

## Capital Structure and Political Patronage: Evidence from China

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This paper examines the effect of political patronage on capital structure of listed companies on the Shanghai Stock Exchange. An empirical study is conducted using a common linear regression method, advanced panel data regression and two way-effect panel data regression to test whether conventional capital structure decision theory applies to the Chinese economic environment. Large non-voting shares are used as proxy to represent political patronage. We find a positive and significant link between leverage and political patronage. We also find evidence of an indirect link between political patronage and capital structure through firm size and profitability. The result proved the existence of political patronage on Chinese listed firms. Chinese firms do not follow conventional trade-off theory, MM theory or pecking order. Chinese institutional characteristic affects the capital choice decision and the largely state ownerships do affect capital structure choices. We conclude that firms with strong political patronage prefer to raise equity first because they do not pay good dividends. Equity, debt and internal funds are their choice of capital structure.

Keywords: China, listed firms, capital structure, theory, leverage, financing characteristic

### Introduction

Capital structure refers to how a company funds its operating activities; where it gets the money from and how it allocates financing items in its balance sheet. It is a mix of debt versus equity in a business capital. China companies' choice of raising capital has always intrigued Western readers; yet, the determinants of capital structure for firms in China are unsolved issues. Prior empirical work on capital structure (Titman and Wessels, 1988; Harris and Raviv, 1991; Myers, 2001; Hovakimian et al., 2001; Frank and Goyal, 2003; Welch, 2004) has provided some insights into the determinants of capital structure of US firms. The link between institutions and capital structure were recorded by (Rajan & Zingales, 1995; La Porta et al., 1998; Johnson & Mitton, 2003).

Lately, there is a growing literature linking political patronage to capital structure. Close relation between politics and firms on policy grounds was first highlighted by (Alavi, 1996). Some suggested that political connections help firms to secure favorable regulatory conditions (Agrawal & Knoeber, 2001), access to resources such as bank loans (Khwaja & Mian, 2005; Faccio, 2006; Fraser et al., 2006) and equity markets (Francis et al., 2009), and ultimately

influence firm value or corporate performance in a variety of ways (Fisman, 2001; Dewenter & Malatesta, 2001; Johnson & Mitton, 2003; Fan et al., 2007; Tian & Estrin, 2008; Boubakri et al., 2009; Ng et al., 2009; Boubakri et al., 2010; Chen et al., 2010). Some argued that political patronage is a result of financial under-development rather than some cultural propensity for corruption (Rajan & Zingales, 1998, 2003). It seems that the influence of political connections occurred more often in emerging markets where the financial system is less developed. The link between political patronage and capital structure is an important and unexplored issue.

This paper examines the effect of political patronage on the capital structure of listed companies on the Shanghai Stock Exchange. We hypothesized that Chinese firms with stronger political connections should carry more debts. Beside determinants such as firm size, growth opportunities, profitability and asset tangibility, we show that state ownership and large number of non-tradable shares can influence the choice of capital structure.

### Literature Review

#### *Capital Structure research in China*

Since Rajan and Zingales (1995), capital structure

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research has become increasingly internationalized. Huang and Song (2002) studied “whether corporate financial leverage decisions made in the Chinese listed firms are different from those made in firms in other countries. They concluded that “capital structure theory applies in China and state ownership of these firms does not prevent these firms from following the capital structure theory.

Chen (2004) argued that the difference, in long-versus short term debt, can better explain the capital structure of Chinese listed companies. They discovered that neither pecking-order theory nor trade-off theory can explain the capital choice preference of Chinese companies. The Chinese firms seem to follow a new theory called “new Pecking Order Theory”, which suggests that Chinese firms choose retained profit, equity, and lastly, debt. The management of the firm prefers the equity financing than the debt financing because the former one is not binding (Chen, 2004). The author does not refer to the infant stage bond market as one reason for this new pecking order. Qian, Yao and Wirjanto (2007) use advanced econometric tools to improve the

regression of the six determinants and the independent variable—total leverage ratio. The methods, including GMM estimation, static panel-data models and dynamic panel-data models, are applied to test whether there exist a target debt ratio referred in the trade-off theory. Their complex regression result showed that “there is large and statistically significant lagged leverage effect on firm’s current leverage, suggesting that there is a target debt-to-equity ratio for publicly listed Chinese companies in our sample and thus the estimates obtained from the static panel-data models are biased and inconsistent.

The estimation of the dynamic panel-data regression also suggests that firm size, tangibility and ownership structure were all positively associated with firm’s leverage ratio while profitability, non-debt tax shields, growth and volatility are negatively related with firm’s leverage ratio although the growth effect is extremely small and statistically insignificant. Lastly, lagged profitability has a small and positive impact on firm’s leverage ratio (Yanmin Qian, Yao Tian, & Tony Wirjanto, 2007).

Table 1. Definition of variables

variables		Definitions	Theoretical signs
Dependent	Total leverage (LEV)	Total debt divided by total assets (TD/TA)	
	Long-term leverage (LLEV)	Long-term debt divided by total assets (LD/TA)	
Independent	Profitability (PROF)	Earnings before interest and tax divided by total assets (EBIT/TA=ROA)	>0 (trade off) <0 (Pecking order)
	Asset tangibility (TANG)	Fixed assets divided by total assets (FA/TA)	>0
	Firm size (SIZE)	Natural logarithm of total assets (Ln(TA))	>0 (trade off) <0 (Pecking order)
	Non-debt tax shields (NDTS)	Depreciation divided by total assets (Dep/TA)	<0
	Growth opportunities (GROWTH)	Change of total assets ( $\frac{TA_t - TA_{t-1}}{TA_{t-1}}$ )	<0 (agency cost, trade off) >0 (pecking order)
	Earnings volatility (EVOL)	Standard deviation of the return on assets	<0
	Non-circulating shares (NCS)	Non-circulating shares divided by total shares	>0

### *China Political Patronage*

Political patronage refers to political leaders using their power to grant economic favors to connected firms (Fisman, 2001; Johnson & Mitton, 2003; Faccio, 2006). Khwaja & Mian (2005) suggested that political favors could be extended to a group of firms. Qin (2012) documented four reasons for political patronage, namely: social networking, information view, reputation building and bribery.

In China, a typical listed firm has a combination of owners. Ownership structure is typically made up of three primary groups of shareholders – the state, legal persons and domestic individual investors. Capital from central government is named state capital and falls into two types: capitals towards the central enterprises and capital towards other regional enterprises. Central enterprise is the one with its control rights-managerial appointments, asset disposals, strategic directions-of the firms and some

or all of the income rights reside with the central government. Regional enterprise is one where the same control and income rights belong to a regional government (Huang, 2004). State shares are generally classified as those held by one of the various levels of government, state agents or by SOEs. These are held by the state and state-owned holding companies on behalf of the state. There are three forms of state backed ownership – “direct”, “state shares” and “legal persons”. Generally, the first two are simply classified as “state shares” and the last as “legal person” shares. Legal person ownership is state equity held by state domestic institutions or holding firms. These are principally autonomously managed investment institutions that are primarily state-owned government agencies (Gul & Zhao, 2001; Xu & Wang, 1999). Therefore, the ownership structure is a

form of pyramid holdings; in this case, primarily by the state (Watanabe, 2002). None of these holdings can be publicly traded. They are thus often classified as “non-tradable A-shares.”

Figure 1 depicts the average holdings of listed firms in China for the years 1999-2009. As can be observed, State held an average of 41.28% of equity in listed firms in China during this period, whereas LP (legal persons) holdings were 19.43%. Thus, overall, the state had a significant influence, if not control, of an average of 60.71% holdings during this period. Private ownership was made up of Public Shares at an average of 30.45% and Foreign Shares at just 3.17%. Therefore, even though these are partially privatized firms, the average private holdings were just 33.62% during this period.

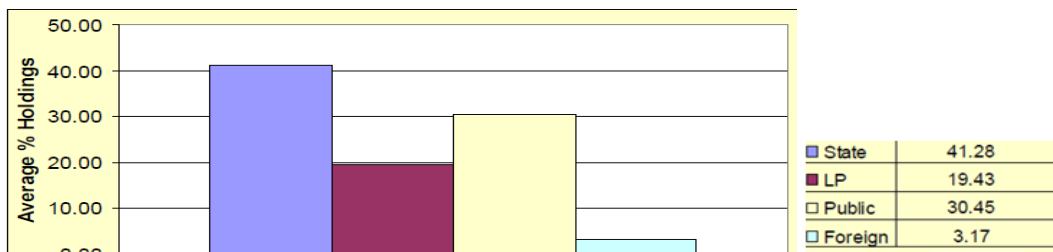


Figure 1. Average share-holding from 1999 -2009.

**Relationships between the state ownership and capital structure**

From 2008 to 2011, the Chinese government’s monetary policy went through a very turbulent process. From 2008 to 2009, the Chinese government used approximately 4000billion RMB to stimulate the economy. The negative effect of this stimulus appeared unexpectedly. So, in order to deal with the potential high level of liquidity, the People’s

Bank of China tightened the monetary policy. The deposit reserve rate rose very quickly; millions of small sized enterprises in Eastern China went bankrupt and thousands of real estate enterprises stop their projects due to the pressure of their cash flow. In contrast, the state owned enterprise was almost not affected by the tight monetary policy. The relationship between the state ownership and the investment structure is shown by Tables 2 and 3.

Table 2. Category leverage ratio

Year	Leverage Ratio of state owned listed enterprises(mean value)	Leverage Ratio of private owned listed enterprises(mean value)
2008	68.76%	61.42%
2009	69.70%	59.37%
2010	69.82%	59.40%
2011	70.13%	58.91%

Source: Shanghai and Shenzhen Stock Exchange (2008-2011).

Table 3. Credit ranking.

Credit ranking	State owned listed companies	Private owned listed companies
AAA	130	61
AA	99	40
A	0	21
B	0	19

The leverage of state owned enterprises is much higher than the leverage ratio of the private owned enterprises. This is due to political patronage.

### Data

We collect data of 256 A-share listed firms from non-financial sector traded on the Shanghai Stock Exchange over the period of 2009-2011. The data was supplied by the China Stock Market and Accounting Research Database (CSMAR). Wharton Business School had included the data from CSMAR into their research institute's own database (WRDS).

$$X'_{it} = (PROF_{it}, TANG_{it}, SIZE_{it}, NDTs_{it}, GROWTH_{it}, EVOL_{it}, NCS_{it})$$

In addition,  $\beta$  is a  $7 \times 1$  vector of parameters,  $\alpha_i$  is the unobserved firm specific effect, and  $\varepsilon_{it}$  is the unobserved zero-mean error term.

### Model 2: Static panel data models

The common multifactor regressions can only detect and test the significance and robustness of the six factors and large amount work has been done. This paper aims to develop the model to advanced levels which can reflect the reality and feature of Chinese companies more properly.

Since firms are likely to be unique due to variable

$$Y_{it} = a + X'_{it}\beta + \sum b_j d_{it} + \alpha_i + \gamma_t + \varepsilon_{it}, i = 1, 2, \dots, 36; t = 1, \dots, 5$$

$$\text{Where } X'_{it} = (PROF_{it}, TANG_{it}, SIZE_{it}, NDTs_{it}, GROWTH_{it}, EVOL_{it}, NCS_{it})$$

$d_{it}$  is the  $j_{th}$  industry dummy variable defined as  $d = 1$  if firm belongs to industry  $j=2, \dots, 12$ , and  $d = 0$  otherwise  $\alpha$  is the (unobserved) firm specific effect,  $\gamma_t$  is time effect for given year  $t$  over firm  $i$ , and  $\varepsilon_{it}$  is the unobserved zero-mean error term.

### Model 3: Dynamic panel data models

When taking the transaction cost into account when we discuss the capital structure adjustment process, the dependent variable---Total leverage (LEV) will have a dynamic adjustment form:

$$y_{it} = \alpha\lambda + \lambda x'_{it}\beta + (1 - \lambda) y_{it-1} + \sum \lambda b_j d_{jit} + \lambda + \lambda \varepsilon_{it}$$

## Models Specifications

### Model 1: Simple multiple regressions

Since the 36 Chinese public listed firms from the financial industry over the period of 2009-2011 are the sample, the basic regression model can be formulated as follows:

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

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

reasons, like Qian (2007) had mentioned in his paper, which we have mentioned before: "legal differences across the country, the varying degrees of exports by companies, the nature of the business and the risk profile of managers, etc. Also, it is likely that macroeconomic shocks and changes in the institutional context have occurred in China over the period 2009-2011. In this situation, a panel-data analysis is desirable because it allows for time effects and controls for heterogeneity by including firm-specific effects which may be treated as fixed or random". The advanced regression model can be formulated as follows:

$$y_{it} - y_{it-1} = \lambda(y_{it}^* - y_{it-1})(0 < \lambda < 1),$$

Where  $y_{it}^*$  is the target leverage ratio. The coefficient  $\lambda$  between 0 and 1 is inversely related to adjustment cost. When  $\lambda = 0$ ,  $y_{it} = y_{it-1}$ , which means there is no adjustment to the target debt ratio because the transaction cost is too high. When  $\lambda = 1$ ,  $y_{it}^* = y_{it}$ , which means the adjustment occurs very quickly and with no friction. Apply this into the formulate equation of model 2, we will come out with:

## Empirical Results and Analysis

Here are three models which have used three different estimation methods in panel data regression and the common linear regression is also performed to demonstrate the advantage of using the panel data regression. The most important part for this paper's empirical part is implanting the maximum likelihood estimation method and the ordinary least square estimation method to estimate the two-way fixed effect in panel data regression. Then the famous Hausman test is performed to decide which of the effect estimator is more suitable for our model.

In this OLS linear regression, the empirical evidence obtained has suggested that the coefficient of size, growth and tangibility is not significant at 99% or 1% statistical level. But this does not indicate that these terms are not statistically significant to explain the leverage ratio. The reason leading to the insignificance t-statistic is various; including too small data sample, inefficient market problem and so forth.

But generally, this model is good. The R square is 62% which means these seven models can explain 62% effect of leverage ratio; i.e. the capital structure decision problem can be explained by these seven factors by 62% percent. The most important part of this common OLS regression is the fact that it is just like what this paper has expected. The profitability term is negatively related to leverage ratio and is significant at a very high statistical level. Additionally, no circulating share term is positively related to the leverage ratio. So the political patronage effect in this OLS regression for this data sample is significantly strong. In other words, this common OLS regression demonstrates the political patronage effect of the Chinese SHEC listed companies.

Since Stata lacks a command to automatically fit two-way fixed effect models, if the number of the time periods is reasonably small, the two-way fixed effect model can be fitted by creating a set of time indicator variables. The joint test that all the coefficients on those indicator variables are zero will be a test of the significance of time Fixed-effect. This testing method works the same way as the individual FE model which requires repressors' variation over time within each time unit.

The two-way FE model is created by adding time effects to the model. The time effect is generated by the command 'tabulate the year' and then transformed into centered indicators by subtracting the indicator for the excluded class from each of the other indicator variables.

The statistical significance result for each variable is quite similar to the ex-model but the R square in 'between group' is very high at 87.67%. Just like the normal FE model, there is a series of

correlation between  $\mu_i$  and dependent variable  $X_t$  and the F-test shows that not all  $\mu_i$  is zero for each unit. Like before, 'non-circulating share' is still treated as a group variable which means Stata automatically treats the 'non-circulating share' variable as significant.

## Conclusion

The empirical analysis shows that there is a relationship between proportion of state ownership and the investment structure. 1) listed companies enjoying government subsidies are positively correlated with investment structure, 2) the effective tax rate of listed companies is not related to its investment structure, 3) the listed company which has access to credit support has a significant effect on its investment. The debt/equity ratio is influenced by the type of company and industry that it belongs to.

The long-term debt ratio tends to be higher for larger state-owned firms which are less profitable. Both the long-term debt ratios and firm characteristics seem to change over time. There is a tendency for the long-term debt ratio to steadily decrease from 8.15% in 2000 to 3.69% in 2007; for state ownership, to dramatically drop from 26.43% in 2000 to 3.92% in 2007; for LP institutional ownership, to increase from 16.22% in 2000 to 25.97% in 2007.

We investigated the determinant of long-term debt ratios of Chinese non-listed firms and empirically examined the political patronage hypothesis which holds that state ownership help firms to receive more long-term loans from banks in a country where the banking industry is dominated by state-controlled banks. Using three different models, this paper has demonstrated the political patronage effect on capital structure decision of firms on the SHSE.

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