomerate firms is lower than that in the manufacturing firms. The coefficients are significant from 1993-1996 on trade and from 1993-1995 on conglomerate.

Evidence shows that leverage is positively related to firm size and growth rate of assets and is negatively related to profitability. There is a significant positive relationship between leverage and tangibility for the most part. The results in Table 8 robustly document the relationship between leverage and firm characteristic, as reported earlier, after controlling for industry membership.

8.5 Evidence on ownership concentration

Results found in Tables 9 and 10 do not support the ownership concentration hypotheses. The percentage of shares held by the individual investors, the State, and the institutional investors does not have a significant influence on the long-term debt ratio. Even though there is a consistent positive relationship between percentage of the State shares and a consistent negative relationship between percentage of the legal person shares, the estimates are not significant in all sample years on both DR1 and DR2. Evidence in Tables 2 and 3 indicates that long-term debt accounts for about 6% of total debt. This may be the reason that there is no significant relationship between long-term debt and ownership concentration at the time this research is undertaken. Once the transition from a State controlled economy to a market-driven economy will have made some tangible progress, it is possible that the dynamics of the relationship between debt financing and ownership structure may exhibit a considerably different picture. This seems to be an important research issue to follow up in the future.

8.6 Evidence on all the factors

Results from using all the factors in the cross-section analysis (industry classification, ownership concentration and firm characteristic variables such as tangibility, firm size, growth rate of assets, and profitability) are found in Table 11. Overall, the results that are consistent with those documented in section 8.2 to 8.5. Long-term debt in trade and conglomerate firms is significantly lower than that in manufacturing firms. Long-term debt in utility firms is higher than that in manufacturing firms. Firms that have more assets have higher leverage. Evidence also shows that leverage is positively related to firm size and growth rate of assets and is negatively related to profitability. There is a significant positive relationship between leverage and tangibility. As noted earlier, results do not support the ownership concentration hypotheses.

9. CONCLUSION

Our study attempts to fill a gap in the determinants of capital structure on Chinese firms. Whereas previous studies focus on developed countries, we examine the determinants of debt levels of public Chinese firms, listed on two national stock exchanges during 1992-1997. These data provide us a unique opportunity to document the relationship between the debt ratio and other factors. They are the industry classification, tangible assets, firm size, growth rate of assets, profitability, and ownership structure.

The results reported here indicate that factors that affect the capital structure of Chinese firms are similar to those in developed countries. Agency and bankruptcy theories appear to hold in China. Managers act to adjust the capital structure of firms in response to variations in agency and bankruptcy costs. We find that industry classification influences long-term debt ratio. Firms that have more assets, such as firms in manufacturing, are more leveraged. Which is consistent

with evidence from developed countries. Our results also show that there is a significant positive relationship between long-term debt ratio and firm size, growth rate of assets and tangible assets, as well as a negative relationship between debt ratio and profitability. The evidence is also consistent with most arguments from developed countries.

The State is the large shareholder in most of the larger listed Chinese firms. Those firms face lower financial distress costs. The size of Chinese firm is an inverse proxy for the probability of default and it is strongly positively related with long-term debt levels. The positive relationship between leverage and tangible assets indicates that physical collateral can secure long-term debt. Chinese firms may select the financing sources by first using retained earning, followed by external equity financing and lastly external debt. This suggests that there is a negative relationship between debt levels and the amount of earning-profitability. We also study the relationship between debt levels and ownership structure. The percentage shares held by individual investors, the State and institutional investors do not have a significant influence on long-term debt ratio. The fact that long-term debt accounts for only a small part of total debt may be the reason to explain non-existence of relationship between ownership concentration and long-term debt.

Table 1: Distribution of Firms in the Sample

This table shows the distribution of listed companies in China in different industries from 1992 to 1997.

Year	Finance	Manufacturing	Trade	Utility	Real Estate	Conglomerate	Total
1992	1	27	2	2	7	6	45
1993	1	105	25	14	16	17	178
1994	4	159	49	23	25	26	286
1995	4	172	52	24	26	29	307
1996	4	307	97	37	29	42	516
1997	4	473	135	51	29	55	747

Table 2: Descriptive Statistics by Year

This table provides the descriptive statistics of variables from 1992 to 1997. Leverage1=Total Debt/Total Assets (book value). Leverage2=Total Debt/(Total Debt + MVE). Leverage3=Long Term Debt/Total Assets (book value). Leverage4=Long Term Debt/(Total Debt + MVE). MVE=Price*(Total Share - H_Share - B_share). Tangibility = Fixed Assets/Total Assets. Firm Size = LOG (Sell). Growth Rate = Change of Total Assets. Profitability = Operating Income/ Total Assets.

Variables	Panel A: Mean					
	1992	1993	1994	1995	1996	1997
Leverage1	0.4495	0.3914	0.4369	0.4576	0.4402	0.4488
Leverage2	0.2444	0.1359	0.2392	0.2919	0.2249	0.1858
Leverage3	0.0835	0.0751	0.0706	0.0473	0.0657	0.0734
Leverage4	0.0335	0.0269	0.0405	0.0872	0.0338	0.0318
Tangibility	0.4218	0.4283	0.4359	0.4300	0.4352	0.3889
Size	10.0160	10.176	10.3358	10.4503	10.3107	10.4572
Growth Rate	N/A	96.4385	34.4686	19.4189	20.517	23.4307
Profitability	0.0688	0.0766	0.0606	0.0406	0.0591	0.0548
Variables	Panel B: Median					
	1992	1993	1994	1995	1996	1997
Leverage1	0.4229	0.3861	0.4469	0.4578	0.4523	0.4160
Leverage2	0.2798	0.1196	0.2152	0.2647	0.1999	0.1500
Leverage3	0.0454	0.0383	0.0353	0.0211	0.0366	0.0333
Leverage4	0.0131	0.0138	0.0195	0.0258	0.0164	0.0144
Tangibility	0.3992	0.4130	0.4301	0.4398	0.4341	0.4356
Size	9.9581	10.1369	10.3472	10.4263	10.2125	10.3869
Growth Rate	N/A	71.8512	25.1459	5.7337	9.555	13.5919
Profitability	0.0708	0.0666	0.04738	0.0331	0.0404	0.0489

Table 3: Descriptive Statistics by Industry, 1992-1997

This table provides the descriptive statistics of variables in different industries from 1992 to 1997. $\text{Leverage1} = \text{Total Debt} / \text{Total Assets (book value)}$. $\text{Leverage2} = \text{Total Debt} / (\text{Total Debt} + \text{MVE})$. $\text{Leverage3} = \text{Long Term Debt} / \text{Total Assets (book value)}$. $\text{Leverage4} = \text{Long Term Debt} / (\text{Total Debt} + \text{MVE})$. $\text{MVE} = \text{Price} * (\text{Total Share} - \text{H_Share} - \text{B_share})$. $\text{Tangibility} = \text{Fixed Assets} / \text{Total Assets}$. $\text{Firm Size} = \text{LOG (Sell)}$. $\text{Growth Rate} = \text{Change of Total Assets}$. $\text{Profitability} = \text{Operating Income} / \text{Total Assets}$.

Variables	Panel A: Mean				
	Manufacturing	Trade	Utility	Real Estate	Conglomerate
Leverage1	0.4406	0.4338	0.3598	0.5472	0.4517
Leverage2	0.2178	0.1985	0.1847	0.2603	0.2249
Leverage3	0.0757	0.0501	0.1269	0.0516	0.0487
Leverage4	0.0379	0.0212	0.0714	0.0263	0.0229
Tangibility	0.4054	0.4809	0.6112	0.1421	0.4054
Size	10.4359	10.5993	9.998	10.1730	9.8915
Growth Rate	29.1317	32.3526	34.0918	42.7940	32.4402
Profitability	0.0553	0.0733	0.0593	0.0552	0.0278
	Panel B: Median				
	Manufacturing	Trade	Utility	Real Estate	Conglomerate
Leverage1	0.4322	0.4094	0.3617	0.5366	0.4488
Leverage2	0.1862	0.1730	0.1314	0.2327	0.1888
Leverage3	0.0431	0.0200	0.0720	0.0183	0.0215
Leverage4	0.0187	0.0075	0.0295	0.0088	0.0105
Tangibility	0.4214	0.5002	0.6375	0.1849	0.3650
Size	10.3334	10.6798	9.936	10.116	9.3957
Growth Rate	17.2121	19.1645	20.1866	14.7376	20.0393
Profitability	0.0466	0.0477	0.0605	0.0443	0.0222

Table 4-a: Descriptive Statistics on Ownership Structure by Year

This table lists the percentage of A shares, B shares, H shares, Liquidable shares, State shares, Legal person shares, Employee shares and Unliquidable shares to total shares, respectively.

Liquidable Shares = A Shares + B Shares + H Shares.

Unliquidable Shares = State Shares + Legal Person Shares + Employee Shares.

Total Shares = Liquidable Shares + Unliquidable Shares.

Panel A: Mean						
	1992	1993	1994	1995	1996	1997
A Shares	21.8051	27.3590	29.7570	30.9640	29.9230	29.534
B Shares	12.2170	5.0700	4.9260	4.9020	3.9400	3.8370
H Shares	0	0.5460	0.6110	1.14	0.8190	0.886
Liquidable Shares	34.0220	32.9790	35.2950	36.9710	34.6920	34.2570
State Shares	33.8201	32.7043	32.9770	32.0640	30.2760	29.4290
Legal Person Shares	30.1420	31.4840	29.830	28.4730	31.5	31.7390
Employee Shares	1.9890	2.2090	1.5900	3.7230	3.5310	4.4650
Unliquidable Shares	65.5560	66.4090	64.4080	62.1360	65.8170	65.6270
Panel B: Median						
A Shares	14.3989	25.030	27.3540	29.6270	27.4050	27.9820
B Shares	0	0	0	0	0	0
H Shares	0	0	0	0	0	0
Liquidable Shares	31.6830	29.657	32.8210	35.8320	31.4960	30.9380
State Shares	40	36.7830	35.2940	34.4250	31.1390	29.7460
Legal Person Shares	17.9900	23.9750	21.8000	20.8460	24.0480	25.5
Employee Shares	0	0	0	0	0	0.08
Unliquidable Shares	68.8130	68.9740	66.8840	63.6040	68.7320	68.8740

Table 4-b: Descriptive Statistics on Ownership Structure, 1992-1997

This table lists the percentage of A shares, B shares, H shares, Liquidable shares, State shares, Legal person shares, Employee shares and Unliquidable shares to total shares, respectively in a pooled sample.

Liquidable Shares = A Shares + B Shares + H Shares.

Unliquidable Shares = State Shares + Legal Person Shares + Employee Shares.

Total Shares = Liquidable Shares + Unliquidable Shares.

	Min	Mean	Median	Max	Std
A Shares	0	29.518	27.315	100	15.714
B Shares	0	4.459	0	60.711	11.012
H Shares	0	0.816	0	50.35	5.202
Liquidable Shares	2.984	34.793	32.137	100	13.997
State Shares	0	30.891	32.802	95.575	26.524
Legal Person Shares	0	30.879	23.678	91.319	26.827
Employee Shares	0	3.168	0.021	64.759	6.365
Unliquidable Shares	0	65.056	67.671	97.015	13.947

Table 5: Pearson Correlation Analysis in 1997

	Tangibility	Firm Size	Growth Rate	Profitability	A_Share	S_Share	L_Share
Tangibility	1 (0.0)						
Firm Size	-0.032 (0.3920)	1 (0.0)					
Growth Rate	0.1730 (0.0001)	0.1286 (0.0032)	1 (0.0)				
Profitability	-0.4355 (0.0001)	0.1164 (0.015)	0.2088 (0.0001)	1 (0.0)			
A_Share	-0.0116 (0.7513)	-0.2861 (0.0001)	-0.0248 (0.5717)	-0.0455 (0.2165)	1 (0.0)		
S_Share	0.0862 (0.0189)	0.1793 (0.0001)	-0.0367 (0.4014)	-0.0786 (0.0321)	-0.1959 (0.0001)	1 (0.0)	
L_Share	-0.0800 (0.0293)	-0.1623 (0.0001)	-0.0022 (0.9599)	0.1112 (0.0025)	0.0919 (0.0123)	-0.8341 (0.0001)	1 (0.0)

The first figure in the table is coefficient, the second is the probability.

Table 6: Leverage and Industry Classification

Regression analysis of leverage on industry classification, trade, utility, real estate, and conglomerate for Chinese listed companies in 1993, 1994, 1995, 1996 and 1997, respectively. (T-statistics are reported in parentheses below coefficients). DR1 = Long Term Debt/Total Assets (book value). DR2 = Long Term Debt/(Total Debt + MVE). MVE = Price*(Total Share-H_Share-B_share).

Dependent variable is DR1 (Long Term Debt/Total Assets (book value)).

Panel: A					
	1993	1994	1995	1996	1997
Intercept	0.0841 (9.212)**	0.0807 (10.943)**	0.0776 (10.687)**	0.0718 (11.356)**	0.0745 (8.511)**
Trade	-0.0466 (-2.364)*	-0.0368 (-2.424)*	-0.0344 (-2.285)*	-0.0321 (-2.456)*	-0.0154 (-0.861)
Utility	0.0270 (0.987)	0.0292 (1.408)	0.066 (3.188)**	0.0502 (2.681)*	0.0188 (0.714)
Real Estate	-0.0363 (-1.517)	-0.0358 (-1.791)	-0.0203 (-1.000)	-0.0230 (-1.298)	-0.0301 (-0.997)
Conglomerate	-0.0567 (-2.298)8	-0.0324 (-1.651)	-0.0396 (-2.075)*	-0.0329 (-1.942)	-0.006 (-0.236)
F Statistic	3.211	3.364	5.827	5.058	0.602
Adjust R ²	0.0553	0.032	0.0605	0.0478	-0.0031
R ²	0.0803	0.0463	0.073	0.0596	0.0046
N	151	281	300	323	522

Dependent variable is DR2 (Long Term Debt/(Total Debt + MVE)).

Panel: B					
	1993	1994	1995	1996	1997
Intercept	0.0309 (6.778)**	0.0479 (9.7)**	0.0527 (9.724)**	0.0440 (10.803)**	0.0312 (12.463)**
Trade	-0.0196 (-1.992)	-0.0261 (-2.568)*	-0.0289 (-2.575)*	-0.0213 (-2.537)*	-0.0122 (-2.368)
Utility	0.0261 (1.913)	0.0176 (1.272)	0.0498 (3.228)**	0.026 (2.16)*	0.0010 (0.141)
Real Estate	-0.0151 (-1.268)	-0.0214 (-1.598)	-0.0148 (-0.979)	-0.0149 (-1.302)	-0.0120 (-1.396)
Conglomerate	-0.0203 (-1.655)	-0.0264 (-2.007)*	-0.0325 (-2.287)*	-0.0235 (-2.155)*	0.0030 (0.422)
F Statistic	3.121	3.536	6.502	4.53	1.971
Adjust R ²	0.0532	0.0347	0.0683	0.0419	0.0074
R ²	0.0783	0.0484	0.0808	0.0537	0.0150
N	151	281	300	323	522

*Significant at 0.05 level

**Significant at 0.01 level

Table 7: Leverage and Firm Characteristic Variables

Regression analysis of leverage on firm characteristic variables, tangibility, firm size, growth rate, and profitability for Chinese companies in 1993, 1994, 1995, 1996 and 1997, respectively. (T-statistics are reported in parentheses below coefficients). DR1 = Long Term Debt/Total Assets (book value). DR2 = Long Term Debt/(Total Debt + MVE). MVE = Price*(Total Share - H_Share - B_share).

Dependent variable is DR1 (Long Term Debt/Total Assets (book value)).

Panel: A					
	1993	1994	1995	1996	1997
Intercept	-0.1204 (-1.912)	0.0488 (0.894)	0.0085 (0.178)	-0.0024 (-0.053)	0.1069 (1.851)
Tangibility	0.1802 (4.547)**	0.0444 (3.266)**	0.0574 (4.29)**	0.0808 (5.030)**	-0.1275 (-10.09)**
Firm size	0.0140 (2.509)*	0.0023 (0.461)	0.0038 (0.845)	0.0030 (0.71)	0.0009 (0.174)
Growth Rate	-0.0000 (-0.931)	0.0000 (0.549)	0.0005 (2.651)*	0.0000 (1.33)	0.0000 (0.119)
Profitability	-0.3608 (-2.79)*	-0.4201 (-3.84)**	-0.3479 (-3.206)**	-0.1246 (-1.466)	0.1461 (1.561)
F Statistic	8.84	6.934	8.017	7.153	30.054
Adjust R ²	0.172	0.0779	0.0856	0.0708	0.1821
R ²	0.1939	0.0910	0.0977	0.0823	0.1884
N	151	281	300	323	522

Dependent variable is DR2 (Long Term Debt/(Total Debt + MVE)).

Panel: B					
	1993	1994	1995	1996	1997
Intercept	-0.1049 (-3.376)**	-0.0261 (-0.711)	-0.0523 (-1.466)	-0.0489 (-1.678)	-0.0179 (-0.995)
Tangibility	0.0861 (4.404)**	0.0254 (2.78)*	0.0391 (3.775)**	0.0473 (4.594)**	-0.0010 (-0.269)
Firm Size	0.0106 (3.871)**	0.0068 (1.959)	0.0083 (2.454)*	0.0066 (2.405)*	0.0047 (2.741)*
Growth Rate	-0.0000 (-0.446)	0.0000 (0.629)	0.0003 (2.437)*	0.0000 (0.703)	0.0001 (2.355)*
Profitability	-0.1920 (-3.009)**	-0.2924 (-3.965)**	-0.3054 (-3.759)**	-0.1413 (-2.595)*	-0.1236 (-4.23)**
F Statistic	9.834	6.153	8.06	7.428	6.515
Adjust R ²	0.1896	0.0683	0.086	0.0737	0.0405
R ²	0.2111	0.0816	0.098	0.0852	0.0479
N	151	281	300	323	522

*Significant at 0.05 level

**Significant at 0.01 level

Table 8: Leverage, Industry Classification and Firm Characteristic Variables

Regression analysis of leverage on all factors both industry classification and characteristic variables including trade, utility, real estate, conglomerate, tangibility, firm size, growth rate, profitability for Chinese companies in 1993, 1994, 1995, 1996 and 1997, respectively. (T-statistics are reported in parentheses below coefficients).

DR1 = Long Term Debt/Total Assets (book value). DR2 = Long Term Debt/(Total Debt + MVE). MVE = Price*(Total Share - H_Share - B_share).

Dependent variable is DR1 (Long Term Debt/Total Assets (book value)).

Panel: A					
	1993	1994	1995	1996	1997
Intercept	-0.1368 (-2.258)*	0.0386 (0.696)	0.0068 (0.142)	-0.0009 (-0.021)	0.1094 (1.876)
Trade	-0.0708 (-3.997)**	-0.0415 (-2.826)*	-0.0413 (-2.862)*	-0.0384 (-3.009)*	-0.0084 (-0.524)
Utility	-0.0093 (0.356)	0.0266 (1.309)	0.0571 (2.833)*	0.0373 (2.03)*	0.0426 (1.784)
Real Estate	0.024 (1.007)	-0.0071 (-0.346)	-0.0039 (-0.199)	-0.0062 (-0.356)	-0.0830 (-3.014)**
Conglomerate	-0.0742 (-3.371)**	-0.0459 (-2.385)*	-0.0393 (-2.107)*	-0.0310 (-1.858)	-0.1378 (-0.049)
Tangibility	0.2255 (4.976)**	0.0421 (2.929)*	0.057 (4.173)**	0.0788 (4.817)**	-0.1292 (-10.1)**
Firm Size	0.0162 (3.105)**	0.0046 (0.879)	0.0049 (1.095)	0.0037 (0.872)	0.0015 (0.28)
Growth Rate	-0.0000 (-0.982)	0.0001 (0.987)	0.0005 (2.448)*	0.0000 (1.256)	0.0000 (0.195)
Profitability	-0.4969 (-3.966)**	-0.4885 (-4.425)**	-0.3810 (-3.609)**	-0.137 (-1.642)	0.1051 (1.120)
F Statistic	8.42	5.571	7.265	6.065	16.964
Adjust R ²	0.2822	0.1152	0.1431	0.1115	0.1966
R ²	0.3202	0.1403	0.1660	0.1335	0.2089
N	151	281	300	323	522

*Significant at 0.05 level

**Significant at 0.01 level

Table 8 (continued)

Dependent variable is DR 2 (Long Term Debt/(Total Debt + MVE)).

Panel: B					
	1993	1994	1995	1996	1997
Intercept	-0.1106 (-3.655)**	-0.0348 (-0.936)	-0.0566 (-1.575)	-0.0479 (-1.614)	-0.0189 (-1.037)
Trade	-0.0315 (-3.568)**	-0.0304 (-3.093)**	-0.0342 (3.184)**	-0.025 (-3.145)**	-0.0137 (-2.716)*
Utility	0.0136 (1.037)	0.0201 (1.477)	0.0480 (3.202)**	0.0203 (1.716)	0.0048 (0.649)
Real Estate	0.0096 (0.813)	-0.0028 (-0.205)	-0.0011 (-0.079)	-0.0026 (-1.928)	-0.0128 (-1.492)
Conglomerate	-0.0285 (-2.597)*	-0.0337 (-2.611)*	-0.0287 (-2.076)*	-0.0206 (-1.928)	0.0013 (0.193)
Tangibility	0.0952 (4.206)**	0.0243 (2.524)*	0.0376 (3.688)**	0.0469 (4.474)**	-0.0021 (-0.528)
Firm Size	0.0119 (4.546)**	0.0085 (2.44)*	0.0095 (2.819)*	0.0070 (2.56)*	0.0051 (2.978)*
Growth Rate	-0.0000 (-0.524)	0.0001 (1.102)	0.0003 (2.235)*	0.0000 (0.608)	0.0001 (2.355)*
Profitability	-0.2615 (-4.179)**	-0.3447 (-4.66)**	-0.3328 (-4.243)**	-0.1494 (-2.786)*	-0.1308 (-4.455)**
F Statistic	8.349	5.627	7.976	6.147	4.602
Adjust R ²	0.2802	0.1164	0.1569	0.1131	0.0523
R ²	0.3184	0.1415	0.1793	0.135	0.0668
N	151	281	300	323	522

*Significant at 0.05 level

**Significant at 0.01 level

Table 9: Leverage and Ownership Concentration

Regression analysis of leverage on ownership concentration A_share, S_share and L_share for listed Chinese companies in 1993, 1994, 1995, 1996 and 1997, respectively. (T-statistics are reported in parentheses below coefficients). DR1 = Long Term Debt/Total Assets (book value). DR2 = Long Term Debt/(Total Debt + MVE). MVE = Price*(Total Share - H_Share - B_share). A_share is percentage of the shares are held by the individual investors over total shares. S_share is percentage of the shares are held by the State over total share. L_share is percentage of the shares are held by legal person over total shares.

Dependent variable is DR1 (Long Term Debt/Total Assets (book value)).

Panel: A					
	1993	1994	1995	1996	1997
Intercept	0.0586 (1.092)	0.0450 (1.166)	0.0718 (2.39)*	0.0458 (1.237)	0.0571 (1.93)
A_share	0.0001 (0.204)	-0.0002 (-0.54)	-0.0003 (-0.877)	0.0000 (0.009)	-0.0000 (-0.051)
S_share	0.0006 (0.99)	0.0006 (1.442)	0.0002 (0.763)	0.0005 (1.121)	0.0003 (0.779)
L_share	-0.0004 (-0.621)	0.0003 (0.693)	0.0000 (0.008)	0.0000 (0.167)	0.0000 (0.342)
F Statistic	5.002	2.279	1.166	1.973	0.295
Adjust R ²	0.0736	0.0135	0.0017	0.009	-0.0041
R ²	0.0921	0.024	0.0016	0.0182	0.0017
N	151	281	300	323	522

Dependent variable is DR2 (Long Term Debt/(Total Debt + MVE)).

Panel: B					
	1993	1994	1995	1996	1997
Intercept	0.0428 (1.59)	0.0499 (1.932)	0.0600 (2.665)**	0.0626 (2.639)**	0.0398 (4.707)**
A_share	-0.0001 (-0.507)	-0.0002 (-0.865)	-0.0001 (-0.682)	-0.0003 (-1.248)	-0.0002 (-1.776)
S_share	0.0004 (0.14)	0.0001 (0.452)	0.0001 (0.041)	0.0001 (0.349)	0.0000 (0.03)
L_share	-0.0004 (-1.342)	-0.0002 (-0.744)	-0.0002 (-0.89)	-0.0003 (-1.316)	-0.0001 (-1.405)
F Statistic	4.389	2.701	1.038	2.306	3.357
Adjust R ²	0.0631	0.0178	0.0004	0.120	0.0134
R ²	0.0817	0.0283	0.0104	0.0212	0.019
N	151	281	300	323	522

*Significant at 0.05 level

**Significant at 0.01 level

Table10: Leverage, Ownership Concentration and Firm Characteristic Variables

Regression analysis of leverage on both ownership concentration and characteristic variables including A_share, S_share, L_share, tangibility, firm size, growth rate, and profitability for listed Chinese companies in 1993, 1994, 1995, 1996 and 1997, respectively. (T-statistics are reported in parentheses below coefficients). DR1 = Long Term Debt/Total Assets (book value). DR2 = Long Term Debt/(Total Debt + MVE). MVE = Price*(Total Share - H_Share - B_share). A_share is percentage of the shares are held by the individual investors over total shares. S_share is percentage of the shares are held by the State over total share. L_share is percentage of the shares are held by legal person over total shares.

Dependent variable is DR1 (Long Term Debt/Total Assets (book value)).

Panel: A					
	1993	1994	1995	1996	1997
Intercept	-0.0919 (-1.027)	0.0777 (1.041)	0.0415 (0.663)	-0.0143 (-0.206)	0.1122 (1.61)
A_share	0.0002 (0.376)	-0.0005 (-1.25)	-0.0004 (-1.251)	0.0001 (0.303)	-0.0001 (-0.347)
S_share	0.0006 (1.101)	0.0006 (1.471)	0.0002 (0.792)	0.0006 (1.305)	0.0005 (1.296)
L_share	-0.0002 (-0.348)	0.0003 (0.665)	0.0000 (0.135)	0.0001 (0.309)	0.0001 (0.434)
Tangibility	0.1697 (4.374)**	0.0436 (3.246)**	0.0586 (4.231)**	0.0814 (5.077)**	-0.1292 (-10.19)**
Size	0.0094 (1.584)	-0.0024 (-0.438)	0.0009 (0.19)	0.0015 (0.33)	-0.0010 (-0.185)
Profitability	-0.3243 (-2.547)*	-0.4073 (-3.708)**	-0.342 (-3.143)**	-0.1091 (-1.28)	0.1505 (1.599)
Growth rate	-0.0000 (-1.049)	0.0002 (1.414)	0.0006 (2.877)*	0.0000 (1.307)	0.0000 (0.247)
F Statistic	6.997	5.515	5.228	5.017	17.617
Adjust R ²	0.2175	0.101	0.0898	0.0801	0.1822
R ²	0.2538	0.1234	0.1111	0.1	0.1932
N	151	281	300	323	522

*Significant at 0.05 level

**Significant at 0.01 level

Table 10 (continued)

Dependent variable is DR2 (Long Term Debt/(Total Debt + MVE)).

Panel: B					
	1993	1994	1995	1996	1997
Intercept	-0.0803 (-1.795)	0.0105 (0.208)	-0.0341 (-0.723)	-0.0234 (-0.525)	0.0032 (0.151)
A_share	0.0000 (0.051)	-0.0003 (-1.048)	-0.0001 (-0.471)	-0.0001 (-0.461)	-0.0001 (-1.432)
S_share	0.0000 (0.234)	0.0001 (0.556)	0.0000 (0.143)	0.0000 (0.037)	0.0000 (0.231)
L_share	-0.0002 (-0.931)	-0.0001 (-0.536)	-0.0001 (-0.534)	-0.0002 (-0.84)	-0.000 (-0.893)
Tangibility	0.0823 (4.247)**	0.0257 (2.825)*	0.0384 (3.682)**	0.0472 (4.585)**	-0.0016 (-0.416)
Size	0.0089 (2.989)*	0.003 (0.995)	0.0072 (1.992)	0.0051 (1.708)	0.0034 (1.888)
Profitability	-0.1733 (-2.724)*	-0.2686 (-3.608)**	-0.2968 (-3.626)**	-0.1286 (-2.347)*	-0.1195 (-4.083)**
Growth rate	-0.0000 (-0.52)	0.0001 (1.236)	0.0004 (2.551)*	0.0000 (0.722)	0.0001 (2.419)*
F Statistic	3.64	4.56	4.802	4.887	4.583
Adjust R ²	0.0326	0.0815	0.0815	0.0777	0.0458
R ²	0.0463	0.1043	0.1029	0.0977	0.0586
N	151	281	300	323	522

*Significant at 0.05 level

**Significant at 0.01 level

Table11: Leverage and All Factors

Regression analysis of leverage on all factors includes industry classification, ownership concentration and characteristic variables. including A_share, S_share, L_share, tangibility, firm size, growth rate, and profitability for listed Chinese companies in 1993, 1994, 1995, 1996 and 1997, respectively. (T-statistics are reported in parentheses below coefficients). DR1 = Long Term Debt/Total Assets (book value). DR2 = Long Term Debt/(Total Debt + MVE). MVE = Price*(Total Share - H_Share - B_share). A_share is percentage of the shares are held by the individual investors over total shares. S_share is percentage of the shares are held by the State over total share. L_share is percentage of the shares are held by legal person over total shares.

Dependent variable is DR1 (Long Term Debt/Total Assets (book value)).

Panel: A					
	1993	1994	1995	1996	1997
Intercept	-0.1632 (-1.875)	0.0361 (0.474)	0.0193 (0.309)	-0.0410 (-0.59)	0.1201 (1.725)
Trade	-0.0654 (-3.599)**	-0.0380 (-2.557)*	-0.0387 (-2.648)**	-0.037 (-2.893)**	-0.0065 (-0.4)
Utility	0.0025 (0.097)	0.0237 (1.164)	0.0565 (2.771)**	0.0384 (2.082)*	0.0433 (1.794)
Real Estate	0.0194 (0.825)	-0.0058 (-0.286)	-0.0024 (-0.123)	-0.0066 (-0.38)	-0.0818 (-2.964)**
Conglomerate	-0.0699 (-3.164)**	-0.0397 (-2.035)*	-0.0354 (-1.867)	-0.0276 (-1.638)	0.003 (0.129)
A_share	0.0006 (1.243)	-0.0002 (-0.57)	-0.0002 (-0.602)	0.0003 (0.903)	-0.0001 (-0.297)
S_share	0.0007 (1.316)	0.0007 (1.617)	0.0002 (0.664)	0.0006 (1.426)	0.0004 (1.038)
L_share	0.0001 (0.200)	0.0004 (1.009)	0.0000 (0.15)	0.0002 (0.554)	0.0000 (0.097)
Tangibility	0.2081 (4.601)**	0.0421 (2.941)**	0.0566 (4.106)**	0.0799 (4.884)**	0.1393 (10.789)**
Size	0.014 (2.553)*	0.0013 (0.237)	0.0033 (0.704)	0.00037 (0.798)	-0.0004 (-0.085)
Profitability	-0.4591 (-3.699)**	-0.4727 (-4.226)**	-0.3750 (-3.526)**	-0.1273 (-1.514)	0.1139 (1.209)
Growth rate	-0.0000 (-1.099)	0.0002 (1.622)	0.0005 (2.592)**	0.0000 (1.21)	0.0000 (0.283)
F Statistic	7.063	4.706	5.419	4.896	12.571
Adjust R ²	0.3063	0.1266	0.1394	0.1171	0.1963
R ²	0.3569	0.1608	0.1710	0.1471	0.2132
N	151	281	300	323	522

*Significant at 0.05 level

**Significant at 0.01 level

Table 11 (continued)

Dependent variable is DR2 (Long Term Debt/(Total Debt + MVE)).

Panel: B					
	1993	1994	1995	1996	1997
Intercept	-0.1087 (-2.486)*	-0.0234 (-0.456)	-0.0554 (-1.194)	-0.0409 (-0.915)	0.0012 (0.059)
Trade	-0.0289 (-3.165)**	-0.0281 (-2.801)**	-0.033 (-3.104)**	-0.0246 (-2.964)**	-0.0127 (-2.521)*
Utility	0.0194 (1.468)	0.0213 (1.535)	0.0500 (3.297)**	0.0216 (1.82)	0.0065 (0.864)
Real Estate	0.0076 (0.647)	-0.0018 (-0.132)	-0.0010 (-0.069)	-0.0029 (-0.265)	-0.0123 (-1.435)
Conglomerate	-0.0272 (-2.45)*	-0.0289 (-2.198)*	-0.0274 (-1.945)	-0.0187 (-1.729)	0.0029 (0.4)
A_share	0.0002 (0.812)	-0.0000 (-0.283)	0.0000 (0.285)	0.0000 (0.144)	-0.0001 (-1.227)
S_share	0.0001 (0.398)	0.0002 (0.711)	0.0000 (0.019)	0.0004 (0.146)	0.0005 (0.44)
L_share	-0.0001 (-0.546)	-0.0005 (-0.175)	-0.0001 (-0.553)	-0.0001 (-0.588)	-0.0001 (-1.113)
Tangibility	0.0877 (3.858)**	0.0248 (2.575)*	0.0367 (3.583)**	0.0470 (4.468)**	-0.0026 (-0.665)
Size	0.011 (3.93)**	0.0067 (1.775)	0.0095 (2.662)**	0.0065 (2.168)*	0.0039 (2.19)8
Profitability	-0.2414 (-3.863)**	-0.3200 (-4.247)**	-0.3251 (-4.111)**	-0.1407 (-2.6)**	-0.1261 (-4.289)**
Growth rate	-0.0000 (-0.618)	0.0001 (1.465)	0.0003 (2.257)*	0.0000 (0.612)	0.0001 (0.017)
F Statistic	6.761	4.44	5.868	4.742	3.864
Adjust R ²	0.2956	0.1187	0.1515	0.1130	0.0569
R ²	0.3469	0.1532	0.1826	0.1432	0.0768
N	151	281	300	323	522

*Significant at 0.05 level

**Significant at 0.01 level

BIBLIOGRAPHY

- Aggrawal, A and G, Mandelker. "Managerial Incentives and Corporate Investment and Financing Decisions" Journal of Finance, 1981.
- Ajit Singh. "Corporate Financial Patterns in Industrializing Economies: A Comparative International Study" Technical Paper, International Finance Corporation, 1995.
- Bowman, R. G. "The Importance of a Market Value Measurement of Debt in Assessing Leverage" Journal of Accounting Research, 1980.
- Berger Alan and Gregory Udell. "Relationship Lending and Lines of Credit in Small Firm Finance" Journal of Business, 1994.
- Copeland and Weston "Financial Theory and Corporate Policy" 1988.
- D. E. Allen and H. Minzuno. "The Determinants of Corporate Capital Structure: Japanese Evidence" Applied Economics, 1989.
- Ferri, M. G. and W. H. Jones. "Determinants of Financial Structure: A New Methodological Approach" Journal of Finance, 1979.
- Haugen, S and Senbet, L W. "Bankruptcy and Agency Cost: Their Significance to the Theory of Optimal Capital Structure" Journal of Financial and Quantitative Analysis, 1988.
- Grier, P. and E, Zychowicz. "Institutional Investors, Corporate Discipline, and the Role of Debt" Journal of Economics and Finance, 1994.
- Gupta, C. "The Effect of Size, Growth, and Industry on the Financial Structure of Manufacturing Companies" Journal of Financial, 1969.
- J. Ang, J. Chua, and J. McConnell. "The Administrative Costs of Corporate Bankruptcy: A Note" Journal of Finance, March 1982.
- Jensen, G., D, Solberg and T, Zorn. "Simultaneous determination of Insider Ownership, Debt, and Dividend Policies" Journal of Financial and Quantitative Analysis, 1992.
- Jensen, M.C. and Meckling, W. H. "Theory of the Firm: Managerial Behavior, Agency Cost and Ownership Structure" Journal of Financial Economics, 1976.
- Jesus Saa-Requejo. "Financing Decisions: Lessons from the Spanish Experience" Financial Management, Autumn 1996.

- Keith Ward. "Corporate Financial Strategy" 1993.
- Keown, Scott, Martin, Peetty, Mcpeak and Ahmad. "Foundations of Finance" 1995.
- Kim, Kenneth A. and Limpaphayom, Piman. "A Test of the Two-Tier Corporate Governance Structure: the Case of Japanese Keiretsu" Journal of Financial Research, 1998.
- Mahmoud A. Moh'd, Larry G. Perry and James N. Rimbey. "The Impact of Ownership Structure on Corporate Debt Policy: a Time-Series Cross-Sectional Analysis" The Financial Review, 1998.
- Mandelker, G. and S. Rhee. "The Impact of the Degrees of Operating and Financial Leverage on Systematic Risk of Common Stock" Journal of Financial and Quantitative analysis, 1984.
- Mehran, H. "Executive Incentive Plans, Corporate Control, and Capital Structure" Journal of Financial and Quantitative Analysis, 1992.
- Modigliani, F. and Miller, H. "The Cost of Capital Corporation Finance and the Theory of Investment" American Economic Review, 1958.
- Modigliani, F. and Miller, H. "Corporate Income Taxes and Cost of Capital: A Correction" American Economic Review, 1963.
- Mohamad H. Mohamad. "Capital Structure in Large Malaysian Companies" Management International Review, 1995.
- Myers, S. "The Capital Structure Puzzle" Journal of Finance, 1984.
- Myers, S. "Determinants of Corporate Borrowing" Journal of Financial Economics, 1977.
- Raghuram G. Rajan and Luigi Zingales. "What Do We Know about Capital Structure? Some Evidence from International Data" The Journal of Finance, December 1995.
- Ross, Westerfield, Jaffe and Roberts. "Corporate Finance" 1996.
- Rozeff, M. "Growth, Beta and Agency Cost as Determinants of Dividend Payout Ratio" Journal of Finance, 1982.
- Sheridan Titman and Roberto Wessels. "The Determinants of Capital Structure Choice" The Journal of Finance, March 1988.

Stonehill, A and Wright, R. "Financial Goals and Debt Ratio Determinants: A Survey of Practice in Five Countries" Financial Management, 1974.

S. Grossman and O. Hart. "Corporate Financial Structure and Managerial Incentives" The Economics of Information and Uncertainty, 1982.

Thies, C. F. and Klock, M. "Variability Proxies and Capital Structure Research" Financial Management, 1991.

Xiaonian Xu and Yan Wang. "Ownership Structure, Corporate Governance, and Corporate Performance: the Case of Chinese Stock Companies" working paper.