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Capital Structure of Chinese Firms Across different Sectors: Does Ownership Structure Matter?



Abstract *This study estimates the effect of state ownership and other firm-specific variables on the capital structure of Chinese listed industries operating in different sectors. State ownership and leverage are both negatively and positively associated. The negative association of state ownership with leverage was found in construction, metals and metal products, services and transport sectors, while positive association was found in chemical, rubber, plastic & non-metallic products and machinery & other equipment. Size and profitability are the other most prominent factors affecting capital structure of the firms across different sectors in China. Hence, this study shows that in addition to other firm specific variables, ownership structure also determines capital structure of Chinese firms.*

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Introduction

One of the key components of financial analysis is to investigate capital structure of firms. Initially, researchers focused on the study of capital structure of the United States firms ([Bernanke et al., 1990](#); [White, 1993](#)). [Rajan and Zingales \(1995\)](#) and ([Wald, 1999](#)) brought other developed countries under investigation for capital structure decisions while [Booth et al., \(2001\)](#), [Demirguc-Kunt and Maksimovic \(1999\)](#) considered developing countries in their analysis. The main finding from these studies is that the set of variables important for capital structure decisions of the US firms are more or less the same for firms outside the US. More recently, emerging markets have become the focus of researchers for investigating the nexus. Among them, there are studies which of State-Owned Enterprises (SOEs) and non-SOEs in China, a transitional economy ([Chen, 2004](#); [Li et al., 2009](#); [Qian et al., 2009](#); Su, Wan and Li 2013). However these studies show mixed results; where in some they find positive association of leverage with SOEs, while in others negative. This implies that research on capital structure and its

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association with ownership structure is not complete and more in-depth study is needed. The current study fills this gap by considering the diversity in industries while investigating the relationship between ownership (SOEs vs. NSOEs) and. This is different than the previous studies where full sample regressions were used ignoring industrial variation. This study argues that firms in different industries may have variant capital structure and thus ownership association requires to be investigated considering the diversity in industries.

Chinese economy has been rapidly growing and its capital markets have attracted global investors and international firms. Its economy is also going through a transition towards a-market-oriented economy. Chinese capital market has ([Chang et al., 2014](#); [Huang and Song, 2006](#)). For example, the legal and institutional environments of the corporate sector, investors' protection, governance quality and accounting standards are relatively weak in ([Allen et al., 2005](#)). In addition, bankruptcy laws regarding a creditor's rights are ambiguous and as a result the ([Fan et al., 2009](#); [Li, 2001](#)). Chinese capital market is dominated by state-ownership. Although, many of the listed firms are privatized SOEs their controlling power still remains with state through equity holdings ([Sun and Tong, 2003](#)). Within the financial market, Chinese banking is controlled by many. State-ownership provides firms access to soft credit without effective supervision mechanisms and bankruptcy constraints. State can pressurize state-controlled banks ([Allen et al., 2005](#); [Brandt and Li, 2003](#); [Gordon and Li, 2003](#)). Such honours do not come without financial cost and hence it can reduce the accessibility of credits to private firms ([Chang et al., 2014](#)).

Chinese government controls the ([Chan et al., 2004](#)). They also observed that for equity issuance, Chinese Security Regulatory System (CSRS) has adopted a review system. Under this system, the issuance of 1990s The price of initial public offering (IPO) was set by the CSRC ranging in between 13-16 times the earning per share from 1993 to 1998. Moreover, for seasoned equity issuance strict rules and requirement have been established by CSRC. Even if a firm satisfies all the rules and requirements for seasonal equity issuance, an approval from CSRC was not guaranteed ([Chan et al., 2004](#); [Chang et al., 2014](#); [Tian, 2001](#)). Following the launch of stock market, priority was given to the SOEs operating in large industries in public share offering. In case of state regulator extending such favourable treatments to state-owned firms in, ([Chang et al., 2014](#); [Zou and Xiao, 2006](#)).

Among the previous studies, [Chen \(2004\)](#) finds in China is positively associated with its size, tangibility and growth while it is negatively associated with profitability and non-debt Tax Shields (NDTS). [Li et al., \(2009\)](#) examine the role of institutional factors in capital structure decisions and find that. Both the studies provide contrasting results with respect to state-ownership. In a similar vein, some studies show that is positively associated ([Chen et al., 2014](#); [Dong, Liu et al., 2014](#); [Huang and Sung, 2006](#); [Li et al., 2009](#); [Qian et al., 2009](#)) while others ([Chang et al., 2014](#); [Firth et al., 2008](#); [Zhengwei, 2013](#)) find negative association between the two.

This discrepancy in literature may have resulted from using different methodologies used in the studies and exclusion or inclusion of key parameters. For example, several studies have also indicated that corporate capital structure follows industry standards ([Harris and Ravi, 1991](#); [MacKay and Phillips, 2005](#); [Michaelas et al., 1999](#)) and hence it is relevant and important to account for this phenomenon while investigating the association between state ownership and leverage.

In this study we used an indicator variable, state-ownership dummy, to account for and analyse the impact of state ownership features on capital structure decisions of a firm, taking into consideration the sectors, where the firm operates. Pooled regressions estimated using OLS and GMM techniques are performed to study this relationship and present robust results. The regression results are discussed in the light of pecking order and trade-off theories. A similar methodology was used by [Talberg et al., \(2008\)](#) in his study to inspect the capital. Conclusions derived from our study showed that association of leverage and SOEs significantly differ. Similarly, the sensitivity of leverage to other firm specific variables differs significantly between the seven industries. Almost every significant coefficient for our firm specific variables has same direction of relation with leverage across all industries and in accordance with capital structure theories and other studies.

Rest of the article consists of four sections. Section two presents literature and discusses theoretical predictions. Section three presents methodology and data. Section four discusses descriptive statistics and empirical results. Section five presents conclusions and policy implications.

Review of Literature

Capital Structure Theories

Managers make financial decisions on whether to finance new projects with debt or equity. While making such decisions, one of the most important issues is to determine optimal financing mix or capital structure of the firm. Empirical analyses are based on two major capital structure theories named Pecking order and Trade-off. Trade-off theory suggests that optimal capital structure of a firm occurs at a point, where the benefit (i.e. tax shield advantage) offset the cost (of bankruptcy) associated with debt financing ([Myers,1984](#)). According to trade-off theory, [Jensen \(1986\)](#) highlighted that debt financing can stimulate organizational efficiency for two reasons. First, credit financing reduces the free cash flow due to which the manager cannot involve in corporate perks. Second, due to the threat of bankruptcy, shareholder and managers are forced to take part in organizational affair. On a theoretical level, Jensen reasoning can be applied as the manager of state owned enterprises are found to be more entrenched and can easily pursue private benefits under a low-debt. On the other hand, Pecking order theory suggests a hierarchy of preferences in making financing decisions because of the presence of. According to this theory, businesses find internal financing first then use retained earnings and hence choose debt over equity financing if internal funds are insufficient ([Chang et al., 2014](#); [Myers and Majluf, 1984](#)).

In this research we use size, tangibility, profitability, growth and ownership structure for our analysis. Selection of these variables was based on previous studies ([Chen et al., 2014](#); [Dong et al., 2014](#); [Huang and Sung, 2006](#); [Li et al., 2009](#); [Qian et al., 2009](#)). Size is measured as the value of total assets. It is argued that larger firms are more diversified and could potentially face less risk of default. Larger firms also tend to face lower agency costs due to accurate and transparent financial information system ([Fama and French, 2002](#); [Rajan and Zingales, 1995](#)). These arguments are in accordance with predictions of trade-off theory which postulates a positive relationship between size and leverage. Alternatively, pecking order theory suggests negative association of firm size and leverage as informational asymmetric problem is less severe for larger firms. Hence, large firms may consider equity financing rather than debt. Furthermore, large

firms usually have retained earnings in addition to their capital structure. Therefore, firms may not be highly leveraged because of more retained earnings ([Frank and Goyal, 2009](#)).

Profitability is considered essential and equals the earnings ratio before interest and tax to total assets. In the light of trade of theory, a company use of debt is accompanied by higher productivity as it gives the company a tax shield advantage. Firms with higher profitability have lower risk due to their regular cash flow from the business, which in effect decreases the cost of financial distress. Therefore from agency viewpoint, businesses with a successful accounting period are now using more debt to monitor their management ([Jensen, 1986](#)). It is also suggested that high earning firms generate more cash flows and therefore such firms give preference to internal financing (retained earnings) over debt or equity financing. Myers and Majluf (1984) observed that firms prefer debt over equity in case of no profit or insufficient profit. Thus, the theory presents a negative relationship between profitability and leverage.

Growth proxies for and is measured as market capitalization to total assets. predicts a negative relation between growth and leverage because firms with higher growth opportunity face underinvestment problems. This happens because the risky debt motivates firms to underinvest in positive net present value projects. Resultantly, shareholders only receive a portion of any increase in a firm's value as part of it goes to debt holder even though shareholders bear the full cost of a project ([Myers, 1977](#)). For firms having high growth, conflict of interest between debt holders and equity holder's results in investment in insecure projects that could result in reducing firm's value. These problems can be reduced by giving preference to equity financing ([Jensen and Meckling, 1976](#)). According to companies with higher growth, more debt overtime should be kept to maintain constant profitability which indicates a positive relationship between growth and leverage (Chang *et al.*, 2014). However, empirical evidence supports that a firm with higher growth carries less debt because of a ([Lemmon and Zender, 2010](#)).

According to trade-off theory, tangible assets act as a collateral and in the event of financial distress it provides security to lenders. Debt holders can limit the activities of shareholders by forcing the firm to tender tangible assets as a collateral before providing debt, but it is impossible in the case of raising funds for projects whose collateralization is not possible. Hence, positive association of leverage and tangibility is postulated ([Chang and Wong, 2004](#); [Wald, 1999](#); [Rajan and Zingales, 1995](#)). [Scott \(1977\)](#) suggests that a firm having higher. Contrary to this, the tangibility of assets entails. As a result, firms with few tangibles assets will incur more information asymmetry problem and will accumulate more debt ([Harris and Raviv, 1991](#)). This illustrates negative relationship between leverage and tangibility.

Ownership and Capital Structure

State ownership dominates the Chinese capital market. State owned enterprises have easier access to financing which can reduce their cost of financial distress and provide them a relatively higher leverage ([Bhabra *et al.*, 2008](#); [Li *et al.*, 2009](#); [Zou and Xiao, 2006](#)). Similarly, when it comes to financing through equity, SOEs face less constraint as they are treated favourably when applied for equity financing. As a result, SOEs have to borrow less, resulting in lower leverage. Researchers supported this line of argument and found that state (Chang *et al.*, 2014; [Firth *et al.*, 2008](#); [Zhengwei, 2013](#)). However,

these studies consider all the industries in their analysis and do not provide sector specific outcomes. Therefore, the impact of state ownership on the leverage at sectoral level is still not explored empirically.

Many studies have investigated the decisions of in China. For example, [Huang and Sung \(2006\)](#) empirically examine the effect of ownership on capital structure decision in China. Huang and Sung (2006) show that Chinese firms leverage grow with increase in a firm's size, and it decrease with its growth. The study further shows that profitability and state ownership does not have a relationship. Li *et al.*, (2009) and [Qian *et al.*, \(2009\)](#) also analysed the impact of ownership on capital structure decisions of Chinese firms. Their findings suggest that book leverage of Chinese firms . [Firth *et al.*, \(2008\)](#) reports that state ownership and book leverage are negatively associated. Dong *et al.*, (2010) empirically examine the relationship between political patronage and for the years 1998-2007. Dong *et al.*, (2010) found a positive association of size and tangibility with leverage. They also found negative relationship of profitability and growth with leverage. They also found that state owned enterprises tend to borrow more compare to non-SOEs. [Zhengwei \(2013\)](#) examines whether corporate ownership affects corporate capital structure by analysing a panel data of 82 Chinese firms for the years 1998 to 2007. Their findings suggest that private firms face higher financing fraction compared to state owned financing activities. Chen *et al.*, (2014) extended the sample to 1481 firms in China and found a positive association between leverage and indicating that tend to borrow more comparatively to non-state-owned enterprises. Whereas Chang *et al.*, (2014) reports that are negatively associated with book leverage.

In the light of the literature discussed above, it can be concluded that studies have found contradictory results with respect to the effect of ownership structure on capital structure of Chinese firms. One of the major reasons for the disagreement between these researchers could be that they did not account for the sectoral variation in their study. That is their results are based on pooled regression without considering individual industries in their analysis. This study estimates the effect of ownership structure on capital structure both at sectoral level as well as industries operating in different sectors are pooled together. The next section presents the empirical model and data used to estimate this relationship.

The Empirical Model and Data

Empirical Model

The empirical model postulates that leverage (L_{isy}) of firm i of sector s in year y is determined by size ($\ln A_{icsy}$), tangibility (T_{icsy}), profitability (ROA_{icsy}), growth (TQ_{icsy}) measured as Tobin's Q and a dummy representing ownership structure. Leverage is the ratio of firm's total debts to total assets. Size is the natural log of total assets measured in billion US\$. T is the ratio between net tangible assets and total assets. ROA is the equal to earnings before interest and taxes to total assets. TQ is equal to the ratio of market capitalization to total assets. This study extends the estimated equation of Booth *et al.*, (2001) and [Rajan and Zingales \(1995\)](#) by including a dummy variable (DO_{is}) representing the ownership structure of a firm, where it equals to one for state-owned and zero otherwise.

$$L_{isy} = \alpha_{isy} + \gamma_1 \ln A_{isy} + \gamma_2 T_{isy} + \gamma_3 ROA_{isy} + \gamma_4 TQ_{isy} + \gamma_5 DO_{is} + \eta_y + \eta_s + \mu_{isy} \quad (1)$$

where η_s , and η_y reflect sector-specific and year-specific fixed effects, respectively, \ln is a natural logarithm, and μ_{icsy} is an error term. In equation-1, γ_1 to γ_5 are the estimated parameters of their respective variables. γ_5 shows the impact of state ownership on the firm leverage. In fact, it is an SOE's intercept shifter when contrasted with a non-SOE's base case. Equation 1 is our basic model, and γ_5 statistical significance refers to our first question. Firm specific fixed effects (δ_s) are eliminated from equation-1 and then it is estimated for individual sectors to study whether ownership structure determine capital structure decision at sectoral level or not in China.

Data

The study uses the latest annual financial and accounting data from 715 state-owned listed companies, and 6180 non-state - owned listed companies from 2011 to 2015, collected from Orbis. Firms are taken from seven different sectors. We used the Bureau Van Dijk (BVD) major sector classification. The sectors are defined according to the statistical classification of economic activities across the world. The selected sectors include construction (BVD 10),. The number of observations of each sector according to ownership is given in Table 1.

Table 1. Number of SOEs and NSOEs Across Different Industries

Industries	SOEs	NSOEs
Construction	9	35
Chemical, rubber, plastic and non-metallic products	26	335
Machinery and other equipment	42	500
Metals and metal products	20	110
Primary sector	17	52
Services	16	154
Transport	13	49

Source: SOEs and non-SOEs data are from Orbis and industrial classification is according to Bureau Van Dijk.

Results and Discussion

Table 2 presents the descriptive statics of the variables for for the entire period. Differences in the mean values of SOEs and non-SOEs is tested using t-statistics. The SOEs included in the sample are significantly larger in size (14.827) and have more tangible assets (0.944) than non-SOEs. However, non-SOEs are more profitable (0.044) and have higher growth ratio (1.555) as compared to non-SOEs. Standard deviation of size and Tobin's Q showed that as compared to other variables, these variables were more dispersed.

Table 2. Descriptive Statistics of the Variables Across Ownership for the Period 2011 to 2015

Variables	Ownership	Number of observations	Mean	Median	Standard Deviation	T-stat
Leverage	SOE	715	0.580	0.604	0.203	14.224***
	Non-SOE	6180	0.457	0.459	0.220	
Size	SOE	715	14.827	14.688	1.575	31.278***

	Non-SOE	6180	13.217	13.081	1.268	
Tangibility	SOE	715	0.944	0.970	0.087	3.634**
	Non-SOE	6180	0.931	0.957	0.091	
Profitability	SOE	715	0.035	0.035	0.072	3.054**
	Non-SOE	6180	0.044	0.038	0.071	
Tobin's Q	SOE	715	0.749	0.444	0.845	8.624***
	Non-SOE	6180	1.555	0.936	2.482	

*** and ** shows significance at 10, 5 and 1 percent level. Difference in the mean values of the variables of SOEs and non-SOEs is tested using t-statistics.

Generalized Method of Moments (GMM) and Ordinary Least Square (OLS) techniques are employed for estimation equation (1) and present robust results in this section. Fixed effect estimation technique is not considered because it eliminates the ownership dummy, which is the main focus of the study. The GMM method solves cross-section dependence and endogeneity problems in a regression model (Roodman, 2006). Two techniques are used to estimate equation (1) both at sector level as well as pooled together. Results of the pooled regression are presented in Table 3 while sector specific results are presented in Tables 4 to 6.

Estimates of the pooled regression (Table 3) show that the entire estimated model are statistically significant and have a high explanatory power. Statistically significant F-statistics show that the hypothesis that all the exogeneous variables do not determine leverage is not accepted. All the estimated parameters, using OLS and GMM techniques are statistically significant. The company's size is positively correlated with the leverage which means that a firm's leverage increases with its size. Profitability is negatively associated with leverage in all the models and is consistent with existing result of China in literature (Chang *et al.*, 2014; Huang and Song 2006). who found a similar association for the US firms. The coefficient of profitability is -1.030 which is approximately four times the coefficient of -0.25 for the U.S. firms or the coefficient of -0.226 for firm fro. (Chang *et al.*, 2014; Fan *et al.*, 2012; Frank and Goyal, 2009). These differences suggest as the most essential for Chinese listed enterprises. Both of the techniques show that Tobin's Q is also negatively associated with book leverage. Ownership is a key determinant of capital structure and has a significant negative effect on leverage. The dummy parameter displays the average impact of state ownership on all the industries operating in different sectors included in the study and it can be concluded that on overall ownership negatively affects leverage. Our full sample results for the association between explanatory variable including dummy, with leverage are consistent with existing result in literature (Chang *et al.*, 2014; Huang and Song, 2006; Zou and Xiao, 2006).

Table 3. The Impact of Ownership on Capital Structure of all the Selected Industries in China

Variables	OLS	GMM
Size	0.079*** (38.690)	0.079*** (41.960)
Tangibility	0.114*** (4.190)	0.092*** (3.720)

Profitability	-1.030*** (-18.760)	-1.031*** (-33.760)
Tobin's Q	-0.004** (-2.140)	-0.004*** (-3.400)
SOE	-0.016** (-2.260)	-0.016** (-2.180)
Year dummy	Yes	Yes
Industry dummy	Yes	Yes
Number of observation	6895	6895
F-Prob.	0.000	0.000
R-Squared	0.366	-
Adjusted R-Squared	0.365	-
RMSE	0.177	-
AR(2) P-values	-	0.841
Sargan j test P-value	-	0.584

*** and ** shows significance at 10, 5 and 1 percent level.

Tables 4 to 5 present the sector level analysis of. These tables show that all the models are statistically significant with a high explanatory power. R-Squared is one of the important indicators of the performance of econometric models. Despite some variation, our regression model performed well, with a minimum R-squared of 0.195 for primary sector to 0.517 for construction sector. The performance of the model varies across sectors as debt ratio and other exogenous variables are governed by different factors for industries operating in different sectors. These result shows that the sensitivity of leverage with explanatory variable differ significantly in all the seven sectors which is in line with [Talberg et al., \(2008\)](#) who found similar results while performing industrial regression for U.S. firms (Table 4). The estimated Coefficient while using GMM methods are also consistent with the OLS model. The AR (2) test conducted using GMM tests for autocorrelation and has a null hypothesis of no autocorrelation. The null hypothesis of no autocorrelation was accepted in all the estimated models. Additionally, the Sargan-J test estimated using GMM technique shows that whether the estimated parameters are identified a priori due to financial or economic restrictions on the parameters and hence tests for the problem of over identification. The null hypothesis of the test assumes no over-identification. The hypothesis of no over-identification is accepted in all the estimated models.

The association between size and book leverage is positive for all selected sectors. This association is consistent all the estimation techniques. These findings confirm that size is the among the selected sectors of China. The coefficient of size varies from 0.026 for primary sector to 0.092 for chemical, rubber, plastic and non-metallic products. association of firm size and leverage given that informational asymmetric problem is less severe for larger firms. Hence, in financial distress large firms may opt for equity financing rather than debt. The implication of size and leverage is that the selected industries have more opportunity to acquire long term debt. The coefficient of size in chemical, rubber, plastic and non-metallic products is 0.092, which is almost twice as the size for the chemical and chemical products sector in U.S. as reported by [Talberg et al., \(2008\)](#). However, the coefficient of size for construction is 0.062, which is smaller than the coefficient of size (0.09) in U.S. construction sector as reported by [Talberg et al., \(2008\)](#). The implication is that Chinese chemical, rubber, plastic and non-metallic

products sector are larger in size, while construction sector is smaller in size when comparing with U.S. chemical and chemical products and construction sectors.

Table 4 shows that the effect of tangibility on the book leverage is positive and statistically significant in construction, metals and metal products and services industries. These results are consistent with those estimated with GMM. Tables 4 and 5 also show that and statistically in transport sector and is in line with. The probability that bigger firms have less information asymmetry is high and hence have a greater propensity to issue equity. The positive relationship between tangibility and book leverage supports building trade-off theory in construction, metals and metal products and services industries. The positive association also confirm that firms having high fixed assets can use these as collateral to get more debt.

The effect of profitability on leverage is consistently negative and statistically significant. Hence, just like size, the effect of profitability is overwhelmingly unidirectional confirming the. The theory presumes that profitable firms meet internal financing first, (Mayers and Majluf, 1984). Frank and Goyal (2009) also found similar results for developed countries and Fan et al. (2012) and Chang *et al.*, (2014) for developing countries. Higher profitability also provides frequent cash flow to firms which reduce their cost of financial stress implying a negative association with book leverage. High profitable firms are also able to use retained earnings for avoid debt. Similarly, Tobin's Q has a negative association with book leverage, whenever it is statistically significant, no matter what estimation technique is used. This negative association is consistent with earlier finding of Bhabra *et al.*, (2008), Huang and Song (2006) and [Zou and Xiao \(2006\)](#) and trade-off theory. The association between Tobin's Q and book leverage is negative since. The implication is that firms with higher growth are likely to use a bigger proportion of equity to finance their growth in order to mitigate underinvestment issues associated with the use of risky debt ([Smith and watts, 1992](#)).

Table 4. Industry Level OLS Estimates of the effect of Ownership Structure on Capital Structure

Variables	Chemical, rubber, plastic and non-metallic products	Construction	Machinery and other equipment	Metals and metal products	Service sector	Primary sector	Transport sector
Size	0.092*** (21.680)	0.062*** (6.420)	0.084*** (22.690)	0.081*** (15.440)	0.092*** (24.410)	0.026** (3.300)	0.029*** (3.440)
Tangibility	0.025 (0.360)	0.300*** (7.770)	0.132* (2.440)	0.092 (1.590)	0.164* (2.440)	0.035 (0.360)	-0.141** (-2.780)
Profitability	-1.254*** (-14.240)	-1.332*** (-4.490)	-0.836*** (-9.310)	-0.969*** (-6.490)	-0.870*** (-6.210)	-1.081*** (-5.640)	-2.082*** (-9.060)
Tobin's Q	-0.006 (-1.43)	-0.040** (-2.780)	-0.004 (-1.450)	-0.012** (-2.880)	-0.004 (-1.670)	-0.009 (-0.860)	-0.034*** (-3.360)
SOE	0.028* (1.870)	-0.054* (-1.670)	0.037** (2.710)	-0.069*** (-3.670)	-0.048** (-2.520)	0.020 (0.860)	-0.067** (-3.100)
# Observation	1805	220	2710	655	850	345	310
F-Statistics	116.200	25.010	154.500	55.540	76.520	9.015	23.170

R-Squared	0.368	0.517	0.340	0.436	0.450	0.195	0.410
Adjusted R-squared	0.365	0.497	0.338	0.428	0.445	0.173	0.392
EMSE	0.177	0.136	0.176	0.159	0.177	0.181	0.163

*** and ** shows significance at 10, 5 and 1 percent level.

Table 5. Industry Level Gmm Estimates of the Effect of Ownership Structure on Capital Structure

Variables	Chemical, rubber, plastic and non-metallic	Construction	Machinery and other equipment	Metals and metal products	Service sector	Primary sector	Transport sector
Size	0.092*** (22.220)	0.062*** (7.270)	0.084*** (25.880)	0.081*** (14.940)	0.092*** (20.600)	0.026*** (3.380)	0.029*** (3.760)
Tangibility	0.025 (0.500)	0.299*** (6.040)	0.132* (2.540)	0.0929 (1.210)	0.164** (2.940)	0.035 (0.360)	-0.141* (-1.810)
Profitability	-1.254*** (-22.730)	-1.333*** (-5.450)	-0.836*** (-17.330)	-0.969*** (-8.830)	-0.870*** (-10.310)	-1.081*** (-7.530)	-2.079*** (-10.370)
Tobin's Q	-0.006** (-2.590)	-0.040*** (-3.770)	-0.004 (-1.950)	-0.012** (-3.110)	-0.004* (-2.060)	-0.009 (-1.400)	-0.034*** (-3.600)
SOE	0.028* (1.740)	-0.054* (-1.690)	0.037** (2.800)	-0.069*** (-3.540)	-0.048* (-2.240)	0.020 (0.720)	-0.067** (-2.880)
# Observation	1805	220	2710	655	850	345	310
F-Statistics	116.150	28.260	154.470	55.540	76.520	9.020	26.130
# of Instruments	11	10	11	11	11	11	10
AR(1) P-level	0.091	0.719	0.010	0.905	0.568	0.913	0.067
AR(2)P-level	0.828	0.735	0.535	0.639	0.281	0.224	0.728
Sargan J test	0.245	0.916	0.304	0.896	0.330	0.498	0.712
P-value							

*** and ** shows significance at 10, 5 and 1 percent level.

Out of fourteen estimates, the positive in four instances, negative in eight and has no effect in two instances. State-owned enterprises have high book leverage in, while negative in construction, metals and metal products, services and transport sectors. These findings suggest that effect of institutional differences such as ownership structure on leverage do vary across industries operating in different sectors in China. The positive association between ownership and book leverage could be due to their relatively higher contribution to the Chinese GDP. The other reason could be that these firms have relatively easy access to finances from banks. As [Zhao and Tang \(2018\)](#) showed that the Chinese economy is concentrated relatively more in the manufacturing sector compare to other sectors. Also, among the previous study on ownership in China, [Li et al., \(2009\)](#) show a positive association between state ownership and leverage for listed manufactured firm.

Conclusion

China is the leading of the world. Its rapidly growing economy and capital markets have been attracting many investors and firms through the world. decision of Chinese firms is important because of its unique and distinct institutional features. However, have provided results regarding on. We argue that mixed results are due to ignorance of sectoral variation. Given this gap, we employ two different estimation techniques OLS and GMM to estimate the for seven different sectors using data from 2011 to 2015.

Our analysis reveals on book leverage is consistent across estimation techniques and according to trade-off and pecking order theory. The positive association between leverage and size indicates that larger firm have more opportunity to acquire long-term debt. The negative association between profitability and leverage implies that profitable firm prefer internal financing to external debts. A more interesting finding of this study is that direction of relation between firm specific variables and leverage is same across the selected industries, which is also the case for U.S. industries ([Talberg et al., 2008](#)).

The negative association of with in construction, metals and metal products, services and transport sectors reflect favourable treatment in season equity financing. As the contribution of these industries in economic growth is relatively less, the state gives favourable treatment to these industries through equity financing. Firms in these sectors will be losing grounds to their private-sector peers in the long-run and China may need to forfeit state capitalism in these sectors. Chinese government needs to focus on more “strategic sectors” rather than keeping on ownership of lowland companies. The positive relationship between in manufacturing sectors reflects easier access to financing, reducing the financial distress cost of firms. One explanation for the existence of positive association in manufacturing sector is that in comparison to the other sectors, Chinese economic growth is concentrated relatively more in the manufacturing sector. Hence, we conclude that is not unidirectional and vary across the sectors where the firm is operating. In, Barclays words, putting SOEs right is “the most critical reform area for China in the coming decades”.

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