

**CAPITAL STRUCTURE CHOICE IN A NASCENT MARKET:
EVIDENCE FROM LISTED FIRMS IN CHINA**

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Abstract

We study the capital structure decisions of newly listed firms in China - a nascent market characterized by high levels of information asymmetry, phenomenal growth and highly concentrated ownership structure and a lack of external market for corporate control. Using the data on almost all listed firms between 1993-1997, we document cross-sectionally for every year that Chinese firms employ little long-term debt in their capital structure. Further, employing Tobit regressions, we find that the amount of long-term debt is positively related to firm size and tangibility, and negatively related to profitability. These results are consistent with recent research on capital structure choice for both developed and emerging economies. There is no evidence that ownership structure influences the sample firms' capital structure choice. These results differ from those reported for the US and Malaysia. We also document that the development and growth of the stock market did not provide enough impetus for the long-term debt market to become viable during our sample period.

CAPITAL STRUCTURE CHOICE IN A NASCENT MARKET: EVIDENCE FROM LISTED FIRMS IN CHINA

1. Introduction

Research on the determinants of firms' capital structure choice had until recently been limited to public firms in North America, especially those in the US. Recent research, however, shows that there are many similarities in the underlying factors of firms' debt-to-equity choices both in the developed (Rajan and Zingales (1995) and Wald (1999)) and emerging countries (Demirguc-Kunt and Maksimovic (1999) and Booth et al. (2001)).¹ These results are striking, given that there is considerable variation across markets in terms of their legal and institutional frameworks, market capitalization, and the degree of market maturity. These studies collectively examine more than 30 countries. However, China is not included in any one of them. This paper examines cross-sectionally the determinants of capital structure choice of almost all listed Chinese firms year-by-year for the period of 1993 through 1997. Specifically, we attempt to answer the following issues:

1. The Chinese capital market is still in its infancy stage; so, are the debt ratios and the composition of debt (short-term versus long-term debt) comparable to those in the developed and emerging countries that have been studied so far?
2. Is Demirguc-Kunt and Maksimovic's (1996) finding, that debt-to-equity ratios increase with an increase in the stock market size and trading activity in countries with developing financial markets, pertinent for China during our sample period, given the substantial increase in trading activity of tradable equity and the growth in the stock market size?
3. How are different ownership structures - characterized by concentrated and non-tradable ownership by the State, diffused and tradable ownership by individual owners, and non-tradable ownership by institutional investors - related to the sample firms' long-term debt ratios in an environment of non-existent external corporate control market?

¹ Miguel and Pindado (2001) study the determinants of capital structure of only Spanish firms and find the results

4. Are the determinants of capital structure, as identified for the developed and mature financial markets, relevant for a market that is nascent and characterized by high levels of information asymmetry, phenomenal growth, a considerable presence of the State in financial intermediation and a major influence in the ever-globalizing world economy?

Our paper follows in the footsteps of Demirguc-Kunt and Maksimovic (1999) and Booth et al. (2001) with a number of distinctly different contributions. First, neither paper studies our second and third questions. In particular, we are able to directly test for the monitoring role of various categories of ownership structures with different monitoring abilities and legal rights on the sample firms' long-term debt ratios in an environment of non-existent external corporate control market. Second, whether including medium and small size firms in both papers' samples might affect their conclusions remains an open question. Both papers, especially Booth et al. (2001), use a maximum of (at best) 100 *largest* firms of emerging countries in their sample. On the other hand, we avoid this question since we have access to almost 100 percent of all listed Chinese firms - large, medium and small - on an annual basis for every year of our study period and include all of them in our empirical work. Third, given our rich and unique firm level data, our paper studies in *more* detail the interactions between the firm-specific characteristics and our sample firms' long-term debt ratios, holding the legal, institutional and financial environment constant (Smith and Warner, 1979). On the other hand, examining a number of countries simultaneously gives Demirguc-Kunt and Maksimovic (1999) and Booth et al. (2001) the opportunity to focus *more* on the interactions between legal and institutional environment and their sample firms' long-term debt ratios than the firm-specific characteristics and the firms' long-term debt ratios.

We document cross-sectionally for every year that Chinese firms employ little long-term debt in their capital structure. Furthermore, we find that the amount of long-term debt is positively related to firm size and tangibility, and negatively related to profitability. These results are largely consistent with recent research on capital structure choice for both developed and emerging economies. There is no

consistent with those documented for G-7 and other emerging countries.

evidence that ownership structure influences the sample firms' capital structure choice – a result different from those reported for the US and Malaysia. We also document that the development and growth of the stock market did not provide enough impetus for the long-term debt market to become viable during our sample period.

The rest of the paper is organized as follows: Section 2 discusses the factors, which motivate our paper, and also provides some details of the Chinese capital markets. Section 3 discusses alternative empirical measures of leverage and develops our hypotheses in detail. Section 4 provides a description of the data and methodology. Empirical results are presented and discussed in section 5. Finally, section 6 concludes the paper.

2. Why China?

a) Motivating factors for this paper

A number of interdependent reasons make this investigation important and interesting. First, theories on capital structure have been put forth in the context of the developed countries with mature capital markets. These theories have only recently been tested on firms in emerging markets. With a history of about a decade today, capital markets in China are still in their infancy in spite of the rapid and tremendous growth in the number of listed firms, China's increasingly dominant role in world politics and the globalizing world economy in addition to receiving attention, assistance and advice from western powers and institutions for its transitional steps from a "planned economy" to a more market driven one.² As a result, we expect an environment of high information asymmetry, making long-term financial contracting more costly³ and difficult. Demircuc-Kunt and Maksimovic (1999) show that (especially

² Net capital flows to China stood at \$50.1 billion in 1996 and \$34 billion in 1999. The corresponding combined figures for the five Asian "tiger" economies (Indonesia, South Korea, Malaysia, Philippines and Thailand) were \$108.1 billion and \$ -3.7 billion. (Source: Institute of International Finance, Inc., Capital Flows to Emerging Market Economies, 24 January 2000 (<http://www.iif.org>)). The total realized foreign direct investment stock at the end of 1998 stood at \$154 billion, which was approximately 16% of China's 1998 gross domestic product.

³ However, we recognize that the State remains the largest shareholder in almost all listed firms and provides implicit loan guarantees to reduce the costs of financial distress to enable the listed firms to continue as ongoing entities. This implicit guarantee should allow the listed firms to borrow more.

small) firms in emerging countries rely mostly on short-term debt and argue, following Diamond (1991, 1993) and Rajan (1993), that when the legal system is inefficient or costly-to-use, short-term debt is more likely to be employed than long-term debt.⁴ This behavior also seems consistent with the contracting cost hypothesis of and evidence in Barclay and Smith (1995). They find that firms with high levels of information asymmetries issue more short-term debt. Thus, it would be informative to explore 1) the nature of long-term debt financing patterns over time and 2) if the extant theories and the determinants of capital structure choice remain relevant in this nascent and increasingly important market.

Second, the number of privatized and listed Chinese firms increased from 177 in 1993 to 740 by 1997, representing a phenomenal growth rate of nearly 320% over five years.⁵ So, the development of the stock markets in China should be a gradual, but strong force for greater incentives for shareholder wealth maximization, influencing the firms' choices for debt contracting. A related and important issue is the development of the long-term credit markets as a function of the increase in the stock market size and trading activity. Demircuc-Kunt and Maksimovic (1996) report evidence from some countries that the existence of active stock markets increases the ability of firms in these countries to obtain long-term credit as stock market activity provides more transparency through the information in quoted stock prices and lessens these firms' risk. Given the dramatic growth in the stock market size and trading activity in China, we examine if there is any evidence of an increase in listed firms' long-term debt ratios during our study period of 1993-1997.

Third, Che and Qian (1998) show, specifically with respect to China, that in the absence of secure property rights against state encroachment and lack of rule of law to constrain the state, private enterprises contributed very little to the total industrial output of the country. The establishment of the two stock exchanges by the Chinese government is a strong endorsement for the development and implementation of the rule of law and securing property rights for private enterprises. Public ownership

⁴ Diamond (1991, 1993) and Rajan (1992) suggest that it is more difficult for borrowers to take advantage of creditors under short-term financing deals since such deals limit the period during which an opportunistic borrower can exploit its lenders without being in default.

⁵ As of the end of 1998, more than 800 firms were listed on the two stock exchanges.

and external monitoring of managerial behavior should make them more accountable for their decisions. While the external market for corporate control is still in its formation stage in China,⁶ ownership concentration differs considerably among 1) individual investors with tradable equity, 2) the State with non-tradable equity and 3) institutional investors with non-tradable equity. Instead of relying on capital infusion from the State, privatized Chinese firms' managers can opt for other sources of external capital.

Fourth, most of the emerging countries, studied by Booth et al. (2001) and Demirguc-Kunt and Maksimovic (1999), have longer stock market histories than China does. But, they have considerably lesser number of listed firms.⁷ Furthermore, we are fortunate to have access to data for almost 100% of the listed Chinese firms every year of the period of 1993 to 1997, while Demirguc-Kunt and Maksimovic (1999) and Booth et al. (2001) had access to data for only a relatively small fraction of the listed firms in their respective sample countries. Not including (due to data restrictions) medium and small size firms in their samples opens up the question of whether these two papers' conclusions would be robust. Our conclusions, on the other hand, are obtained after including in our estimations almost all listed firms.

Fifth, China is a major trading partner to most of the G-7 and other developed countries and hosts many joint ventures.⁸ Therefore, a more thorough understanding of the fundamental corporate finance issues of Chinese firms should be of interest to the managers of firms with an investment and/or intention to invest in the Chinese markets. Moreover, financial and economic instability in China will generate substantial and significant political uncertainty not only in the Far East, but also potentially around the world. Thus, an orderly, well-functioning and maturing capital market in China is also in the best interests of institutions and firms from western countries, especially those with substantial investments in China.

These factors make studying listed Chinese firms' capital structure choice and the determinants of their capital structure important and interesting.

⁶ Over time, as the markets mature and the government relaxes the constraints on the merger and acquisition activity, the full impact of external monitoring will be more visible.

⁷ For e.g., the stock exchange in India was established as far back as 1875 while the stock exchange in Malaysia was established in 1973, in Korea in 1956, in Thailand in 1974 and in Pakistan in 1949.

⁸ Among the major US corporations that have invested in China include General Motors, Ford, Coca Cola, Hewlett Packard, United Technologies, ARCO, General Electric, Motorola and Cargill. (Source: *US Department of State*)

b) A brief review of the recent developments in Chinese stock markets

China reopened its stock markets in the 1990s, nearly 50 years after they were closed in 1949. Even though the origins of market-oriented economic reforms in China dates back to 1979, much of the forward thrust towards economic liberalization has come after the establishment of the two national stock exchanges, the Shanghai Stock Exchange in December 1990 and the Shenzhen Stock Exchange in July 1991. Both stock exchanges have expanded rapidly and dramatically since their openings. As of December 31, 1997, the total market capitalization had reached US\$22.6 billion.

Gordon and Li (1999) state that the Chinese stock market exhibits some distinctly different features when compared to mature financial markets. For example, the government plays a dual role as a regulatory agency and owner of firms. Also, there is a high degree of market segmentation in terms of tradable and non-tradable shares.

A two-tier regulatory structure was established in 1992 to strengthen the implementation of securities law. At the first tier, the main regulatory body overseeing the stock market activities and responsible for overall policy is the People's Bank of China (PBC) (China's central bank). The responsibilities of the PBC include listing of stocks, licensing of financial institutions and foreign agents, and taking disciplinary action when required. Thus, the PBC's functions are similar to those of the Securities and Exchange Commission (SEC) in the United States. At the second tier is the China Securities Regulatory Commission (CSRC) that is responsible for day-to-day regulation and activities such as the identification of firms for listing.

Common shares that trade on the two exchanges are classified into four categories: A, B, H and N shares, based on shareholders' residency and nationality. A_shares are by far the largest segment of the stock market and are sold only in Chinese currency, *Renminbi* (Chinese Yuan), to domestic investors, both individuals and institutions. There are four different types of A_shares, depending on who owns them. These include State shares, legal person shares, employee shares and tradable (liquid) A_shares.⁹

FY2000 Country Commercial Guide: China).

⁹ Only about one-third of the outstanding A_shares, held mostly by individual investors, are tradable. A_shares

This compartmentalization of A_shares into different shareholder groups and the strict non-transferability across groups ensures both the government's control of these firms and diversity in ownership. B_shares are sold only to foreign investors and some large authorized domestic financial institutions, are priced and traded in U.S. dollars on the Shanghai Stock Exchange and in Hong Kong dollars on the Shenzhen Stock Exchange. H_shares are issued and traded on the 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.

Most listed Chinese firms, whose shares trade on one of the two stock exchanges, are former state-owned enterprises that were privatized. A listed firm is usually established through a "share off". A firm's assets are categorized into two types: assets directly used in manufacturing the product and other assets such as investment in clinics, day-care facilities, and the payroll of "all retired workers". In a share off, the first step is to separate the not-for-profit assets from the total assets. The second step involves hiring an accounting firm to audit the last three years' financial statements of these candidate firms. If the newly listed firm is formed from a state-owned enterprise, the state-owned assets are transformed into State shares in the newly listed firm. If the newly listed firm is formed from a joint-venture or a corporate enterprise, those assets are transformed to legal person A_shares. Sometimes, other related enterprises and some financial institutions are willing to buy legal person A_shares to become legal person co-founders. The rest of the shares (including A_, B_ and H_shares) are offered to employees and public investors through initial public offerings.

Banks hold much of the debt issued by the state-owned enterprises (SOEs). The Chinese banking structure is highly concentrated with four state banks and eleven commercial banks. Commercial banks have no obligation to lend to the SOEs and therefore hold very little debt of the SOEs. However, they face the same interest rate structure as the state banks. The Chinese government has made many pronouncements since 1998 about the impending reforms in the banking system. Among the major

held by the State, legal person shareholders and employees are not tradable.

changes the government hopes to limit is the influence of local officials in making lending decisions and ensuring that most such decisions are made on the basis of commercial considerations.

A review of the tax system in China shows that many of its features are common with those in most other countries that have been studied so far. Enterprises, including the state-owned enterprises, joint ventures and private enterprises, pay taxes at a marginal rate of 33% on their taxable income. As in western economies, interest is a tax-deductible expense for firms. The laws also allow for tax loss carry-forwards to be offset against taxable income of subsequent years. There was a substantial overhaul of the corporate tax legislation that became effective on January 1, 1994.¹⁰

It is worthwhile noting that publicly listed firms represent only a small subset of China's universe of enterprises. Having been chosen for listing on one of the two stock exchanges, these firms are more likely to be among the better performing group of enterprises. They are generally large or medium-size firms compared to the size of the non-listed firms.¹¹ Furthermore, as mandated by CSRC, the listed firms go through a significant restructuring process before their initial public offering. Accounting systems are converted to international standards and information disclosure standards set by the CSRC have to be met.

c) Some descriptive and comparative statistics for the Chinese market

Table 1 provides some statistics of the Chinese market for our sample period of 1993-1997. While the time periods are not directly comparable, it is still instructive to compare the economic variables in Table 1 with those for the emerging markets as presented in Booth et al. (2001; Table 2, p. 92). The number of listed Chinese companies employed in our study is substantially more than that for any of the emerging markets. We are fortunate to include nearly all the firms traded on either of the two

¹⁰ For more details, please see [wysiwyg://248/http://www.geocities.com/WallStreet/8366/e14.htm](http://www.geocities.com/WallStreet/8366/e14.htm).

¹¹ Better performing state-owned enterprises are the first candidates to be listed and sold to the public. This may lead to a self-selection bias in our sample. However, self-selection bias is present even more severely in Demirguc-Kunt and Maksimovic (1999) and Booth et al. (2001) as they have access to only a (sometimes a small) fraction of

stock exchanges in China. The data constraints force Booth et al. (2001) to study only (sometimes a small) fraction of the listed firms in the other emerging markets, despite the fact that some of the countries examined in their study have a fairly long stock market history. The total stock market value of China in 1997 was substantially lower than the stock market value of other emerging countries, such as South Korea and Malaysia in 1990. In addition, the ratio of the total stock market value to gross domestic product (GDP) ratio was only 2.5% in China in 1997. This is lower than the average value for the 1981-1989 period for all emerging markets in Booth et al. (2001) and substantially below the values reported for Malaysia, Jordan and South Korea. These statistics clearly display the nascent nature of the Chinese capital markets. The rapid increase in the number of listed companies over the years, the stabilization of the exchange rate and the decline in inflation will all likely contribute to the growing importance of the capital markets in the Chinese economy in the future. It already exhibited a growth rate in excess of 10 percent during our sample period, helped in large part by the increase in foreign direct investments. The proportion of external debt to GDP ratio was kept relatively stable around 15 percent.

- insert Table 1 here -

For any vibrant economy, it is important that lenders have adequate legal protection of their claims. Since most of the state-owned enterprises never defaulted on their obligations, as these were guaranteed by the State, China did not have any bankruptcy law until 1988. On November 1, 1988, the Enterprise Bankruptcy Law was passed for an initial trial period. It was only on April 9, 1991 that the Civil Procedural Law was passed that established the procedure for corporations to seek legal protection from creditors by filing for bankruptcy. Cao (1998) reports that bankruptcies increased from 117 cases in 1991 to 6,227 cases by 1996. However, this still represented only 0.6 percent of all registered enterprises in that year which is below the international average of 1%.¹²

listed firms in their sample countries.

¹² The Chinese government has repeatedly stated that bankruptcy legislation is an integral part of the financial reform process. The recent bankruptcy of Guangdong International Trust and Investment Corporation (GITIC) clearly shows the government's resolve and commitment to allow state-owned enterprises to declare bankruptcy rather than invest more resources into failing enterprises. GITIC, an arm of the provincial government of Guangdong province, was forced by PBC to close due to its inability to repay its approximately \$4 billion debt

3. Defining leverage and the development of testable hypotheses

a) Alternative definitions of leverage

The broadest definition of leverage is the ratio of total debt, including both short-term and long-term debt, to total assets. Rajan and Zingales (1995) argue that the use of total debt may overstate the level of leverage for a firm since it often includes items, such as accounts payable, that may be used for transactions rather than for financing purposes. Total debt, according to these authors, is not a good indicator of whether the firm is at risk of default in the near future. They suggest that it is more appropriate to define leverage on the basis of long-term debt. We follow Rajan and Zingales (1995) in defining our leverage variables and use two different measures of leverage, based on long-term debt. The first measure, LTD1, is computed as long-term debt divided by total book value of assets. The second measure, LTD2, is computed as long-term debt divided by total market value of assets.¹³ The total market value of assets in LTD2 is calculated as the sum of book value of debt and the market value of equity, MVE, where $MVE = Price_{\text{year-end}} * (\text{Total number of all outstanding shares minus total number of H_shares minus total number of B_shares})$. The price data on B_ and H_shares, which are priced in US\$ and HK\$, respectively, are not available. We, therefore, exclude them in computing MVE. Since B_ and H_shares account for only about 5% of total shares outstanding, we do not expect their exclusion to affect significantly our results. It is worth noting that the long-term debt employed by firms in our sample consists almost exclusively of bank debt.¹⁴

b) Development of the hypotheses

The extant literature on capital structure is rich in its theoretical underpinnings and empirical tests. We draw upon this literature, and also the unique features of the institutional environment in China, to formulate our hypotheses about the determinants of the capital structure for Chinese firms.

obligations. GITIC was the first non-banking financial institution to file for bankruptcy protection. (See *Asian Economic News*, January 25, 1999.)

¹³ We also provide descriptive statistics in Table 3 for the similarly defined debt ratios using total debt of a firm.

¹⁴ Bowman (1980) shows that the cross-sectional correlation between the book and market values of debt is large.

The theories on capital structure suggest that firms select their capital structures by taking into account various costs (such as agency and bankruptcy costs) and benefits of debt and equity financing. Most explanations are premised on the existence of information asymmetry and agency costs. Thus, the static trade-off theory, for example, accounts for capital structure variations across countries and industries on the basis of differences in tax rates, bankruptcy costs and asset specificity. On the other hand, the pecking order theory rests on the information asymmetry between the firm's management and the market, while the agency cost arguments rest on the tradeoffs between the agency costs of debt and equity.¹⁵

Empirically distinguishing between these theories has been problematic since the same variables have served as proxies for the underlying theoretical reasons. Using time series data, Shyam-Sunder and Myers (1999) demonstrate that most empirical tests lack sufficient statistical power. Booth et al. (2001) argue that much of the recent research has been limited to explaining the cross-sectional variations in capital structure choice, using financial variables without regard to necessarily confirming or disputing one theory or the other. We also take a similar approach to that of Booth et al.'s (2001) and limit ourselves to identifying the important determinants of capital structure in the context of Chinese firms.

Some of the commonly cited explanations for the observed capital structures of firms include: a) interest tax shields (Modigliani and Miller (1963); Berens and Cuny (1995)), b) financial distress and bankruptcy costs (Scott (1977); Castanias (1983); and Haugen and Senbet (1988)), c) availability of non-debt tax shields (De Angelo and Masulis (1980)), d) signaling (Flannery (1986); Kale and Noe (1990); Diamond (1991, 1993); and Shah (1994)), e) agency costs of debt and equity (Jensen and Meckling (1976); Myers (1977); and Smith and Warner (1979)) and f) the availability of investment opportunities (Myers (1977); Stulz (1990); Berger, Ofek and Yermack (1997); Smith and Watts (1992); and Hart and Moore (1990)). Empirical evidence shows that industry classification, firm size, tangibility of assets (also called asset specificity), profitability and growth rate of assets, as well as ownership concentration, are

Hence, the mis-specification from using book value measures of debt is probably not large.

¹⁵ Excellent surveys of the literature on capital structure can be found in Bradley, Jarrell and Kim (1984) and Harris

important determinants of capital structure choice (Titman and Wessels (1988); Smith and Watts (1992); Rajan and Zingales (1995); Demirguc-Kunt and Maksimovic (1999); Wald (1999); Miguel and Pindado (2001); and Booth et al. (2001)). Evidence also shows that managers' opportunistic behavior and the ensuing agency problems are linked to the differences in the capital structure of firms in both the developed and emerging economies.

Our data allow us to examine empirically the role of 1) ownership structure, 2) firm specific characteristics, namely, firm size, tangibility, profitability and growth rate of assets, and 3) industry membership in the determination of the capital structures of listed Chinese firms. Each of these factors is discussed in more detail next.

c) Ownership structure

The presence of and monitoring by an external corporate control market has been a key argument for minimizing managers' opportunistic behavior. Such opportunistic behavior can lead to sub-optimal decisions. The degree of effectiveness of an external corporate control market in disciplining firms' managers depends on a firm's ownership structure, among other things. On the one hand, it may be limited in (easier for) firms with a concentrated ownership structure with an opposition (alliance) to (with) the external market's potential actions. On the other hand, a high concentration of ownership in the hands of an owner-manager may align the owner-manager's interests with other shareholders' interests, rendering the external corporate control market relatively immaterial.

As Rajan and Zingales (1995) note, countries with diffused ownership, such as the US, UK, and Canada, have a much more active market for corporate control while countries with more concentrated ownership or with inter-company cross ownership, pyramid ownership and dual class shares, such as Japan and Germany, do not have a significant market for corporate control. The external corporate control market, as we know it, is currently non-existent in China but we do observe different ownership structures. Individual investors have diffused and tradable ownership; the State has concentrated and non-tradable ownership; and the institutional investors have non-tradable ownership. Therefore, we investigate

and Ravis (1991).

how these different ownership structures affect the sample firms' long-term debt ratios. Below, we first discuss the agency-theoretic arguments for ownership structure's effects on leverage and then elaborate on the Chinese firms' ownership structure patterns.

Jensen and Meckling (1976) show that when ownership and control of a firm are separated, managers may take sub-optimal decisions or consume excessive perquisites to improve their own welfare at the expense of other shareholders. The concentration or dispersion of the ownership in a firm represents a source of power that is and can be used either to support or oppose the existing management. Thus, ownership structure is a relevant determinant of a firm's capital structure. The management of a firm with a diffused ownership will be monitored with much less vigilance by its shareholders than the management of an otherwise identical firm with a high concentration of ownership. This suggests, on the one hand, a willingness by managers to subscribe to the monitoring and discipline by debtholders in the presence of an external market for corporate control. Hence, the relationship between the number of shareholders and a firm's long-term debt ratio should be positive. On the other hand, Rozeff (1982) indicates that as the number of shareholders of a firm increases, there will be either a negative or insignificant relationship between the number of shareholders and a firm's long-term debt ratio.

The theory suggests that the presence of large shareholders would increase monitoring by these shareholders, reduce the agency costs of equity, and enhance the use of equity as a source of financing. The monitoring provided by debtholders is less valuable for firms with concentrated ownership. In this case, monitoring provided by shareholders may be a substitute for the disciplinary role of debt (Grier and Zychowicz (1994)). This suggests a negative relationship between the number of shareholders and a firm's long-term debt ratio.

Although the theory appears to be clear, the empirical evidence is not. Aggarwal and Mandelker (1987) and Mehran (1992) find a positive relationship between the percentage of shares held by insiders and US firms' leverage. On the other hand, Friend and Hasbrouk (1988) and Jensen et al. (1992) report a negative relationship for a sample of US firms. The results from Mohammed et al. (1998) for a sample of

Malaysian firms indicate that both insider ownership and outsider ownership have a significant negative relationship with a firm's long-term debt ratio.

The diversity of different classes of shareholders of A_shares in China allows us to examine whether there is any empirical relationship between the proportion of A_shares owned by the individual investors, the State and the legal persons (institutional shareholders in China) and the long-term debt ratios of sample firms.¹⁶ The ownership by individual investors of A_shares is quite diffused.¹⁷ Since the external market for corporate control is non-existent in China, we expect the relationship between the percentage of A_shares owned by individual investors and the sample firms' debt ratios to be negative or insignificant. On the other hand, the State's concentrated ownership in the newly listed firms along with its role in reducing the financial distress costs of the sample firms imply a significant and positive relationship between the percentage of A_shares held by the State and the sample firms' long-term debt ratios. Finally, the sign for the relationship between the ownership concentration of legal person shareholders and the long-term debt ratio is ambiguous. This is because legal person shareholders are both owners and creditors of the firm.¹⁸ This is a situation similar to that in economies where banks dominate financial intermediation. So, the sign of the relationship between the ownership concentration and leverage for legal person shareholders depends on the dominance (or a lack of it) of the benefits of the reduced agency costs by using more equity or these shareholders' incentive to lend more to the sample firms.

The percentage of A_shares held by the State, legal person shareholders, and individuals are used as measures of ownership in the empirical analyses.

d) Firm Specific Characteristics

d.1) Firm Size

¹⁶ Since data on the percentage of shares owned by Chinese managers are not readily available, we cannot test directly the influence of managerial ownership on a firm's financing decision. Anecdotal evidence seems to suggest that the number of shares held by managers is usually very small (only a few thousand) during our sampling period.

¹⁷ Only a handful of shareholders are in the list of the ten largest shareholders and almost no individual shareholder has any seat on the board of directors.

The positive relationship between debt levels and firm size has been documented in many studies (Scott and Martin (1976); Ang et al. (1982); and Titman and Wessels (1988)). There are several reasons for the observed relationship. In most studies, firm size has been considered a good proxy for the firms' business risk.¹⁹ Large firms tend to be more diversified and less prone to bankruptcy, have lower transaction costs and are able to issue debt at a cheaper rate. Consequently, large (and multi-product) firms should, on average, be less risky and more capable of supporting higher levels of debt as compared to small (and single-product) firms.²⁰ In China, larger firms are significant employers. Since the size of a firm and the number of employees to be laid off, in case of a bankruptcy, are quite correlated, we conjecture an implicit, but more committed protectionism by the government in favor of larger Chinese firms. This, in turn, may induce management to assume a higher level of long-term debt than would be otherwise sustainable. So, we expect a positive size effect on the Chinese firms' long-term debt ratios.

We measure size by computing the natural logarithm of a sample firm's annual sales revenues.

d.2) Tangibility

There are two different arguments with regard to the influence of tangibility on a firm's debt ratio. On the one hand, tangible assets serve as collateral and secure the debt of a firm (see, for e.g. Scott (1977)). Researchers have also argued that tangible assets serve as a good proxy for reduced agency costs, resulting from the conflict of interest between bondholders and shareholders (Prowse (1990); Mackie-Mason (1990); Smith and Watts (1992); Jensen et al. (1992); Grier and Zychowicz (1994); and Booth et al. (2001)). Therefore, a high degree of tangibility is expected to influence positively a firm's ability to obtain more debt financing. On the other hand, Berger and Udell (1994) show that firms, which

¹⁸ Xu and Wang (1997) suggest that the legal person shareholders have a stake considerably larger than that of individual investors. They can and do exercise corporate control directly as members of the board of directors.

¹⁹ Studies that have attempted to measure the impact of business risk on capital directly include Prowse (1990), Bathala et al. (1994), Barton et al. (1989), Jensen et al. (1992) and John (1993). These studies use the standard deviation of EBITDA as a proxy for business risk. The results are, however, inconclusive. We are unable to employ this measure of business risk directly due to data limitations.

²⁰ Friend and Lang (1988) and Friend and Hasbrouck (1988) contend that since ownership in larger firms is more dispersed and diluted, managers may have the incentive to issue less long-term debt to reduce the risk of bankruptcy. Furthermore, Flannery (1986) argues that larger firms will signal their better quality by issuing more short-term debt, since this kind of debt can be more easily rolled-over. However, Marsh (1982) documents that, on

develop a close relationship with their creditors, need to provide less collateral in obtaining debt financing. In this context, the relationship and the increased and more intimate monitoring by creditors substitute for physical collateral. Berger and Udell's (1994) argument indicates either a weakly positive or no influence of tangibility on a firm's debt ratio.

The Berger-Udell (1994) argument appears to be applicable to Chinese firms. They usually have very good relationships with their banks. Moreover, the State is the largest shareholder for most firms and its presence has the potential to make the lenders demand less collateral in lending to firms.

We hypothesize a weakly positive or insignificant relationship between tangibility and leverage and define tangibility as the ratio of fixed assets over total assets (Rajan and Zingales (1995)).

d.3) Profitability

Myers (1984) and Myers and Majluf (1984) suggest that firms may employ a 'pecking order' in financing their assets. This argument indicates that firms will first use internally generated funds and that, if and when external financing becomes necessary, debt will be given priority over equity. Thus, a firm's past profitability and retention of its cash flows should be inversely related to its debt ratio. Consistent with this hypothesis, Titman and Wessels (1988), Friend and Lang (1988), Rajan and Zingales (1995) and Wald (1999) report a negative relationship between profitability and debt ratio for the U.S. and the G-7 countries, with the exception of Germany. Likewise, Booth et al. (2001) report a negative relationship between debt ratio and profitability for emerging countries.²¹ They point out that profitability relates to the significant agency and informational asymmetry problems and to the undeveloped nature of long-term debt markets in emerging economies and that a negative relationship between profitability and leverage might be a proxy for the difficulty in borrowing against intangible growth opportunities in these countries.

average, large firms have higher levels of long-term debt compared to smaller firms.

²¹ Singh (1995) finds that firms in emerging countries have relied heavily on external equity and suggests that the relative external cost of equity has fallen while the relative cost of debt has increased in these countries, making external equity more attractive. Singh's (1995) work, however, does not provide any evidence on the firms' preference for internally generated funds versus externally generated funds.

The listed Chinese firms are still in their early growth stages while the nascent nature of the Chinese capital markets offers many significant agency and informational asymmetry problems. Thus, we hypothesize that profitability has a negative influence on the debt ratios of the listed Chinese firms.

We define profitability as the ratio of operating income before depreciation over total assets (Titman and Wessels (1988)).

d.4) Growth rate of assets

It has been well-recognized that availability of investment opportunities and future growth influences the debt policy of the firm. Myers (1977) shows that firms with growth options should use less long-term debt or preferably use short-term debt to minimize the under-investment problem resulting from the conflict of interest between bondholders and shareholders.²² Furthermore, financial theory suggests that equity or equity-like securities, such as convertible debt, are more appropriate in accessing funds from the capital markets in the face of inherent problems of contracting under considerable information asymmetry. On the other hand, Gupta (1969) argues that growth can enhance a firm's future borrowing capacity and that rapidly growing firms will tend to finance expansion with debt. Hence, growth should be positively related to leverage. Finally, the presence of the State in China plays a role similar to that played by a *keiretsu* in Japan. In explaining the information differences between the U.S. and Japan, Wald (1999) refers to Hoshi et al.'s (1990) work on Japanese firms and states that "Japanese firms experience lower costs of financial distress because the members of a *keiretsu* have additional information about the firm's status and can invest profitably in downturns" and that this result explains why the conflict between debtholders and equityholders in Myers' (1977) model does not apply in Japan. Thus, the negative relationship between growth and leverage, as in Myers (1977), may not apply in the Chinese context either.

²² Berens and Cuny (1995) show that the impact of growth, even for firms with moderate growth, will be reflected in their equity, but not debt, values. Hence, they argue that the observed low debt ratios for firms with significant growth options may simply be driven by the higher valuation of their equity.

We note that available empirical evidence is visibly more consistent with Myers (1977) (see Titman and Wessel (19988); Barclay and Smith (1995); Demirguc-Kunt and Maksimovic (1999) and Rajan and Zingales (1995)).²³

We hypothesize either an insignificant or a positive relationship between growth rate and sample firms' long-term debt ratio and use the percentage change in total assets, between the current year and the year just preceding that, as our variable for the growth rate.²⁴

e) Industry Classification

Titman (1984) and Titman and Wessels (1988), among others, show that industry classification influences firms' capital structure.²⁵ These researchers argue that, firms, which manufacture products with a requirement of specialized post sale servicing and spare parts, will find liquidation especially costly. Consequently, such firms are expected to use less debt financing. Furthermore, spending on research and development and tangible assets varies considerably across industries. These factors have been found to be significantly related to the proportion of debt employed by firms. In the context of China, Xu and Wang (1997) document that industry classification has a significant effect on the financial performance of the listed firms. We, therefore, hypothesize that capital structure should vary across different industry groups among listed firms in China. Specifically, based on the extant literature, we expect firms in more asset-intensive industries to have a higher level of leverage compared to firms in other industries.

Using dummy variables, we test if the leverage ratios are significantly different across the industries of manufacturing, utility, trade, real-estate and conglomerate in China.²⁶

²³ Booth et. al. (2001) present mixed evidence on the relationship between debt ratio and growth opportunities.

²⁴ Our measure of growth may not be adequately capturing the cross-sectional variation in growth rates across firms. More preferable measures of growth would be the mean growth rate in assets over a 3- or 5-year period, preceding the fiscal year when the variations in long-debt ratio are being investigated. Alternately, measures such as research and development spending, as used by Titman and Wessels (1988), may serve as better proxies. Data limitations preclude us from employing these alternative proxies.

²⁵ An earlier study by Remmers, Stonehill and Wright (1974) had presented dissenting evidence on this issue.

²⁶ 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. Allen and Mizuno (1989) also document an industry effect for Japanese firms.

4. Data and research methodology

a) Data description

Our data come from the *'Annual Reports of Listed Company in China'* and the *'Statistics Year Book'*, issued by the two stock exchanges, and *'China Listed Company Reports'*, issued by China Cheng Xin Securities Rating Co., Ltd. Annual data are obtained from the balance sheets, income statements, and the sources and uses of funds statements for all listed firms for each year during the period of 1993-1997. The sample firms are from six different industries: finance, manufacturing, trade, utility, real estate, and conglomerates. We decided not to include financial firms, such as banks, trust, and insurance firms, in our sample as their debt amounts are not strictly comparable to the debt amounts issued by non-financial firms.

Table 2 classifies by industry the number of Chinese firms that were listed on either the Shanghai Stock Exchange or the Shenzhen Stock Exchange in each year between 1993 and 1997. From 177 firms that were trading at the end of 1993, the number grew quickly to 740 by the end of 1997, an increase of nearly 320 percent over a five-year period. Most of the increase occurred in the manufacturing sector, where the number of listed firms grew from 105 in 1993 to 469 by 1997. By the end of 1997, more than 63% of the listed firms belonged to the manufacturing sector. The next biggest sector was trade with 18% of the all listed firms. Except for 1995, the number of newly listed firms in each year is large.²⁷ Though the Chinese financial markets still remain smaller than those in developed countries, the rapid growth in the number of listed firms in the last decade provides a vivid picture of the speed with which the economy is transforming towards a market driven one.

- insert Table 2 here -

b) Descriptive statistics for leverage variables

Table 3 provides the means and standard deviations of alternative measures of debt by year, by the year in which firms were listed for the first time, and by industry in the year the sample firms were

²⁷ The stock market dropped nearly 20 percent in 1994, prompting the government to cancel a large number of planned privatizations for 1995. The market also exhibited a high volatility in 1994, contributing to the drop in the

listed for trading. As noted in section 3.a above, LTD1 and LTD2 refer to debt ratios based on long-term debt while TD1 and TD2 refer to debt ratios based on total debt.

- insert Table 3 here -

We see in Panel A that the year-by-year means of LTD1 vary from a low of 0.0665 in 1996 to a high of 0.0744 in 1993 with an overall 5-year mean of 0.0708. The standard deviations appear to be stable around 0.09 every year during the 5-year period. On the other hand, the year-by-year means of LTD2 vary from a low of 0.0269 in 1993 to a high of 0.0479 in 1995 with an overall 5-year mean of 0.0363. While the standard deviations of LTD2 exhibit more variability than the standard deviations of LTD1, they are also relatively stable around 0.06. The overall mean of LTD2 over the same 5-year period is 0.0363. Overall, these results indicate that the sample firms use little long-term debt. This finding becomes more evident when we contrast these ratios against the same ratios for other emerging countries. Demircuc-Kunt and Maksimovic (1999) and Booth et al. (2001) report debt ratios (scaled by the market value of assets) above 10 percent for all countries in their samples with the exception of Brazil, Zimbabwe and Malaysia. The use of long-term debt by publicly traded Chinese firms is the lowest among all the countries studied in the literature to date, despite the fact that Chinese economy is much bigger in relation to many of the emerging markets that have been studied so far. These findings are consistent with the contracting-cost arguments (Barclay and Smith (1995)). They note that firms, which operate with high levels of information asymmetry are more likely to use short-term debt. This is also consistent with with Demircuc-Kunt and Maksimovic (1999), who following Diamond (1991, 1993) and Rajan (1992), suggest that short-term debt is more likely to be employed than long-term debt to minimize borrowers' opportunistic behavior in countries with inefficient or costly-to-use legal systems. The use of low levels of long-term debt by Chinese firms is also consistent with the findings documented by Booth et al. (2001) for other emerging markets.

The 5-year means of total debt ratios, TD1 and TD2, are 0.4292 and 0.2159, respectively. Our measure of total debt is inclusive of all non-equity liabilities. Rajan and Zingales (1995) report the ratio of

number of firms privatized in 1995.

non-equity liabilities, based on book value, to total assets for the G-7 countries (see Table 3, pp. 1430). These ratios vary from a low 0.57 for United Kingdom to a high of 0.72 for Germany.²⁸ Thus, the corresponding ratios for China are much lower. It appears from these comparisons that a lack of well-developed credit markets and a high degree of informational asymmetry, associated with the nascent nature of the Chinese capital markets, significantly limit the Chinese firms' borrowing ability. As documented for the emerging economies, we find that much of the total debt in China is short-term. In relation to the emerging economies, studied by Booth et al. (2001), the total debt of Chinese firms falls somewhere in the middle of the total debt of firms in these countries.²⁹

Comparing the long-term debt ratios with the total debt ratios in Panel A, it is clear that the ratio of LTD1 to TD1 and the ratio of LTD2 to TD2 have varied between 10% and 20%. Demirguc-Kunt and Maksimovic (1999) report a long-term debt ratio above 20 percent for all developing countries. We conclude that Chinese firms differ significantly in their use of long-term debt from firms both in developed and emerging countries. It is, therefore, interesting to investigate whether the capital structure determinants in China are similar to or different from those found in other markets. We undertake this exercise in section 5.

The means and standard deviations of the long-term debt and total debt ratios in the year the firms were privatized are reported in Panel B. The results are pretty much stable from one year to the next and are overall comparable to those in Panel A. The mean of LTD1 across all years is 0.0772 while the mean of TD1 across all years is 0.4176. The 22 firms that were listed in 1995 had the highest means for both the long-term debt ratios and the total debt ratios.

Panel C provides the break-up of long-term and total debt ratios by industry in the year the firm was listed for trading. The utility industry has the highest value for LTD1 at 0.1485 while trade shows the lowest average for LTD1 with the next highest being the conglomerate industry. The corresponding

²⁸ Rajan and Zingales (1995) also report the total debt (long-term plus short-term) ratios for the G-7 countries in the same table. For example, the total debt ratios for the sample of U.S. firms are 0.31 (TD1) and 0.24 (TD2), and for the sample of Japanese firms are 0.35 (TD1) and 0.24 (TD2).

²⁹ The average total debt ratio for the listed Chinese firms is comparable to the ratio of 0.45 reported by Mohammed

value for the manufacturing industry is 0.0746. This is consistent with evidence found in the extant literature that asset-intensive firms have higher levels of debt than those of (more) service-oriented firms. The low value of TD1 for the utility industry in comparison to all other industries shows that firms in this industry carry less short-term debt.

We also track the long-term debt and total debt ratios over the years after the sample firms were listed. The results are plotted in Figure 1. It should be noted that the number firms used to compute the ratios varies for years 0 to 4 after listing since firms that were listed in 1993 could be tracked for 4 years while firms that were listed in 1997 could not be tracked after listing. Year 0 is the year the firms got listed on one of the two exchanges. The ratio of LTD1 is flat through time while there is a slight upward slope in the ratio of TD1. This suggests that any new debt raised by the newly listed firms was short-term in nature. The ratios LTD2 and TD2 increase in year 2 but then fall back close to their original values.³⁰

- insert Figure 1 here -

Figure 2 shows the long-term debt ratio patterns for quartiles of firms, sorted according to their total assets. While we report the results only for 1997 – the most recent sample year, we examine this issue for each sample year and find that the results in each sample year are totally consistent with those in Figure 2.³¹

- insert Figure 2 here -

Figure 2 demonstrates that firms in higher quartiles of total assets obtain increasingly more long-term debt in China. We note that this is the first *complete* evidence on this issue from an emerging economy. Demircug-Kunt and Maksimovic (1999) do not provide a separate picture on this issue for the developed and emerging countries, but rather offer evidence after combining data from developed and emerging economies, leaving open the question of whether the relationship between firm size, measured

(1995), for the Malaysian firms for the 1986-1990 period.

³⁰ Since these ratios are scaled by the market value of the firm, this result could simply be driven by the decline in the market value of the sample firms' equity due to the worsening conditions in the stock market in the mid 1990s.

³¹ These results are available from the authors upon request.

in total assets, and long-term debt is driven by the long-term financing patterns of firms in developed countries. Booth et al. (2001) do not offer any evidence on this issue for firms from emerging countries.

c) Evidence on the development of long-term debt market

The State or state-controlled financial institutions had provided most (if not all) of the financing of the state-owned enterprises in China before the process of financial liberalization began and continue to do so even today. Neither an independent credit evaluation system nor a private market for financial intermediation has existed.

An important question we investigate is whether Chinese firms' long-term debt ratios increase with an increase in the stock market size and trading activity during our sample period (Demirguc-Kunt and Maksimovic, 1996).³² Greenspan (1999) notes that multiple alternatives to transform an economy's savings into capital investment offer a set of backup facilities should the primary form of intermediation fail. Citing the examples of the United States and Sweden, Greenspan (1999) goes on to state that the existence of vibrant capital markets reduce the impact of banking shocks and that one of the main reasons for the protracted credit crunch in Japan in the 1990s has been the over-dependence on the banking system for credit. Thus, given the recent financial contagion problems in the Far East, the development of the long-term credit market in China is an important issue not only for this market, but also especially for those surrounding it.

The results presented in Table 3 and Figure 1 also provide the evidence that the development of the two stock exchanges and a substantial increase in the stock market size, in the number of listed firms and in trading activity in tradable issues in this nascent market since the early 1990s was not a force for an increase in the annual long-term debt ratios of listed Chinese firms during our sample period. These results are not consistent with those in Demirguc-Kunt and Maksimovic (1996) for other countries and may suggest, following Demirguc-Kunt and Maksimovic (1999, p. 303), that "the additional liquidity that stock markets provide makes it easier for informed shareholders to escape the consequences of failed

³² A properly functioning stock market provides reliable, relevant and timely information, brings transparency and reduces information asymmetry that exists between the firms and their investors (Grossman (1976); Grossman and

gambles, and therefore encourages risk-taking behavior costly to shareholders.” Alternatively, information revealed through the trading of tradable issues might have been only marginal in the Chinese context. This is because the State and institutional investors maintain a large and *non-tradable* ownership position in these firms. Thus, the prices quoted do not necessarily make the listed firms less risky.³³

d) Descriptive statistics for ownership and firm specific attributes

Table 4 provides descriptive statistics on ownership and firm specific attributes for our sample. We observe in Panel A that the typical firm, listed during our sample period, was large (measured in local currency) and had a tangibility ratio of around 43%. Measured in US\$, however, the average firm is small in comparison to average firms in the G-7 countries and most emerging markets. The mean of total assets in US\$ varies from \$12.68 million to \$16.76 million. In addition, the typical firm had been growing over the most recent year at an average rate of 32.11% (excluding data for 1993) and had an overall mean profitability ratio (based on sample firms’ operating income) of 5.33%.

- insert Table 4 here -

Panel B of Table 4 shows the distribution of ownership patterns by year. As was noted earlier, shares are categorized according to shareholders’ residency and nationality: A_, B_ and H_ shares. The proportion of liquid A_ shares remained stable around 29% of the total number of all shares during the 1993-1997 period. By contrast, the proportion of B_ shares declined from 5.03% in 1993 to 3.86% in 1997 while the proportion of H_ shares constituted less than 1% of the total number of all shares over the 1993-97 period. It is interesting to note that nearly 65% of the entire set of shares are not traded and are owned by the state, legal persons and employees. The proportion of State shares declined from above 33% in 1993 to below 30% in 1997 while the proportion of legal person shares stayed stable around 31-32% during the sample period. While the proportion of employee shares grew from a low of 1.62% in 1994 to 4.55% in 1997, it still constituted a small fraction of the total number of all shares outstanding. The data in Panel B on distribution of equity ownership in listed firms show that the State continued to

Stiglitz (1980)). So, there should be more transparency in China after the development of the stock exchanges.

³³ Booth et al. (2001, p. 94) also observe this point by stating: “If a large amount of equity is not traded, it can be

maintain a significant presence in these firms during our sample period. The State's effective control is even greater since many of the legal person shareholders are either directly owned or significantly controlled by the State. As we noted earlier, while the market for corporate control does not exist in China, given its nascent nature, the high effective concentration of ownership by the State will likely be a major impediment for any takeover market coming into being in the near future.

e) Research methodology

The dependent variable, the ratio of long-term debt to total assets, (either LTD1 or LTD2), is bounded on the lower end by zero. Therefore, we use a Tobit estimation procedure to assess the effect of industry classification, firm size, tangibility of assets, profitability, growth rate of assets and ownership concentration on the dependent variable. The analyses are undertaken for each year from 1993 to 1997. The Tobit regression specifies the relationship between long-term debt ratio and the explanatory variables as follows:

$$y_i = \alpha + x_i' \beta + e_i \quad \text{if } y_i > 0 \quad (1)$$

$$= 0 \quad \text{otherwise,}$$

where, y_i is the long-term debt ratio, either LTD1 or LTD2, x_i' is the matrix of explanatory variables, comprising industry membership dummies, firm characteristics and ownership characteristics, β is the vector of parameter estimates and e_i is an error term with a mean 0. This specification allows for the fact that the dependent variable is bounded below by zero.

5. Empirical results

Results of the Tobit regressions are presented in Tables 5 through 8. Ordinary least square (OLS) regression analyses were also undertaken. Since the results with the two methods are nearly identical, results from the OLS analyses are not reported here, but are available from the authors upon request.

just as inhibiting to corporate finance as a small amount that is traded.”

a) Ownership concentration and leverage

Since A_shares held by individual investors, by the State and by legal person shareholders account for nearly 95 percent of the outstanding shares, we investigate the impact of their ownership concentration on the sample firms' leverage ratios. Results in Table 5 show that none of the shareholder groups has a significant relationship with leverage. There is, however, a consistently positive (negative) relationship between percentage of the State (legal person) shares and leverage, respectively, for all years. The positive but insignificant estimates for the State's ownership effects add to the evidence for the State's mute protectionist role to lower the financial distress costs of the sample firms. As indicated, the sign of the relationship between legal person shareholders and leverage is ambiguous. We think that the consistently negative, though insignificant, relationship indicates that the monitoring role of large shareholders is more important than their creditor role. The lack of any relationship between individual shareholders and leverage is consistent with our hypothesis that diffused ownership is ineffective in providing adequate external monitoring.

– insert Table 5 here -

The degree of effectiveness of an external corporate control market in disciplining firms' managers depends on a firm's ownership structure, among other things. Rajan and Zingales (1995) note that countries with diffused ownership, such as the US, UK, and Canada, have a much more active market for corporate control while countries with more concentrated ownership or with inter-company cross ownership, pyramid ownership and dual class shares, such as Japan and Germany, do not have a significant market for corporate control. Existing evidence on this issue from the US firms is mixed. For example, Aggarwal and Mandelker (1987) and Mehran (1992) find a positive relationship between the percentage of shares held by insiders and US firms' leverage while Friend and Hasbrouk (1988) and Jensen et al. (1992) report a negative relationship for a sample of US firms. The results from Mohammed et al. (1998) for a sample of Malaysian firms indicate that both insider ownership and outsider ownership have a significant negative relationship with a firm's long-term debt ratio. Since the external corporate

control market is currently non-existent in China, our results convey the message to the Chinese policymakers to take legal and institutional steps for the development of the external corporate control market in China.

b) Firm specific characteristics and leverage

Results in Table 6 show that tangibility and firm size are positively, while profitability is negatively, related to the long-term debt ratios of Chinese firms. Panel A (B) presents the results with LTD1 (LTD2) as the dependent variable, respectively. These relationships are robust to the measure of long-term debt. The positive relationship between firm size and leverage is consistent with Ang et al. (1988) and others, who suggest that large firms, on average, are more diversified and less risky and that these factors enable them to support higher debt levels. As noted earlier, larger listed firms are major employers for the local economies where they operate. It is in the government's interest to ensure that these firms remain viable employers of the local population to avoid political unrest. Positive estimates are also consistent with the conjecture that the State's presence is adding to the firms' ability to support higher leverage.

- insert Table 6 here -

We also find an inverse relationship between profitability and leverage. The negative coefficient on profitability is consistent with the pecking order hypothesis as proposed by Myers and Majluf (1984) and Myers (1984)³⁴ and with the findings in Titman and Wessels (1988), Rajan and Zingales (1995), Wald (1999), and Booth et. al. (2001). These results provide strong support to Booth et al.'s (2001, p.105) conjecture that “ ... the negative correlation between profitability and leverage is a proxy for the

³⁴ As Singh (1995) has noted, external financing in many emerging countries has been obtained through equity issues rather than debt. The negative coefficient on profitability in the Chinese context may also be driven by the fact that newly listed firms that have been performing well prefer to sell new equity because 1) the debt markets are not well-developed, and 2) investor interest in the newly established equity markets makes it relatively easier for these firms to sell additional equity. The State is also interested in expanding the investor base for these newly listed firms. Furthermore, the problem of informational asymmetry that firms encounter in established markets in the developed countries may be less of a problem in the Chinese context given that the market recognizes the State's interest in privatizing the better performing enterprises. Since we do not have information on subsequent equity issues by these firms, we are unable to verify our conjecture that these firms may have preferably issued equity instead of debt in subsequent financing decisions.

difficulty in borrowing against intangible growth opportunities.” This is because most of the sample firms were/are exhibiting fast growth.

Another result in Table 6 is that firms with higher levels of tangible assets have more long-term debt. This result is again robust to the definition of long-term debt employed, across the sample years and is consistent with the results reported in Rajan and Zingales (1995) and Wald (1999) for the G-7 countries and Booth et al. (2001) for emerging countries.³⁵ The annual estimates are highly statistically significant, rendering the Berger-Udell (1994) argument, that a close relationship between a lender and a borrower is a substitute for physical collateral, not as relevant as we conjectured in the Chinese context. In other words, collateral plays a visible role in lending relationships in China. In separate regressions, not reported here, we also document that total debt is negatively related to the amount of tangible assets.³⁶ Thus, we have a finding similar to that in Booth et al. (2001), suggesting that our sample firms try to match the maturity of long-term assets with the maturity of long-term debt.

Other than 1995 and 1996, when the relationship is positive, we do not find any relationship between growth rate of assets and leverage. The positive relationship with growth rate of assets is inconsistent with Myers (1977) and Barclay and Smith (1995). It is, however, consistent with Toy et al.’s (1974) results for Holland, Norway, Japan and the United States, and Wald’s (1999) results for Japan, United Kingdom, France and Germany³⁷ and Booth et al.’s (2001) result, using book value of debt, for India, Korea, Malaysia, and Turkey.³⁸ A positive coefficient for the growth rate of assets supports

³⁵ 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. Since short-term debt constitutes a substantial proportion of the total debt of listed Chinese firms, the negative relationship between tangible assets and total debt indicates that good relationships with the government and/or banks substitute for physical collateral in raising short-term debt.

³⁶ Results are available from the authors upon request.

³⁷ Wald (1999) argues that since Toy et al. (1974) did not control for size in their regressions, and since size and growth are positively correlated, the positive coefficient on growth may simply be picking up the size effect. In our regressions, we control for size. Thus, the positive coefficient for 1995 and 1996 cannot be explained on the basis of a size effect. Wald (1999) also suggests that differences in the signs on the coefficient for growth may also be driven by growth-oriented firms in different countries belonging to different industries and being in different stages of the business cycle.

³⁸ Wald (1999) uses the growth rate of sales while Booth et al. (2001) use the market-to-book as a proxy for the growth opportunities.

indirectly our conjecture that the State plays a role similar to that played by keiritsu in Japan.³⁹ It is also consistent with Booth et al. (2001) who note that profitable, but moderately growing firms may be in a position to sustain their growth from internally generated funds and that only rapidly growing less profitable firms need to depend on external financing.⁴⁰

c) Industry classification and leverage

There are significant differences in the long-term debt ratios across different industry groups in the Chinese market. Table 7 presents the year-by-year results with only the industry membership dummies. Panel A reports the results for LTD1, the long-term debt scaled by the book value of assets, while Panel B shows the results for LTD2, the long-term debt scaled by market value of total assets. The manufacturing industry is set as the intercept.

- insert Table 7 here -

The long-term debt ratios are not statistically significantly different between the manufacturing and the real estate industries. The long-term debt ratios of sample firms in the utility industry are significantly higher than those in the manufacturing industry. On the other hand, the long-term debt ratios of sample firms in the trade and conglomerate industries are significantly lower than those in the manufacturing industry. These results are robust across years and the measure of long-term debt used in the analyses. The evidence presented in Table 7 is consistent with Titman and Wessels' (1988) evidence for the U.S. firms that firms in more asset-intensive industries have, on average, higher levels of long-term debt in comparison to those in other sectors.

d) Ownership structure, firm specific characteristics, industry membership and leverage

Table 8 reports the results of Tobit regressions with ownership concentration, firm characteristics and industry dummies as independent variables in the model. The dummy variable for the manufacturing

³⁹ This appears to be also consistent with Aivazian and Callen's (1980) point that if recontracting costs of enforcing contractual provisions are low, the under-investment incentives and agency costs of debt are reduced.

⁴⁰ The negative relationship between profitability and both measures of long-term debt is robust across years. It is possible that these newly listed firms may be able to finance their growth from internally generated resources.

industry is set as the intercept. The results confirm robustly the findings documented in Tables 5 through 7, where each category of independent variables is considered individually.

- insert Table 8 here -

There is some limited evidence from 1993, 1994 and 1997 in Panel A that, as hypothesized, the proportion of shares held by the State is positively related to leverage. In general, however, the distribution of stock ownership does not appear to influence the long-term leverage of Chinese firms.

Tangibility and firm size have a positive, while the level of profitability has a negative, impact on long-term debt in China. The positive coefficient on growth is now statistically significant for 1994, 1995 and 1996 for both measures of long-term debt ratio. As noted previously, this is inconsistent with Myers (1977), who shows that firms with growth options should have less leverage, but consistent with the argument that the State plays a role like a keiretsu in Japan.

There is no significant difference in the average level of LTD1 and LTD2 between the manufacturing and the real estate industries. However, the average level of long-term debt in the manufacturing sector is significantly more than that for the trade and conglomerate industries.

6. Summary and conclusions

The understanding of the determinants of capital structure has been the focus of extensive research for the past few decades. Much of the theory relating to capital structure choice and its empirical verification had been limited to the U.S. until recently. Recent research on other G-7 countries (Rajan and Zingales (1995) and Wald (1999)) and emerging markets (Demirguc-Kunt and Maksimovic (1999) and Booth et al. (2001)) show that many of the capital structure determinants, such as tangibility, firm size and profitability, that influence debt levels in the U.S. are relevant in other markets as well. Furthermore, Demirguc-Kunt and Maksimovic (1999) and Booth et al. (2001) show that firms in emerging markets, on average, have more short-term debt.

We study the nature of long-term debt financing patterns and the determinants of capital structure cross-sectionally for almost all Chinese firms, which were listed on either of the two national stock exchanges during the period 1993-1997. With rapid liberalization of the financial markets as a result of the economic reforms undertaken by the Chinese government, the pace of privatization has increased tremendously after the establishment of the two national stock exchanges in the early 1990s. However, the financial markets are still in their infancy and are characterized by an environment with less than reliable or sometimes a lack of information, with a considerable government involvement in financial markets and the listed firms, with a phenomenal growth, and with an increasing influence in the globalizing world economy. These factors indicate that the Chinese capital market is still nascent in its development. This provides us with a unique opportunity to study the determinants of financial contracting in an environment of high information asymmetry. Also, we have the comparative advantage over the recent papers of including almost all listed firms - large, medium and small - in our estimations, allowing us to stay clear of the question of whether including medium and small size firms would affect our results and conclusions.

We find that the proportion of long-term debt of the average Chinese firm as a fraction of its total debt and total assets is less than 10 percent and smaller than those found for firms in developed countries. Furthermore, even though the Chinese economy is bigger than those of many emerging markets, the proportion of long-term debt of the listed Chinese firms is the lowest in relation to all emerging markets for which this evidence is reported. Also, our findings show consistently that firms placed in higher quartiles of total assets obtain increasingly more long-term debt. We conclude that the problems of information asymmetry and the resultant financial contracting costs faced by Chinese firms are far greater than those faced by firms in other emerging markets, which have much longer stock market history than China does.

The annual long-term debt ratios of the listed Chinese firms did not increase during our sample period. This is despite the fact that since the two national stock exchanges began their operations, the

stock market size increased substantially, that the number of listed firms grew at a remarkably fast pace, and that the trading activity of tradable issues also increased substantially. These results differ from those in Demircuc-Kunt and Maksimovic (1996) for other countries. It seems that information revealed through the trading of tradable issues has provided only marginal transparency in China. Given the State's and institutional investors' highly concentrated and *non-tradable* ownership position in these firms in the face of a remarkably fast growth in the number of listed firms and their market capitalizations, the policymakers may have to rethink how to make the market more informative and transparent.

The presence of and monitoring by an external corporate control market has been a key argument for minimizing managers' opportunistic behavior. The external corporate control market did not exist in China during our sample period and is still not developed to this day. So, we study how various ownership structures relate to the sample firms' long-term debt ratios. We find no relationship between the percentage of shares held by the State, by legal person and by individual investors and leverage. These findings differ from those reported for the US and Malaysia. Given the intensifying international competition in a globalizing world economy, the development of an external corporate control market comes up yet as another policy challenge for the architects of the China's economic steps.

While the amount of tangible assets and firm size are positively related to the sample firms' long-term debt ratios, profitability exhibits a negative relationship. These relationships are consistent with the evidence in the extant literature from developed countries and emerging markets.

We find a positive (no) relationship between the growth rate of the firms' assets (proxy for growth opportunities) and their long-term leverage for 1995 and 1996 (for other sample years), respectively. These results are not consistent with Myers (1977) and Barclay and Smith (1995). They argue that firms with more growth opportunities should issue lower levels of long-term debt or preferably finance their operations with short-term debt to maintain their financing flexibility and to protect the lenders against the greater levels of uncertainty. On the other hand, these results are consistent with those found in Rajan and Zingales (1995) and Wald (1999) for the G-7 countries and Booth et al. (2001) for

some of the emerging countries. In the context of China, therefore, the use of more short-term debt by listed firms is more likely to be driven by the higher financial contracting costs in the face of more informational asymmetry in the long-term debt market rather than by the need to preserve financing flexibility. There is also evidence for some degree of maturity matching.

Finally, we document considerable inter-industry variation in the use of long-term debt by listed Chinese firms. Specifically, we find that firms in asset-intensive industries, such as manufacturing, have higher levels of debt than those in the trade, utility and conglomerate industries.

Overall, it appears that the determinants of capital structure, as identified for the developed and mature financial markets, are relevant for this nascent market – a result consistent with that in Demircug-Kunt and Maksimovic (1999) and Booth et al. (2001).

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Table 1: Summary Statistics for the Chinese Economy

This table provides the summary statistics for the Chinese economy for the period of 1993-97. Data have been collected primarily from the documents of the Asian Development Bank available online on its web site (www.adb.org). These include *Key Indicators of Developing Asian and Pacific Countries 2000*, (Vol. XXXI) and *Country Economic Review* (People's Republic of China), October 2000. Where applicable, amounts have been converted to US\$ based on the exchange rate for that particular year. The total stock market value is computed as the aggregate market value of all the firms in this study and whose data are obtained from the *Annual Reports of Listed Companies in China* and the *Statistics Year Book*, issued by the Shanghai Stock Exchange and the Shenzhen Stock Exchanges, and *China Listed Company Reports* issued by the China Cheng Xin Securities Rating Co. Ltd.

	1993	1994	1995	1996	1997
Stock market value (\$ billion)	7.35	4.74	4.89	10.32	22.55
Number of listed companies	175	287	311	514	738
GNP per capita (at current prices, \$)	509.02	454.35	571.43	660.45	717.25
GDP Growth rate (real, %)	13.5	12.7	10.5	9.6	8.8
Inflation rate (CPI, %)	14.7	24.1	17.1	8.3	2.8
Stock market value/GDP (%) ^a	1.22	0.87	0.70	1.26	2.51
Foreign Direct Investment (\$ billion)	-	-	33.8	38.1	41.7
Trade Balance (\$ billion)	(12.2)	5.4	18.1	19.5	46.2
Exchange rate ((Chinese Yuan/US\$) ^b	5.762	8.619	8.351	8.314	8.290
External Debt (\$ billion) ^c	85.9	100.4	106.6	116.3	131.0
External Debt/GDP (%)	14.3	18.5	15.2	14.2	14.6
1-year Time Deposit Rate	-	-	-	8.33	5.67
1-year Lending Rate	-	-	12.06	10.53	9.36

^a This ratio is computed using data for stock market value and GDP in local currency. Stock market value does not include the market value of B_shares and H_shares (that together constitute < 5% of total shares outstanding) that trade on NYSE and Hong Kong Stock Exchange, respectively. Data on shares prices for these shares are not available.

^b The central bank in China follows a “managed floating exchange rate” system. These figures reflect the average values for the year.

^c Includes both short-term and long-term debt.

Table 2: Distribution of listed firms in the final sample by year and industry

This table provides the distribution of firms, by year and by industry, that were listed for the first time on either the Shenzhen Stock Exchange or the Shanghai Stock Exchange between 1993 and 1997. Data are obtained from the *Annual Reports of Listed Companies in China* and *Statistics Year Book* as issued by the two exchanges and the *China Listed Companies Reports* issued by China Cheng Xin Securities Rating Company Ltd. All non-financial public companies listed on the two stock exchanges are included in the final sample. From an initial total of 761 firms, 21 firms were excluded since sufficient data were not available on them for any meaningful analysis. The table also reports the percent of the total sample by year and industry.

Year	Manufacturing	Trade	Utility	Real Estate	Conglomerate	Total
1993	105 14.2%	25 3.4%	14 1.9%	17 2.3%	16 2.1%	177 23.8%
1994	56 7.6%	25 3.4%	9 1.2%	10 1.3%	10 1.3%	110 14.9%
1995	14 1.9%	3 0.4%	1 0.1%	0 0%	4 0.5%	22 3.0%
1996	133 18.0%	44 5.9%	13 1.8%	2 0.3%	12 1.6%	204 27.6%
1997	161 21.8%	38 5.1%	14 1.9%	0 0%	14 1.9%	227 30.7%
Total	469 63.4%	135 18.2%	51 6.9%	29 3.9%	56 7.6%	740 100%

Table 3: Year-by-year means and standard deviations of leverage ratios

Panel A presents the cross-sectional means and standard deviations of leverage variables by year for all firms that were listed on one of the two exchanges between 1993-97. Leverage variables are defined as follows: LTD1=Long-term debt/Total assets (book value); LTD2=Long-term debt/(Total book value of debt + MVE); TD1=Total debt/Total assets (book value); and TD2=Total debt/(Total book value of debt + MVE). MVE is the market value of equity and is defined as $MVE = Price_{(year-end)} * (Total\ number\ of\ all\ outstanding\ shares - Total\ number\ of\ outstanding\ H_shares - Total\ number\ of\ outstanding\ B_shares)$. Standard deviations are reported in parentheses.

Panel B displays the means and standard deviations of the same leverage ratios in the year the firms started trading on one of the two exchanges while Panel C documents the 5-year means and 5-year standard deviations of the listed firms by industry.

Panel A: Means and standard deviations of leverage by year

Variables	1993	1994	1995	1996	1997
LTD1	0.0744 (0.0938) N=177	0.0719 (0.0954) N=285	0.0724 (0.0977) N=306	0.0665 (0.0852) N=509	0.0689 (0.0953) N=730
LTD2	0.0269 (0.0427) N=172	0.0409 (0.0635) N=280	0.0479 (0.0733) N=301	0.0339 (0.0503) N=505	0.0319 (0.0596) N=723
TD1	0.3888 (0.1737) N=177	0.4400 (0.1623) N=285	0.4613 (0.1602) N=306	0.4403 (0.1620) N=509	0.4157 (0.1713) N=726
TD2	0.1359 (0.0939) N=172	0.2397 (0.1359) N=280	0.2946 (0.1588) N=301	0.2223 (0.1369) N=509	0.1862 (0.1473) N=723

Panel B: Means and standard deviations of leverage in the year the firms started trading

Variables	1993	1994	1995	1996	1997
LTD1	0.0744 (0.0938) N=177	0.0684 (0.0809) N=110	0.1014 (0.1139) N=22	0.0694 (0.0792) N=204	0.0737 (0.0967) N=227
LTD2	0.0269 (0.0427) N=172	0.0360 (0.0454) N=107	0.0585 (0.0696) N=21	0.0259 (0.0345) N=201	0.0399 (0.0848) N=220
TD1	0.3888 (0.1737) N=172	0.4413 (0.1656) N=110	0.4931 (0.1514) N=22	0.4114 (0.1529) N=204	0.3532 (0.1553) N=227
TD2	0.1359 (0.0939) N=172	0.2374 (0.1286) N=107	0.2547 (0.1254) N=21	0.1506 (0.0999) N=201	0.1756 (0.1908) N=220

Panel C: Mean and standard deviations of leverage, by industry, in the year the firms started trading

Variables	Manufacturing	Trade	Utility	Real Estate	Conglomerate
LTD1	0.0746 (0.0839) N=469	0.0483 (0.0640) N=135	0.1485 (0.1556) N=51	0.0667 (0.0939) N=29	0.0501 (0.0655) N=56
LTD2	0.0326 (0.0464) N=458	0.0207 (0.0326) N=131	0.0863 (0.1493) N=50	0.0280 (0.0486) N=27	0.0181 (0.0235) N=55
TD1	0.3946 (0.1581) N=467	0.3964 (0.1653) N=135	0.3326 (0.1981) N=51	0.5099 (0.1358) N=29	0.3939 (0.1631) N=56
TD2	0.1699 (0.1386) N=458	0.1761 (0.1439) N=131	0.1671 (0.2011) N=50	0.2063 (0.1218) N=27	0.1497 (0.1025) N=55

Table 4: Descriptive statistics for the final sample

This table provides the descriptive statistics on firm and ownership characteristics for each year between 1993 and 1997. Panel A displays the descriptive statistics on firm characteristics. The variables are defined as follows: Tangibility = Fixed assets/Total assets; Firm Size is measured by Sales and Total assets (both in the local currency, *Renminbi* or Chinese Yuan and US\$); Growth rate = Percentage change in total assets over the previous year; and Profitability = Operating income/Total assets. Panel B is a summary of the descriptive statistics on ownership characteristics. A_shares are denominated in the Chinese currency and are held by individuals, the State, legal person shareholders and employees. B_shares and H_shares are denominated in US\$ and HK\$ and trade on the NYSE and HKSE, respectively. Liquid shares that trade regularly are comprised of A_shares held by individuals, B_shares and H_shares. Non-liquid shares that do not trade are A_shares held by the State, legal person shareholders and employees. The means reported for each category of shareholder in the table are computed as a percentage of the total number of shares outstanding. Standard deviations are reported in parentheses.

Panel A: Firm Characteristics

Variables	1993 N=177	1994 N=285	1995 N=306	1996 N=509	1997 N=730
Tangibility (%)	42.93 (17.22)	43.61 (40.23)	45.13 (18.43)	44.32 (18.36)	44.74 (17.96)
Firm Size (in <i>Renminbi</i>)					
Sales (mil.)	52.74 (81.82)	56.64 (86.03)	81.94 (226.56)	61.64 (110.12)	68.74 (120.86)
Total assets (mil.)	96.56 (150.64)	109.34 (171.94)	129.49 (196.69)	114.26 (185.27)	124.67 (200.40)
Firm Size (in US\$) ^a					
Sales (mil.)	9.16 (14.2)	6.57 (9.98)	9.81 (27.13)	7.42 (13.25)	8.29 (14.58)
Total assets (mil.)	16.76 (26.15)	12.68 (19.95)	15.51 (23.56)	13.75 (22.29)	15.04 (24.17)
Growth Rate (%)	83.24 (65.69)	34.34 (33.67)	19.91 (25.15)	33.35 (43.49)	40.82 (57.26)
Profitability (%)	7.32 (5.27)	6.06 (5.17)	3.98 (5.47)	4.15 (5.96)	5.13 (6.52)

^a Based on the average exchange rate (ChineseYuan and US\$) over the year as reported in Table 1.

Panel B: Ownership Structure (in %)

Variables (N)	1993 (173)	1994 (280)	1995 (301)	1996 (507)	1997 (729)
a) A_shares					
Individual	27.70 (16.37)	29.69 (17.18)	30.81 (17.64)	29.85 (14.85)	29.38 (14.13)
State	33.13 (27.36)	33.07 (26.91)	32.13 (26.03)	30.18 (26.03)	29.53 (26.55)
Legal Person	30.86 (26.20)	29.83 (27.18)	28.55 (26.45)	31.73 (26.63)	31.72 (26.97)
Employee	2.18 (4.45)	1.62 (4.19)	1.63 (3.75)	3.55 (6.59)	4.55 (7.82)
b) B_shares	5.03 (10.75)	4.88 (11.19)	4.99 (11.22)	3.86 (10.26)	3.86 (10.66)
c) H_shares	0.56 (4.29)	0.62 (4.27)	1.12 (5.85)	0.83 (5.22)	0.84 (5.40)
Liquid Shares (Individual A-shares + B_shares + H_shares)	33.29 (15.19)	35.20 (15.57)	36.92 (15.46)	34.54 (13.31)	34.09 (12.27)
Non-liquid Shares (State + Legal Person + Employee)	66.29 (15.25)	64.60 (15.54)	62.35 (15.65)	65.98 (12.01)	65.78 (12.47)

Table 5: Empirical results for the relationship between leverage and ownership structure, by year.

This table reports estimation results from the Tobit regressions of leverage on ownership characteristics. Panel A presents the results with the dependent variable LTD1 while Panel B presents the results with the dependent variable LTD2. The dependent variables are defined in Table 3. Independent variables on ownership concentration are based on A_shares and trade in Chinese currency only. They are defined as follows: Individual = proportion of all outstanding shares held by individual shareholders; State = proportion of all outstanding shares held by the State; and Legal Person = proportion of all outstanding shares held by the legal person shareholders. ‘Proportion > 0’ indicates the percentage of firms that had long-term debt in their capital structure. Standard errors are reported in parentheses.

Panel A: Dependent variable: LTD1

Year	1993	1994	1995	1996	1997
Intercept	0.0241 (0.0579)	0.0256 (0.0504)	0.0508 (0.0421)	0.0471 (0.0324)	0.0991*** (0.0281)
Individual	0.0464 (0.0651)	-0.0229 (0.0536)	-0.0202 (0.0463)	-0.0137 (0.0361)	-0.0786** (0.0328)
State	0.1949*** (0.0699)	0.0955 (0.0618)	0.0572 (0.0536)	0.0570 (0.0408)	-0.0095 (0.0365)
Legal Person	0.0319 (0.0692)	0.0409 (0.0592)	-0.0131 (0.0513)	-0.0034 (0.0392)	-0.0406 (0.0354)
Proportion > 0	83.72%	86.74%	91.0%	87.77%	86.97%
Log-Likelihood	110.89	172.57	205.66	375.88	444.66
N	172	279	300	507	729

Panel B: Dependent variable: LTD2

Year	1993	1994	1995	1996	1997
Intercept	0.0138 (0.0274)	0.0442 (0.0336)	0.0552* (0.0315)	0.0566*** (0.0194)	0.1258*** (0.0170)
Individual	-0.0022 (0.0309)	-0.0312 (0.0358)	-0.0197 (0.0347)	-0.0314 (0.0217)	-0.1461*** (0.0199)
State	0.0458 (0.0330)	0.0233 (0.0412)	0.0079 (0.0401)	-0.0098 (0.0243)	-0.0769*** (0.0221)
Legal Person	-0.0221 (0.0328)	-0.0265 (0.0395)	-0.0287 (0.0384)	-0.0463** (0.0233)	-0.1061*** (0.0214)
Proportion > 0	84.21%	86.74%	91.0%	87.72%	86.84%
Log-Likelihood	220.43	272.15	285.70	607.83	771.24
N	171	279	300	505	722

Note: ***, **, and * indicate significance at the 0.01, 0.05 and 0.10 levels, respectively.

Table 6: Empirical results for the relationship between leverage and firm specific characteristics, by year.

This table reports the results from the Tobit regressions of leverage on firm characteristics. Panel A presents the results with the dependent variable LTD1 while Panel B presents the results with the dependent variable LTD2. The dependent variables are defined in Table 3. Independent variables are defined as follows: Tangibility = Fixed assets/Total assets (book value); LSize = Log(Sales); Growth Rate = the percentage change in total assets over the most recent year; and Profitability = Operating income/Total assets (book value). ‘Proportion > 0’ indicates the percentage of firms that had long-term debt in their capital structure. Standard errors are reported in parentheses.

Panel A: Dependent variable: LTD1

Year	1993	1994	1995	1996	1997
Intercept	-0.1446** (0.0755)	-0.1108* (0.0597)	-0.1738*** (0.0515)	-0.1365*** (0.0388)	-0.0796** (0.0343)
Tangibility	0.2228*** (0.0449)	0.2205*** (0.0310)	0.2557*** (0.0297)	0.2055*** (0.0216)	0.1685*** (0.0194)
Lsize	0.0150** (0.0066)	0.0096* (0.0054)	0.0125*** (0.0046)	0.0103*** (0.0035)	0.0070** (0.0031)
Growth Rate	-0.0133 (0.0118)	0.0212 (0.0170)	0.0718*** (0.0221)	0.0322*** (0.0103)	0.0029 (0.0065)
Profitability	-0.4572*** (0.1486)	-0.5591*** (0.1194)	-0.5055*** (0.1124)	-0.2982*** (0.0754)	-0.2339*** (0.0574)
Proportion > 0	84.77%	86.22%	90.76%	87.65%	87.11%
Log-Likelihood	111.43	200.68	244.43	406.52	523.88
N	151	283	303	502	706

Panel B: Dependent variable: LTD2

Year	1993	1994	1995	1996	1997
Intercept	-0.1263*** (0.0370)	-0.1275*** (0.0415)	-0.1816*** (0.0393)	-0.1233*** (0.0230)	-0.0822*** (0.0178)
Tangibility	0.1091*** (0.0221)	0.1257*** (0.0214)	0.1738*** (0.0227)	0.1132*** (0.0127)	0.0722*** (0.0101)
Lsize	0.0119*** (0.0032)	0.0120*** (0.0038)	0.0146*** (0.0035)	0.0105*** (0.0021)	0.0080*** (0.0016)
Growth Rate	-0.0045 (0.0058)	0.0134 (0.0117)	0.0542*** (0.0169)	0.0138** (0.0061)	0.0007 (0.0034)
Profitability	-0.2372*** (0.0730)	-0.3887*** (0.0824)	-0.4292*** (0.0859)	-0.2512*** (0.0445)	-0.1890*** (0.0299)
Proportion > 0	86.49%	86.74%	90.94%	87.75%	87.04%
Log-Likelihood	207.95	294.02	318.59	644.63	931.09
N	148	279	298	498	702

Note: ***, **, and * indicate significance at the 0.01, 0.05 and 0.10 levels, respectively.

Table 7: Empirical results for the relationship between leverage and industry classification, by year.

This table reports the results from the Tobit regressions of leverage on industry classification dummies. Panel A presents the results with the dependent variable LTD1 while Panel B presents the results with the dependent variable LTD2. The dependent variables are defined in Table 3. The five industries are manufacturing, trade, utility, real estate and conglomerate. By construction, the intercept represents the manufacturing industry. ‘Proportion > 0’ indicates the percentage of firms that had long-term debt in their capital structure. Standard errors are reported in parentheses.

Panel A: Dependent variable: LTD1

Year	1993	1994	1995	1996	1997
Intercept	0.0776*** (0.0102)	0.0768*** (0.0083)	0.0749*** (0.0077)	0.0658*** (0.0053)	0.0584*** (0.0049)
Trade	-0.0565** (0.0235)	-0.0484*** (0.0173)	-0.0396** (0.0162)	-0.0295*** (0.0110)	-0.0065 (0.0104)
Utility	0.0498* (0.0295)	0.0185 (0.0237)	0.0630*** (0.0221)	0.0461*** (0.0160)	0.0693*** (0.0154)
Real Estate	-0.0374 (0.0279)	-0.0359* (0.0220)	-0.0227 (0.0212)	-0.0306* (0.0182)	-0.0290 (0.0205)
Conglomerate	-0.0793*** (0.0291)	-0.0366* (0.0223)	-0.0446** (0.0202)	-0.0278* (0.0153)	-0.0062 (0.0151)
Proportion > 0	82.48%	86.32%	90.85%	87.62%	86.99%
Log-Likelihood	97.81	172.78	217.49	374.76	452.66
N	177	285	306	509	730

Panel B: Dependent variable: LTD2

Year	1993	1994	1995	1996	1997
Intercept	0.0272*** (0.0046)	0.0448*** (0.0055)	0.0501*** (0.0058)	0.0334*** (0.0032)	0.0261*** (0.0031)
Trade	-0.0217** (0.0107)	-0.0322*** (0.0115)	-0.0311*** (0.0121)	-0.0176*** (0.0065)	-0.0101 (0.0065)
Utility	0.0249* (0.0133)	0.0108 (0.0157)	0.0481*** (0.0165)	0.0229** (0.0095)	0.0436*** (0.0096)
Real Estate	-0.0151 (0.0128)	-0.0260* (0.0151)	-0.0180 (0.0161)	-0.0124 (0.0108)	-0.0168 (0.0127)
Conglomerate	-0.0297** (0.0131)	-0.0290** (0.0147)	-0.0357** (0.0153)	-0.0173** (0.0091)	-0.0038 (0.0094)
Proportion > 0	84.30%	86.79%	91.03%	87.72%	86.86%
Log-Likelihood	217.93	274.75	296.40	608.60	753.35
N	172	280	301	505	723

Note: ***, **, and * indicate significance at the 0.01, 0.05 and 0.10 levels, respectively.

Table 8: Empirical results for the relationship between leverage and industry classification, firm characteristics and ownership structure, by year.

This table reports estimation results from the Tobit regressions of leverage on industry classification, firm characteristics and ownership characteristics. The dependent variables, LTD1 in Panel A and LTD2 in Panel B are defined in Table 3. Independent variables on industry membership, firm characteristics and ownership concentration are defined on Tables 5, 6 and 7, respectively. ‘Proportion > 0’ indicates the percentage of firms that had long-term debt in their capital structure. Standard errors are in parentheses.

<i>Panel A: Dependent variable: LTD1</i>					
	1993	1994	1995	1996	1997
Intercept	-0.2236** (0.1001)	-0.2031** (0.0875)	-0.2273*** (0.0718)	-0.1711*** (0.0581)	-0.0592 (0.0483)
<i>Industry Membership</i>					
Trade	-0.0735*** (0.0206)	-0.0643*** (0.0156)	-0.0589*** (0.0145)	-0.0398*** (0.0102)	-0.0233*** (0.0093)
Utility	-0.0027 (0.0285)	-0.0259 (0.0220)	0.0154 (0.0211)	0.0213 (0.0150)	0.0392*** (0.0143)
Real Estate	0.0123 (0.0263)	0.0280 (0.0218)	0.0447** (0.0206)	0.0091 (0.0174)	0.0051 (0.0184)
Conglomerate	-0.0670*** (0.0244)	-0.0355* (0.0199)	-0.0238 (0.0186)	-0.0214 (0.0141)	0.0032 (0.0132)
<i>Ownership Structure</i>					
Individual	0.0860 (0.0619)	0.0287 (0.0501)	0.0208 (0.0418)	0.0362 (0.0348)	-0.0254 (0.0311)
State	0.1209** (0.0627)	0.1233** (0.0540)	0.0447 (0.0455)	0.0718** (0.0375)	0.0197 (0.0319)
Legal Person	0.0363 (0.0633)	0.0912* (0.0525)	0.0165 (0.0440)	0.0289 (0.0365)	-0.0121 (0.0313)
<i>Firm Characteristics</i>					
Tangibility	0.2458*** (0.0489)	0.2557*** (0.0352)	0.2887*** (0.0334)	0.2019*** (0.0225)	0.1625*** (0.0205)
Lsize	0.0165*** (0.0066)	0.0106* (0.0059)	0.0143*** (0.0048)	0.0104*** (0.0038)	0.0059* (0.0033)
Profitability	-0.5367*** (0.1380)	-0.5858*** (0.1193)	-0.5270*** (0.1085)	-0.2849*** (0.0740)	-0.2460*** (0.0578)
Growth Rate	-0.0081 (0.0110)	0.0371** (0.0170)	0.0872*** (0.0218)	0.0331*** (0.0102)	0.0054 (0.0065)
Proportion > 0	86.49%	86.69%	90.91%	87.80%	87.09%
Log-Likelihood	131.66	213.72	255.26	424.40	534.76
N	148	278	297	500	705

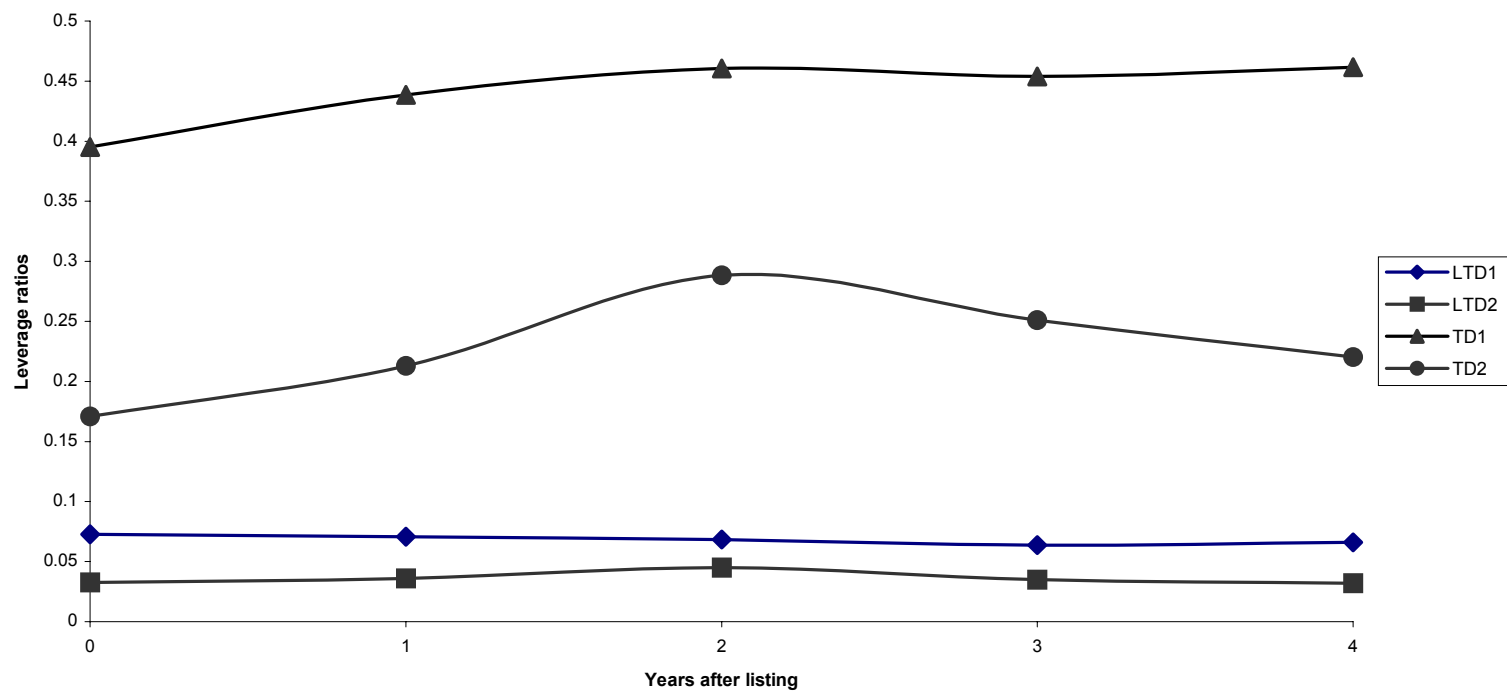
Table 8 (cont'd)

Panel B: Dependent variable: LTD2

	1993	1994	1995	1996	1997
Intercept	-0.1513*** (0.0499)	-0.1675*** (0.0602)	-0.2277*** (0.0540)	-0.1327*** (0.0344)	-0.0260 (0.0249)
<i>Industry Membership</i>					
Trade	-0.0349*** (0.0103)	-0.0441*** (0.0108)	-0.0478*** (0.0109)	-0.0251*** (0.0060)	-0.0151*** (0.0048)
Utility	0.0169 (0.0142)	-0.0078 (0.0152)	0.0225 (0.0158)	0.0127 (0.0088)	0.0168** (0.0073)
Real Estate	0.0033 (0.0132)	0.0181 (0.0150)	0.0316** (0.0155)	0.0097 (0.0102)	0.0002 (0.0094)
Conglomerate	-0.0271** (0.0122)	-0.0264** (0.0137)	-0.0196 (0.0140)	-0.0143* (0.0083)	0.0041 (0.0067)
<i>Ownership Structure</i>					
Individual	0.0325 (0.0308)	0.0199 (0.0344)	0.0328 (0.0314)	0.0140 (0.0207)	-0.0507*** (0.0162)
State	0.0349 (0.0312)	0.0477 (0.0371)	0.0077 (0.0341)	0.0118 (0.0221)	-0.0270* (0.0165)
Legal Person	-0.0031 (0.0314)	0.0168 (0.0361)	-0.0139 (0.0330)	-0.0107 (0.0215)	-0.0452*** (0.0162)
<i>Firm Characteristics</i>					
Tangibility	0.1081*** (0.0243)	0.1498*** (0.0242)	0.1982*** (0.0251)	0.1164*** (0.0133)	0.0703*** (0.0105)
LSize	0.0133*** (0.0033)	0.0129*** (0.0041)	0.0177*** (0.0036)	0.0112*** (0.0022)	0.0063*** (0.0017)
Profitability	-0.2819*** (0.0668)	-0.4066*** (0.0823)	-0.4451*** (0.0819)	-0.2478*** (0.0438)	-0.1862*** (0.0297)
Growth rate	-0.0023 (0.0055)	0.0223*** (0.0117)	0.0586*** (0.0164)	0.0157*** (0.0060)	0.0024 (0.0033)
Proportion > 0	86.49%	86.69%	90.91%	87.75%	87.02%
Log-Likelihood	222.59	306.38	334.17	661.16	948.21
N	148	278	297	498	701

Note: ***, **, and * indicate significance at the 0.01, 0.05 and 0.10 levels, respectively.

Figure 1: Mean leverage values after listing



This figure tracks the long-term debt and total debt ratios over the years after the sample firms were listed. We note that the number firms used to compute the ratios varies for years 0 to 4 after listing since firms that were listed in 1993 could be tracked for 4 years while firms that were listed in 1997 could not be tracked after listing. Year 0 is the year the firms got listed on one of the two exchanges. LTD1=Long-term debt/Total assets (book value); LTD2=Long-term debt/(Total book value of debt + MVE); TD1=Total debt/Total assets (book value); and TD2=Total debt/(Total book value of debt + MVE). MVE is the market value of equity and is defined as $MVE = Price_{(year-end)} * (Total\ number\ of\ all\ outstanding\ shares - Total\ number\ of\ outstanding\ H_shares - Total\ number\ of\ outstanding\ B_shares)$.

Figure 2: Long-term and total debt by size quartile for 1997

