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## *Does social capital affect the financing decisions of Chinese small and medium-sized enterprises?*

**By**

**Jun Du, Alessandra Guariglia, and Alexander Newman**

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# Does social capital affect the financing decisions of Chinese small and medium-sized enterprises?

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**Abstract**

Using a panel of 65,551 firms over the period 2000-2006, this study examines the capital structure determinants of Chinese privately owned small and medium-sized enterprises. Investment in the building and maintenance of social capital, measured by entertainment expenditure, is found to be positively associated with short-term leverage, but negatively associated with long-term leverage, while the opposite is the case for asset structure. This suggests that social capital is important for firms who seek to establish initial relationships with their financiers, while asset structure is more important in the consolidation of these relationships.

**Keywords***:* Capital structure, China, leverage, social capital

**JEL classification:** G32

**Outline**

Non-technical abstract

There is growing recognition that theories of capital structure from the finance paradigm do not fully explain the capital structure of small and medium-sized enterprises (SMEs). This is especially the case in the context of developing economies where institutional and cultural factors exert a significant influence on the financing decisions of firms. Although a growing number of studies have examined the capital structure determinants of large, listed firms in China, limited work has been conducted on SMEs. This study investigates the extent to which existing theories of capital structure can assist in our understanding of the capital structure adopted by Chinese SMEs.

One factor that has been shown to influence the decision-making of Chinese firms is the social and business relationships they possess with other economic actors, which include executives at other firms, bank officials, and government officials. The social capital inherent in such relationships enables firms to gain preferential access to a whole host of scarce information or resources, one of which may be financial capital. Due to the fact that the state-owned banks in China continue to discriminate against the private sector in their lending practices, investment in the building and maintenance of social capital may enable SMEs to get preferential access to credit over their competitors and, hence, employ more debt, in their capital structure. Despite a growing focus on the impact of social capital on SME performance in China, limited work has been conducted on whether it helps improve the ability of firms to access external financing. To fill this gap in the literature this study investigates the extent to which investment in the building and maintenance of social capital influences the capital structure of Chinese SMEs.

Using a sample of 65,551 enterprises from across China, we show that existing theories do not fully explain the capital structure adopted by Chinese SMEs. To understand the financing decisions of SMEs, it is in fact important to examine the cultural and institutional environment in which they operate, which is typically ignored by those theories. Our results suggest that social capital is an important determinant of capital structure for Chinese privately-owned SMEs. In particular, a positive relationship is found between investment in social capital and both total and short term leverage. In contrast investment in social capital is found to be negatively associated to long-term leverage. The opposite is true for asset structure. This indicates that social capital is important for firms who seek to establish initial relationships with their financiers, while asset structure is more important in the consolidation of these relationships.

Our findings have important policy implications: policy makers need to recognize the importance of improving the ability of privately owned SMEs to access bank financing, especially in the long-term. Informal financing mechanisms based on social capital might have supported the growth of Chinese SMEs until the present day, but are arguably not appropriate if China is to develop world-class private enterprises able to compete globally.

## 1. Introduction

The capital structure decisions of firms, and in particular of small and medium-sized enterprises (SMEs) have important implications for their performance, their ability to succeed, their risk of failure and their potential for future development (Cassar, 2004)[1]. For instance, the inability to secure adequate sources of finance has been cited as a primary cause of SME failure (Gaskill and Van Auken, 1993; Van Auken and Neeley, 1996; Coleman, 2000). Understanding how SMEs are financed is therefore an important question. A vast body of literature has examined the determinants of the capital structure of SMEs in the context of developed economies over the last decade. Empirical work based on theories of capital structure has been conducted for Australia (Romano, Tanewski & Kosmas, 2000; Cassar and Holmes, 2003; Johnsen and McMahon, 2005), Spain (Sorgorb-Mira, 2005), the UK (Hall, Hutchinson & Michaelas, 2000; Jordan, Lowe & Taylor, 1998; Michaelas, Chittenden & Poutziouris, 1999), and the US (Gregory et al., 2005).

Only in recent years, has empirical work on capital structure been extended to the developing economy context. The level of development of a country's legal and financial systems has been shown to influence the capital structure that firms adopt (Demirgüç-Kunt and Maksimovic, 1999; Booth et al., 2001; Fan et al., 2006). Specifically, Demirgüç-Kunt and Maksimovic (1999) find that in economies with weak investor protection, firms are more likely to employ short-term debt than long-term debt in their capital structure. In contrast, they demonstrate that firms in economies with active stock markets and large banking sectors have more long-term debt than those in economies with small capital markets and banking sectors. Booth et al. (2001) examine the capital structure of firms in 10 developing economies and find evidence that, although the determinants of capital structure are similar to those in developed countries, the amount of long and short-term debt employed by enterprises differs greatly from economy to economy. Fan et al. (2006) show that firms operating in legal systems with better protection for investors tend to have less total debt and a greater proportion of long-term debt in their capital structures.

[1] Capital structure is defined as the mixture of debt and equity used to finance the business activities of a firm (Myers, 1994).

Despite a growing body of research on the determinants of capital structure in the developing economy context, there has been limited work conducted on SMEs. Some preliminary work has been carried out for Poland (Klapper et al., 2006), Vietnam (Nguyen and Ramachandran, 2006), and Ghana (Abor and Biekpe, 2007). This work suggests that theories of capital structure developed to explain the financing decisions of SMEs in developed economies are not always applicable in developing economies, due to institutional and cultural differences.

The contribution made by SMEs to the phenomenal economic growth experienced in China over the last twenty years has been well documented in the literature (Chen, 2006; Dougherty and Herd, 2005). A recent study suggests that the dynamic SME sector accounts for over 55 per cent of Chinese GDP and 75 per cent of employment (Farrell et al., 2006). Despite the contributions they make to the economy, Chinese SMEs, especially those that are privately owned, continue to face difficulties in accessing adequate financial capital to support their development (Bai et al., 2006), in comparison to other Asian countries (Dollar et al., 2003).

Empirical work on capital structure in the Chinese context is limited. Focusing on a panel of 77 Chinese PLCs over the period 1994-2000, Chen (2004) finds that the traditional capital structure theories developed in western economies do not hold in the Chinese context. Huang and Song (2006) use a panel of 1200 PLCs over the period 1994-2003 and show that leverage increases with firm size, fixed assets, volatility, and non-debt tax shields, and decrease with profitability. Bhabra et al. (2008) find that over the period 1992-2001, Chinese listed firms use little long-term debt, which is positively related to firm size and asset tangibility, and negatively associated with profitability and growth. Using a more recent dataset made up of 650 PLCs over the period 1999-2004, and a dynamic specification, Qian et al. (2009) show that leverage is positively associated with firm size and tangibility, but negatively related to profitability, non-debt tax shields, volatility, and growth. Finally, Li et al. (2009) use a panel made up of 417,068 firm-year observations over the period 2000-2004 to show that ownership and governance structures play an important role in firms' financing decisions. With the exception of Li et al. (2009), all this work has been limited to large listed firms. Despite SMEs being the main engine behind economic growth in China, the lack of comprehensive firm-level data

on these firms has made it difficult for researchers to understand the determinants of their financing behavior. In order to fill this significant gap in the literature, we use a relatively large, new, and underused dataset conducted by the Chinese National Bureau of Statistics to examine the capital structure determinants in the Chinese SME context[2]. The final data used in our analysis is made up of 65,551 private SMEs from all provinces in China during the period 2000 to 2006. Containing 110,770 observations, it is the largest and most representative dataset in existence.

We contribute to the literature in three main ways. First, we examine the capital structure determinants of privately owned Chinese SMEs using a large dataset representative of firm activity across the whole country. We choose to focus on private SMEs due to the fact that they are subject to financial constraints not faced by publicly-owned firms, who continue to receive substantial state support. To the best of our knowledge, no empirical study has been conducted to test the applicability of existing capital structure theories to such firms in the Chinese context. Second, we consider social capital as a determinant of capital structure. Although previous work has found a relationship between social capital and firm performance (Peng and Luo, 2000; Zhang and Fung, 2006; Fung et al., 2007), no work has been conducted on the relationship between social capital and capital structure in the Chinese context. This is an important gap in the literature in the light of the fact that expenditure in building and maintaining social capital represents on average 6.7% of the total assets of the firms in our sample. Third, in line with recent work on larger firms (Qian et al., 2009), we are the first study to adopt a dynamic approach to estimating the capital structure determinants of SMEs, taking into account the evolving nature of a firm's financing decisions over time.

The remainder of the paper is organized as follows. In section 2, we describe the theoretical background on capital structure. In section 3, we present our baseline specification, and discuss our estimation methodology. Section 4 describes our data and presents some descriptive statistics. In section 5, we illustrate and discuss our results. Finally, in section 6, we provide some conclusions.

[2] Li et al. (2009) make use of the same dataset as ours to study Chinese firms' capital structure, but they do not focus on SMEs. The main objective of their study is to understand the role of ownership and institutional development in determining firms' capital structure.

## 2. Theoretical background

Since the publication of Modigliani and Miller's seminal work in 1958, a number of theoretical explanations have been advanced to explain the financing decisions of firms. The two theories which have gained the most attention in the literature are the static trade-off and pecking-order theories.

*3.1 The static trade-off theory:* The static trade-off theory takes into account the effect of taxes, agency costs and the costs of financial distress on the capital structure decisions of the firm. The management of the firm is assumed to maintain an optimal debt/equity ratio in order to minimize the cost of prevailing market imperfections, trading off the tax shield benefits of debt finance and the agency and financial distress costs of maintaining high debt levels (Scott, 1972; Kraus and Litzenberger, 1973; Kim, 1978; Bradley et al, 1984; Harris and Raviv, 1990).

The static-trade off theory is illustrated in figure 1. In the diagram the straight line AB shows the value of a firm that uses 100% equity to finance its business. If a firm uses debt in its capital structure, it has to pay interest, which is generally tax deductible. Interest payments act as a tax shield and allow the firm to increase its value. As the firm takes more debt, its value increases (curve AC). However, after a certain level of debt (the optimum level) is reached, the value of the firm starts to decrease, as the costs of debt start to outweigh the benefits. Curve AD illustrates how the costs of financial distress rise as the firm uses increasing amounts of debt in its capital structure. At higher levels of debt, the firm's interest payments increase to cover for the potential risk of financial distress. In summary, the firm trades off the tax benefits that may be gained by using debt with the costs of financial distress and agency costs, to maintain an optimal level of debt in its capital structure.

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Insert Figure 1 about here

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Under the static trade-off theory we would expect leverage to be positively related to firm size (the larger the firm, the lower the costs of bankruptcy), profitability (the more profitable the firm, the greater the profits that need to be shielded from taxation and the

lower the costs of financial distress), and asset structure (the larger the assets of the firm the lower the costs of bankruptcy)[3].

Previous empirical work questions the applicability of the static trade-off theory to the SME context, suggesting that the explanatory power of the theory is low and empirical results inconclusive (Holmes and Kent, 1991; Watson and Wilson, 2002). This might be due to the fact that, due to difficulties in accessing adequate external sources of debt and equity financing, managers of SMEs find it difficult to trade-off the benefits of debt and equity as predicted by the static trade-off theory.

*2.2 The pecking-order theory:* An alternative explanation in the literature as to how firms make their capital structure decisions is the pecking-order theory or POT (Myers, 1984). The POT suggests that firms order their financing choices in a hierarchical pecking-order, using internal sources of finance initially, before seeking debt financing second, and introducing new equity as a last resort. Under the POT, capital structure decisions are made to mitigate the inefficiencies arising as a result of asymmetric information. Initially it is assumed that firms will prefer to use internal sources of financing as they are less susceptible to asymmetric information problems, and therefore cheaper than debt or equity. When firms need external financing, they will first issue debt, which is less susceptible to undervaluation than new equity, which will be issued as a last resort.

The pecking-order theory is illustrated in figure 2. In the diagram demand for finance is represented by the D1, D2 and D3 schedules. When demand for finance is low at D1, investment is financed through internal funds, which are cheaper than external sources of finance. When demand for finance is relatively high at D2, external debt financing is used once internal sources of finance have been exhausted. Finally, if

[3] Recent studies (see for instance Flannery and Rangan, 2006) indicate that the trade-off between the benefits and costs of debt financing might not be static in nature, but might depend on the costs of making adjustments towards an optimal level of debt. The dynamic version of the trade-off theory supposes that, due to significant adjustment costs, firms will not constantly adjust their leverage ratio to their optimal level. Firms will only choose to rebalance their capital structure when the costs of deviating from the optimal level outweigh the costs of adjustment.

demand for finance is very high at D3, firms will finance via issuing equity once internal funds and debt financing have been exhausted.

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Insert Figure 2 about here

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Under the pecking order theory we would expect leverage to be positively related to the firm's size (the larger the firm, the more established it is likely to be, and the lower the degree of asymmetric information it is likely to face), negatively related to the profitability of the firm (the more profitable the firm, the greater the internal financing available), and positively related to the its asset structure (the greater the percentage of fixed assets possessed by the firm, the easier it is to access collateralized debt).

In recent years a growing number of studies have examined the applicability of the pecking-order theory of financing to SMEs (Ang, 1991; Holmes and Kent, 1991; Jordan et al., 1998; Berggren et al, 2000; Watson and Wilson, 2002; Hogan and Hutson, 2005; Sorgorb-Mira, 2005). There is a general consensus in the empirical literature that the pecking-order theory provides a much sounder theoretical explanation than the static trade-off theory for the capital structure that SMEs adopt (Watson and Wilson, 2002; Sorgorb-Mira, 2005). Some authors suggest a more constrained version of the pecking-order theory in the SME context than is the case for larger firms (Ang, 1991; Holmes and Kent, 1991). They point out that smaller firms rely overwhelmingly on internal sources of finance in the start-up and development phases.

*2.3 The role of social capital:* It has been suggested that the theories developed to explain the financing decisions of SMEs in the Western context might not be applicable in the developing economies context due to cultural and institutional differences (Demirgüç-Kunt and Maksimovic, 1999; Booth et al., 2001; Fan et al., 2006). We contend that in the context of developing countries, where SMEs face huge difficulties in accessing formal sources of finance (Batra et al., 2003; Bai et al., 2006), both the static trade-off and pecking order theories of capital structure alone might not fully explain the financing behavior of SMEs. We argue that the social capital inherent in a firm's web of interpersonal relationships with other economic actors will also be an important

determinant of their ability to access adequate sources of capital from external sources.

Over the last decade there has been a growing literature on social capital and its relationship with firm performance in the Chinese context (Peng and Luo, 2000; Park and Luo, 2001; Zhang and Fung, 2006; Fung et al., 2007). Yet, to the best of our knowledge, no study has focused on the relationship between social capital and the financing behavior of Chinese firms.

In this study we follow the previous literature by conceptualizing social capital as the resources inherent in the informal web of personal relationships that senior executives at the firm have with other economic actors, which may include executives at other firms, bank officials, and government officials (Peng and Luo, 2000; Park and Luo, 2001). Such relationships are known as "guanxi" in Chinese and are reinforced by implicit rules of reciprocity and interpersonal obligation (Park and Luo, 2001). The social capital inherent in such relationships confers numerous benefits on firms regardless of their capabilities, which may include access to scarce information or resources (see Adler and Kwon (2002) for a detailed review). One scarce resource, especially in the developing economies context, is financial capital. Good social relationships with executives at other firms should improve firm access to trade credit and inter-firm loans, and good relationships with bank officials should improve firm access to bank financing. Due to the fact that the Chinese government still maintains significant direction over credit allocation, firms that have good relationships with government officials should also find it easier to obtain financial capital from the banking sector (Farrell et al., 2006; Brandt and Zhu, 2007).

Preliminary work on the relationship between social capital and capital structure has been conducted in the United States (Uzzi, 1999) and Vietnam (Nguyen and Ramachandran, 2006). Uzzi (1999) demonstrates that, when their transactions are embedded in social relationships and networks, firms are able to gain better access to bank financing at a more competitive price. Nguyen and Ramachandran (2006) find that building close social relationships with financial institutions enables SMEs to get preferential access to credit over their competitors and, hence, employ more debt, especially short term debt, in their capital structure. They also demonstrate the stronger the level of networking with other firms, the greater the debt employed by SMEs in their capital structure.

In this study, we extend this growing stream of literature by investigating the relationship between social capital and capital structure in the Chinese context. We follow previous work by utilizing entertainment expenditure as a proxy for social capital (Zhang and Fung, 2006; Fung et al., 2007). This proxy is chosen due to the lack of alternative measures of social capital in our dataset, and the fact that in China the wining and dining of officials and executives is an important part of business culture. Indeed, expenditure on entertainment has been shown to be a significant determinant of the performance of privately owned enterprises in China (Zhang and Fung, 2006) and accounts for an average of around 6.7% of the total assets of the firms in our sample, a significant amount by conventional standards. Entertainment expenditure includes the costs of meals, gifts and other related expenses, and therefore represents the investment made by an enterprise in building business and social relationships at an individual and organizational level.

## 3 Baseline specification and estimation methodology

*3.1 Baseline specification.* In order to test our hypotheses, and motivated by the literature on capital structure, we estimate the following baseline dynamic model:

$$Lev_{it} / stlev_{it} / ltlev_{it} = a_0 + a_1(lev_{it-1} / stlev_{it-1} / ltlev_{it-1}) + a_2 size_{it-1} + a_3 age_{it} + a_4(\textit{net fixed assets/total assets})_{it-1} + a_5(\textit{fixed asset growth})_{it-1} + a_6 ROA_{it-1} + a_7(\textit{depreciation/total assets})_{it-1} + a_8(\textit{social capital/total assets})_{it-1} + v_i + v_t + v_j + v_p + e_{it}, \quad (1)$$

where *i* indexes firms; *t*, time; *j*, industries; and *p*, provinces. *Lev*, *stlev*, and *ltlev* indicate in turn the total leverage to total assets ratio, the short-term leverage to total assets ratio, and the long-term leverage to total assets ratio[4]. We chose a dynamic specification to take into account the fact that the firm may have a target leverage ratio, which it may take time to reach due to adjustment costs (Flannery and Rangan, 2006). (1-$a_1$) can be seen as the firm's speed of adjustment towards its optimal leverage ratio. In line with the

[4] Short-term leverage includes bank loans, accounts payable, and other current liabilities. Long-term leverage includes long-term debt and other non-current liabilities. See Table 1 for precise definitions of all variables included in Equation (1).

predictions of both the pecking-order and the static trade-off theories, we expect firm size (which in our equation is measured as the logarithm of the firm's real sales) to be positively related to leverage. The pecking order theory surmises that smaller firms may use less debt in their capital structure due to high levels of asymmetric information which makes it relatively difficult to access bank financing compared to larger firms. According to the static trade-off theory, larger firms should have more debt in their capital structure due to lower costs of bankruptcy compared to smaller firms who are seen as being more risky in the eyes of lenders. Previous empirical research on SMEs in the context of developed economies (Cassar, 2004; Sorgorb-Mira, 2005), on larger Chinese enterprises (Huang and Song, 2006), and on SMEs in developing economies (Klapper et al., 2006; Nguyen and Ramachandran, 2006) confirms a positive relationship between firm size and all forms of leverage.

Both the pecking-order and static-trade off theories are silent as regards the relationship between age and leverage. Berger and Udell (1995) hypothesize that older firms will find it easier to access debt financing as asymmetric information problems with lenders are resolved through improvements in the firm's public reputation. Previous empirical work on SMEs investigating this relationship produced mixed results. Hall et al. (2000) find evidence of a negative relationship between the age of a firm and both short and long-term leverage in UK SMEs, whereas Romano et al. (2000) do not find age to be a significant predictor of leverage for Australian SMEs. In the context of developing economies, Abor and Biekpe (2007) find evidence of a strong positive relationship between firm age and access to bank financing in Ghanaian enterprises, whereas Klapper et al. (2006) find a negative relationship between firm age and both short-term and long-term leverage for Polish enterprises. In line with the previous findings from research on larger Chinese firms (Li et al., 2009), we expect a positive relationship between firm age and all forms of leverage for Chinese SMEs.

In line with the pecking-order theory, we expect a positive relationship between the asset structure of the firm (defined as the ratio between net fixed assets and total assets) and its ability to access bank financing. Previous research highlights the use of fixed assets as a mechanism for resolving information asymmetries between lenders and borrowers and reducing financial risk for lenders (Berger and Udell, 1998). Empirical

research on SME financing indicates a positive relationship between asset structure and long-term leverage, but a negative relationship between asset structure and short-term leverage (Chittenden et al., 1996; Hall et al., 2000; Cassar and Holmes, 2003; Sorgorb-Mira, 2005; Ortqvist et al., 2006; Li et al., 2009). Sorgorb-Mira (2005) suggests such findings result from long-term leverage being secured against fixed assets. Empirical work in developing economies produces similar results (Klapper et al., 2006). Huang and Song (2006) find a positive relationship between asset structure and both long-term and total leverage for larger Chinese firms. For Chinese SMEs, we expect a positive relationship between asset structure and long-term leverage and a negative relationship with short-term leverage: long term financing is in fact only possible on the production of collateral, whereas a greater percentage of short term borrowing might be unsecured. Previous research indicates reliance by Chinese SMEs on substantial amounts of trade credit and informal financing, which is generally unsecured (Allen et al., 2005; Cull et al., 2009; Ge and Qiu, 2007; Ayygari et al., 2008; Du and Girma, 2009).

According to the pecking order theory, a firm will tend to finance investment through retained earnings first, and raise external financing only when it is essential (Myers, 1984). This suggests a negative relationship between a firm's profitability (measured in terms of the return to assets) and its leverage. This is opposite to what is hypothesized by the static trade-off theory which suggests the more profitable the firm the greater the use of bank financing due to an increased need to shield profits from taxation and lower costs of financial distress. Despite some conflicting findings (Hall et al., 2000), empirical studies on SMEs in developed countries overwhelmingly confirm a negative relationship between profitability and all forms of leverage (Chittenden et al., 1996; Jordan et al., 1998; Michaelas et al., 1999; Cassar and Holmes, 2003; Sorgorb-Mira, 2005). In the developing economies context, Klapper et al. (2006) confirm a negative relationship between firm profitability and both short-term and long-term leverage. In contrast, Nguyen and Ramachandran (2006) do not find strong evidence of a significant link between profitability and leverage in Vietnamese SMEs. Previous empirical work on larger Chinese firms indicates a negative relationship between profitability and capital structure (Chen and Strange, 2005, Huang and Song, 2006). We expect to find a negative

relationship between profitability and all forms of leverage in the context of Chinese SMEs.

According to the static trade-off theory, there are several mechanisms that may act as a substitute to the role of debt in reducing the tax liability of a firm (Sorgorb-Mira, 2005). These are labeled non-debt tax shields and may include research and development expenses and depreciation. Empirical work on SMEs confirms a negative relationship between such tax shields and leverage for both SMEs in developed economies (Sorgorb-Mira, 2005) and larger Chinese firms (Huang and Song, 2006). We expect to observe a similar relationship for Chinese SMEs.

Finally, we expect positive relationships between the firm's growth opportunities (measured as its fixed asset growth) and investment in social capital (measured by entertainment expenditure) and all types of leverage.

The error term in Equation (1) is made up of a firm-specific time-invariant component ($v_i$), encompassing all time-invariant firm characteristics likely to influence investment, as well as the time-invariant component of the measurement error affecting any of the regression variables; a time-specific component ($v_t$) accounting for possible business cycle effects; an industry-specific component ($v_j$); a province-specific component ($v_p$); and an idiosyncratic component. We take into account the $v_t$, $v_p$, and $v_j$ components of the error term by including time, industry, and provincial dummies in all our specifications[5].

*3.2 Estimation methodology:* Focusing on total and short-term leverage, we initially estimate equation (1) using OLS. Yet, OLS does not take into account unobserved heterogeneity and the possible endogeneity of the regressors[6]. For this reason, we also present estimates obtained using a GMM system estimator (Arellano and Bover, 1995; Blundell and Bond, 1998). This estimator combines in a system the relevant equation in

[5] It is important to include industry dummies in all specifications, considering that levels of leverage vary across industries. For instance, capital intensive manufacturing firms and utility companies typically have high leverage, while hi-tech and mining companies are generally characterized by low leverage (Qian et al., 2009).

[6] Specifically, with reference to Equation (1), OLS does not take into account the $v_i$ component of the error term.

first differences and in levels[7]. It makes use of values of the regressors lagged two and/or three times as instruments in the differenced equation, and of differences of the regressors lagged once or twice in the levels equation[8]. In our specifications, we also include the following additional external instruments: an indicator of regional financial development defined as the ratio of private lending to GDP, and dummies indicating whether the firm is affiliated to central, provincial, or other governments.[9] The system GMM estimator is preferred to the simple first-difference GMM estimator when instruments are likely to be weak (Blundell and Bond, 1998).

To evaluate whether our instruments are legitimate and our model is correctly specified, we use the tests for the second and third-order serial correlation of the residuals in the differenced equation (*AR(2)* and *AR(3)*). The *AR(2)* and *AR(3)* tests are asymptotically distributed as a standard normal under the null of no second/third-order serial correlation of the differenced residuals, and provide a check on the legitimacy of variables dated *t*-2 and *t*-3 as instruments in the differenced equation[10]. In addition, we use the Hansen/Sargan test (also known as *J* test), which is a test for overidentifying restrictions. Under the null of instrument validity, this test is asymptotically distributed as a chi-square with degrees of freedom equal to the number of instruments less the number of parameters[11].

When focusing on long-term leverage, we also estimate Equation (1) using OLS and a GMM specification. Yet, because long-term debt is equal to 0 in a large number of cases, we also report a simple and an Instrumental Variable (IV) Tobit specifications[12]. In the latter case, our instrument set consists of the second lags of all explanatory variables

[7] Estimating the Equation in first-differences is a way to control for the $v_i$ component of the error term.
[8] We started using two lags of the regressors as instruments in the differenced equation. If the AR(2) test and/or the Hansen/Sargan test failed, we used instruments lagged three times, in which case the AR(3) test became the relevant test for the serial correlation of the differenced residuals (Brown and Petersen, 2009). These tests are described in detail below.
[9] More than half of Chinese firms (including private firms) are affiliated to the government at various levels. This affiliation may affect firms' access to various resources (Li et al., 2008). Importantly, political affiliation is normally assigned to established firms from the very beginning of the registration process. The political affiliation dummies can hence be considered as exogenous variables.
[10] If the un-differenced error terms are *i.i.d.*, then the differenced residuals should display first-order serial correlation. The *AR(1)* test, which is reported in Tables 2 and 3, shows that this is the case in all our specifications.
[11] Note that the *AR(2)* and *AR(3)* tests and the Hansen/Sargan test do not allow us to discriminate between bad instruments and model specification
[12] Long-term liabilities could in principle take negative values, but these negative values are not observed due to censoring.

except age, the regional financial development indicator, and the political affiliation dummies.

## *4* Data and summary statistics

We use data drawn from the annual accounting reports filed by industrial firms with the National Bureau of Statistics over the period 2000-2006. All state-owned enterprises and other types of enterprises with annual sales of more than five million RMB (about $650,000) are covered. These firms operate in the manufacturing and mining sectors and come from 31 provinces or province-equivalent municipal cities. Because our focus is limited to small and medium-sized private firms, we limit our attention to those privately owned firms with sales less than 30 million RMB and fewer than 300 employees that are registered as private[13]. Observations with negative sales, as well as observations with negative total assets minus total fixed assets, and total assets minus liquid assets were dropped. Firms that did not have complete records on our main regression variables were also dropped. To control for the potential influence of outliers, we excluded observations in the one percent tails of each of the regression variables. The inclusion of lagged explanatory variables coupled with the first-differencing of our estimating equations meant we also had to drop two years of observations for all firms. This left us with a final panel covering 65,551 unlisted firms and corresponding to 110,770 firm-year observations. Our panel is unbalanced, with number of observations ranging from a minimum of 4,380 in 2000 to a maximum of 43,138 in 2006[14].

Table 1 presents descriptive statistics relative to the main variables used in our regression analysis. We can see that the leverage to total assets ratio is generally quite high (58.7 per cent). Most of this debt is short-term, as only 24.4 per cent of our firm-years hold long-term debt, and the ratio of long-term liabilities to total assets is only 3.8 per cent. This finding is in line with Demirgüç-Kunt and Maksimovic (1999), who show that firms in developing countries tend to depend more on short-term debt. The firms in our sample perform well in terms of growth: their mean fixed asset growth rate is in fact 7.6 per cent. Their average return on assets is also high (7.4 per cent), which suggests

[13] This way of defining SMEs is suggested by the NBS.
[14] The exact structure of the panel is described in the Appendix.

good overall performance. Coming to social capital, this is defined as total management fee net of other major sub-accounts of management fee, which leaves social and entertainment expenses[15]. The average ratio of these fees to total assets is equal to 6.7 per cent, which indicates that investment in building and maintaining social capital is important for private SMEs.

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Insert Table 1 about here

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## 5. Results and discussion

*5.1 Total leverage and short-term leverage:* Table 2 presents the estimates of Equation (1). Columns 1 and 2 refer to the estimates for total leverage, obtained using the OLS and system GMM estimators respectively. We can see that in both specifications, social capital attracts a positive and statistically significant coefficient, suggesting that the more entertainment expenses firms incur, the more leverage they can obtain. Hence, in addition to enhancing firm performance (Zhang and Fung, 2006), social capital also positively affects the ability of firms to obtain leverage. This may result from the fact that, typically, private firms were, and continue to be, discriminated against by the banking sector. Until 1998, when the Chinese constitution was changed to acknowledge the private sector to be an integral part of the economy, the state-owned commercial banks were instructed to lend to state-owned enterprises only. The liberalization of the financial system that followed, theoretically, should have led to the end of discriminatory lending in favor of state-owned enterprises. However, in practice, banks still consider private enterprises to be riskier than their publicly-owned counterparts, due to their shorter credit history and lower chances of being bailed out by the government when in financial difficulties. The problem is likely to be greater for SMEs than larger private firms. The former may therefore choose to entertain bank directors, making their goals and

[15] The other major sub-accounts of the management fee include fees paid for training, insurance, and travel purposes, as well as fees paid to trade unions and environmental agencies. Note that social and entertainment fees do not directly measure social capital, but the resources used to build social capital. See Zhang and Fung, (2006) and Fung et al. (2007) who used a similar measure of social capital.

investment projects known to them, and hence reducing the degree of asymmetric information that they face.

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Insert Table 2 about here

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As for the other regressors, the lagged dependent variable has a positive and significant coefficient, which is equal to 0.71 in column 1 and 0.76 in column 2, and indicates that around 30 per cent of the deviation between the actual total leverage to assets ratio from its optimal level is eliminated within a year (Qian et al., 2009). This rather fast adjustment speed is similar to that found by Flannery and Rangan (2006) for US firms.

Contrary to the predictions of both the pecking order and trade-off theories, the firm's asset structure attracts a negative and statistically significant coefficient in the OLS specification. The significant proportion of short-term over long-term debt in the capital structure of Chinese SMEs most likely explains this negative relationship, as short-term debt is generally unsecured or secured against the current assets of the firm. This is consistent with the findings of previous research and provides evidence that firms match the duration of their assets and liabilities (Cassar and Holmes, 2003). In addition the greater use of informal sources of financing in China compared to the West, which are secured against the 'social capital' inherent in social and business networks, as opposed to fixed assets, might also explain these findings.

Column 1 indicates a positive association between the firm's size and its total leverage, which however, disappears in column 2. Age generally has an insignificant coefficient. Tangible fixed asset growth is positively related to leverage in column 1, suggesting that the higher the firm's investment opportunities, the more leverage it will take. Finally, in line with the pecking-order theory, the return on assets (*ROA*) exhibits a negative coefficient in column 1.

Columns 3 and 4 report the estimates for short-term leverage, obtained respectively using OLS and the system GMM estimator. Once again, in both specifications, social capital attracts a positive and precisely determined coefficient. The

remaining coefficients are similar to those reported in columns 1 and 2. In particular, asset structure and asset growth have respectively a negative and positive coefficient in both specifications. Furthermore, the coefficient on the lagged dependent variable is precisely determined and equal to 0.7 in both columns. Finally, in all columns of Table 2, depreciation, which can be seen as a non-debt tax shield, attracts a poorly determined coefficient. This can be seen as evidence against the trade-off theory. The Hansen/Sargan and *AR(2)/AR(3)* tests suggest that instruments lagged two/three times are suitable and that our model does not suffer from gross mis-specification problems.

In summary, the results in Table 2 suggest that neither the pecking-order theory nor the trade-off theory are fully supported when tested on our panel of Chinese SMEs. Furthermore, investment in social capital, which has been ignored in capital structure theories, is positively associated with both short-term and total leverage. These results are robust to estimating our equations with both OLS and GMM.

*5.2 Long-term leverage:* Table 3 reports our estimates for the long-term debt to asset ratio. Colum 1 contains the OLS estimates; column 2, the GMM estimates; column 3, the Tobit estimates; and column 4, the IV Tobit estimates. The results are remarkably consistent across specifications. Two findings are worth noting. First, our social capital dummy attracts a negative coefficient in all columns. Second, contrary to the case of short-term debt, the asset structure variable now has a positive coefficient. The latter finding is in line with Chittenden et al. (1996), Hall et al. (2000), Cassar and Holmes (2003), Sorgorb-Mira (2005), Ortqvist et al. (2006), and Li et al. (2009).

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Insert Table 3 about here

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These results suggest that in the Chinese context, social capital acts as a substitute for fixed assets as security for short-term lending, whereas fixed assets are used as security for long-term lending. Short-term financing generally consists of informal financing and trade credit, as well as short-term loans from banks. When borrowing informally or using trade credit, social capital is extremely important and assets are less important. Financial institutions are only willing to lend in the short-term to SMEs,

especially those with a short history and high levels of asymmetric information. For these SMEs, it is particularly important to spend time and resources to build up successful working relationships with their bank and other firms to gain access to sufficient sources of financing. On the other hand, firms that are able to access long-term financing generally have less of a need to invest in the building and maintenance of social capital due to less asymmetric information between them and their bank. These are generally successful firms, which have already built up a good relationship with their bank and other firms, and have sufficient fixed assets to use as security for lending. For these firms, entertainment expenses may actually become counter-productive.

As for the other regressors in Table 3, it is interesting to note that once again, the lagged dependent variable has a positive coefficient. Moreover, both the return on assets and asset growth exhibit negative coefficients, suggesting that it is not necessarily the best performing firms that obtain long-term debt in China. This is in line with the hypothesized predictions of the pecking-order theory that more profitable firms will tend to reinvest their profits first, before resorting to external financing. Furthermore, we can see that it is the oldest firms that make use of more long-term debt. This is probably due to the fact that these firms suffer less from asymmetric information problems. Finally, contrary to the predictions of both the trade-off and pecking-order theories, both size and depreciation generally exhibit a poorly determined coefficient.

In summary, social capital, asset structure, asset growth, and the return on assets are the main determinants of total, short, and long-term debt in China. It is also important to consider leverage within a dynamic framework, as the lagged dependent variable is significant in all our specifications. Size and age often play an important role, although the exact way in which they determine leverage depends on the type of leverage considered and the method of estimation used. Finally, depreciation is never an important determinant of leverage. These findings suggest that the trade-off and pecking-order theories do not fully explain the capital structure decisions of Chinese SMEs.

## 6. Conclusions

This paper represents a first attempt to understand the determinants of the capital structure decisions of Chinese SMEs. To this end, we have used a panel of 65,551

privately owned Chinese SMEs over the period 2000-2006, emphasizing the role of investment in social capital, which we define as expenditure on entertainment undertaken by the firm's management. Expenditure on building and maintaining social capital represents on average 6.7% of the total assets of the firms in our sample, a significant amount by conventional standards.

Our findings demonstrate that in line with work done on larger Chinese firms (Chen, 2004), neither the static trade-off nor the pecking-order theory provide a complete explanation for the capital structure that Chinese SMEs adopt, largely because these theories ignore the role played by social capital. We find that social capital is an important determinant of Chinese SMEs' leverage. Specifically, it is positively associated with firms' short-term leverage, but negatively associated with its long-term leverage, indicating that entertainment expenditure is important for firms who seek short-term financing from financial institutions, while it may become counter-productive for firms seeking longer-term financing. This may result from the fact that, typically, private firms were, and continue to be, discriminated against by the banking sector. The problem is likely to be particularly severe for SMEs, who may choose to entertain bank directors, making their goals and investment projects known to them, hence reducing the degree of asymmetric information that they face. As Chinese banks are typically reluctant to lend in the long-term, other factors become more important than social capital in determining the amount of long-term liabilities that SMEs obtain. Among these, asset structure plays a crucial role.

Our study has significant managerial and policy implications. Senior managers need to recognize the importance of building strong relationships with other economic actors to enhance firm performance in China. Without adequate social capital, SMEs may face huge difficulties in obtaining adequate short-term financing which is so important for them to survive the early years of business growth. However, managers should also be aware of the negative consequences of becoming over-reliant on interpersonal relationships, and of the obligations that entails. As well as investing money on entertaining political and bank officials, and executives from other firms, managers should also seek to invest in fixed assets which may be used as security for formal lending, enabling them to achieve sustainable growth into the future.

Policy makers need to recognize the importance of improving the ability of privately owned SMEs to access bank financing, especially in the long-term. This might be done through the development of effective credit-rating and guarantee schemes. Informal financing mechanisms based on social capital might have supported the growth of Chinese SMEs until the present day, but are arguably not appropriate if China is to develop world-class private enterprises able to compete globally. The development of effective formal financing mechanisms is especially important in times of economic crisis as we are experiencing today, when informal credit on offer to SMEs has dried up.

**Appendix 1: Panel Structure**

| No of years per firm | Frequency | Percentage | Cumulative Percentage |
|---|---|---|---|
| 1 | 35,075 | 31.66 | 31.66 |
| 2 | 21,733 | 19.62 | 51.28 |
| 3 | 18,022 | 16.27 | 67.55 |
| 4 | 17,426 | 15.73 | 83.29 |
| 5 | 7,759 | 7 | 90.29 |
| 6 | 4,521 | 4.08 | 94.37 |
| 7 | 6,234 | 5.63 | 100 |
| **Total** | 110,770 | 100 | |

| Year | Frequency | Percentage | Cumulative Percentage |
|---|---|---|---|
| 2000 | 4,380 | 3.95 | 3.95 |
| 2001 | 4,910 | 4.43 | 8.39 |
| 2002 | 7,336 | 6.62 | 15.01 |
| 2003 | 14,790 | 13.35 | 28.36 |
| 2004 | 15,671 | 14.15 | 42.51 |
| 2005 | 20,545 | 18.55 | 61.06 |
| 2006 | 43,138 | 38.94 | 100 |
| **Total** | 110,770 | 100 | |

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**Table 1: Summary statistics**

| Variables | Description | Mean | S.D. | Min | Max |
|---|---|---|---|---|---|
| *lev* | total liabilities divided by total assets | 0.587 | 0.256 | 0.002 | 1.517 |
| *stlev* | short-term liabilities divided by total assets | 0.534 | 0.268 | 0.000 | 1.368 |
| *ltlia_d* | dummy =0 if the firm has long- term liabilities, and 0 otherwise | 0.244 | 0.430 | 0.000 | 1.000 |
| *ltlev* | long-term liabilities divided by total assets | 0.038 | 0.099 | 0.000 | 0.677 |
| *size* | log (*sales* +1) | 9.364 | 0.665 | 0.000 | 10.309 |
| *age* | age | 8.211 | 6.030 | 1.000 | 60.000 |
| *ass* | net fixed assets divided by total assets | 0.322 | 0.196 | 0.002 | 0.901 |
| *asgr* | fixed asset growth (proxy for growth potential) | 0.076 | 0.499 | -2.260 | 2.486 |
| *roa* | operating profit divided by total assets | 0.074 | 0.113 | -0.186 | 0.744 |
| *dept* | depreciation divided by total assets | 0.0003 | 0.0003 | 0.0000 | 0.0025 |
| *social* | social capital: entertainment fee divided by total assets | 0.067 | 0.064 | 0.000 | 0.487 |
| *Observations* | | 110,770 | | | |

**Table 2: Dynamic models for total and short-term leverage**

| **Variables** | **OLS** | **GMM** | **OLS** | **GMM** |
|---|---|---|---|---|
| | ***lev*$_{(t)}$** | ***lev*$_{(t)}$** | ***stlev*$_{(t)}$** | ***stlev*$_{(t)}$** |
| | **(1)** | **(2)** | **(3)** | **(4)** |
| *lev* $_{(t-1)}$ */stlev* $_{(t-1)}$ | 0.714*** | 0.762*** | 0.673*** | 0.728*** |
| | (0.00268) | (0.0257) | (0.00281) | (0.0270) |
| *size* $_{(t-1)}$ | 0.00249*** | -8.65e-05 | 0.00361*** | 0.000442 |
| | (0.000876) | (0.00218) | (0.000985) | (0.00248) |
| $age_t$ | 5.29e-05 | 1.58e-05 | -4.33e-06 | 0.000192 |
| | (8.19e-05) | (0.000266) | (8.85e-05) | (0.000317) |
| *ass* $_{(t-1)}$ | -0.0518*** | -0.0225 | -0.0718*** | -0.0394** |
| | (0.00328) | (0.0148) | (0.00353) | (0.0159) |
| *asgr* $_{(t-1)}$ | 0.00657*** | 0.00246 | 0.00846*** | 0.00564** |
| | (0.00107) | (0.00217) | (0.00115) | (0.00237) |
| *roa* $_{(t-1)}$ | -0.157*** | -0.00347 | -0.186*** | -0.0207 |
| | (0.00579) | (0.0168) | (0.00596) | (0.0185) |
| *dept* $_{(t-1)}$ | 2.889 | 2.071 | 2.163 | 0.782 |
| | (2.240) | (5.046) | (2.342) | (5.175) |
| *social* $_{(t-1)}$ | 0.0457*** | 0.0559** | 0.0679*** | 0.0677** |
| | (0.00837) | (0.0274) | (0.00888) | (0.0288) |
| Constant | 0.163*** | 0.143* | 0.171*** | 0.259*** |
| | (0.00976) | (0.0775) | (0.0107) | (0.0973) |
| Observations | 109,686 | 94,100 | 110,633 | 94,922 |
| R-squared | 0.582 | | 0.554 | |
| Specification tests (*p*-values) | | AR(1) = 0.000<br>AR(2) = 0.000<br>AR(3) = 0.251<br>Hansen/Sargan =0.088 | | AR(1) = 0.000<br>AR(2) = 0.000<br>AR(3) = 0.080<br>Hansen/Sargan =0.012 |

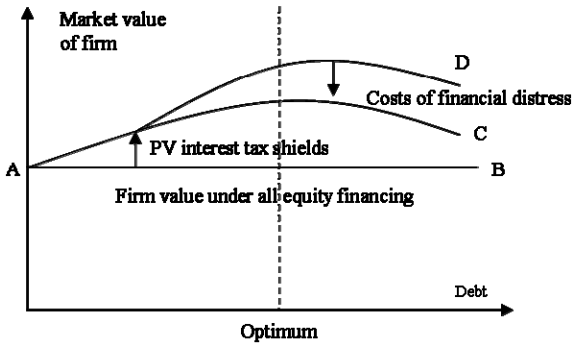
*Notes:* The specifications in columns 2 and 4 were estimated using a GMM system estimator. The figures reported in parentheses are asymptotic robust standard errors. Time dummies, province dummies, and industry dummies were included in all specifications. Instruments in columns 2 and 4 are two and/or three lags of all regressors except age in the differenced equation, and one lag of the difference of all regressors except age in the levels equation. A regional financial development indicator defined as the ratio of private lending to GDP, and dummies indicating whether the firm is affiliated to central, provincial, or other governments were also included in the instrument set as external instruments.Time dummies, province dummies, and industry dummies were always included in the instrument set. *AR(x)* is a test for $x^{th}$-order serial correlation in the first-differenced residuals, asymptotically distributed as N(0,1) under the null of no serial correlation. See Table 1 for definitions of all variables. * indicates significance at the 10% level. ** indicates significance at the 5% level. *** indicates significance at the 1% level.

**Table 3: Dynamic models for long-term leverage**

| **Variables** | **OLS** | **GMM** | **Tobit** | **IV Tobit** |
|---|---|---|---|---|
| | **(1)** | **(2)** | **(3)** | **(4)** |
| *ltlev* $_{(t-1)}$ | 0.573*** | 0.646*** | 1.094*** | 1.101*** |
| | (0.00549) | (0.0363) | (0.00373) | (0.00702) |
| *size* $_{(t-1)}$ | 0.000462 | 0.000284 | -0.00306 | 0.00770*** |
| | (0.000412) | (0.000977) | (0.00303) | (0.00124) |
| $age_t$ | 0.000217*** | 0.000198 | 0.00214*** | 0.00182*** |
| | (4.11e-05) | (0.000143) | (0.000133) | (0.000121) |
| *ass* $_{(t-1)}$ | 0.0120*** | 0.0175** | 0.0478*** | 0.0462*** |
| | (0.00151) | (0.00701) | (0.00246) | (0.00459) |
| *asgr* $_{(t-1)}$ | -0.000998** | -0.00253** | -0.00238** | -0.00394*** |
| | (0.000460) | (0.000994) | (0.000954) | (0.00152) |
| *roa* $_{(t-1)}$ | -0.00720*** | 0.00553 | -0.0515*** | -0.0309*** |
| | (0.00230) | (0.00840) | (0.00465) | (0.00790) |
| *dept* $_{(t-1)}$ | -0.427 | -2.603 | -8.347*** | 0.987 |
| | (1.042) | (2.362) | (1.749) | (3.034) |
| *social* $_{(t-1)}$ | -0.0188*** | -0.0230* | -0.111*** | -0.112*** |
| | (0.00342) | (0.0120) | (0.00709) | (0.0134) |
| Constant | 0.0153*** | -0.0704 | -0.214*** | -0.307*** |
| | (0.00452) | (0.0435) | (0.0127) | (0.0147) |
| Observations | 110,103 | 94,460 | 110,103 | 107,329 |
| Specification tests (*p*-values) | | AR(1) = 0.000<br>AR(2) = 0.000<br>AR(3) = 0.762<br>Hansen /Sargan=0.412 | | |

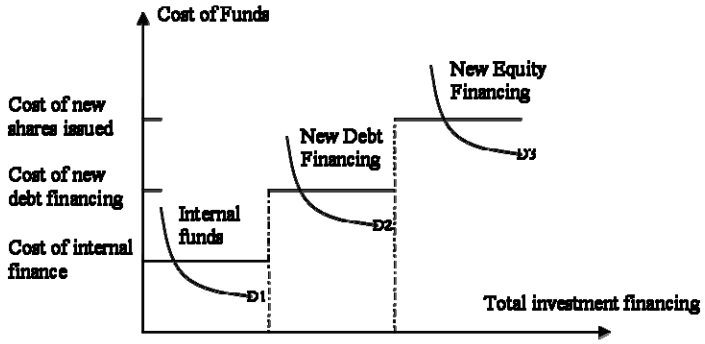
*Notes:* Time dummies, province dummies, and industry dummies were included in all specifications. The figures reported in parentheses are asymptotic robust standard errors. The specification in column 2 was estimated using a GMM system estimator. Instruments in column 2 are two and/or three lags of all regressors except age, in the differenced equation, and one lag of the difference of those same instruments in the levels equation. Instruments in column 4 are the second lags of all explanatory variables except age. In both columns 2 and 4, a regional financial development indicator defined as the ratio of private lending to GDP, and dummies indicating whether the firm is affiliated to central, provincial, or other governments were also included in the instrument set as external instruments. Time dummies, province dummies, and industry dummies were always included in the instrument set. *AR(x)* is a test for $x^{th}$-order serial correlation in the first-differenced residuals, asymptotically distributed as N(0,1) under the null of no serial correlation. See Table 1 for definitions of all variables. * indicates significance at the 10% level. ** indicates significance at the 5% level. *** indicates significance at the 1% level.

**Figure 1: The static trade-off theory**




Source: Myers, 1984

**Figure 2: The pecking-order theory**




Source: Fazzari et al. (1988)