# ULTIMATE OWNERSHIP STRUCTURE AND CAPITAL STRUCTURE: EVIDENCE FROM CHINESE LISTED COMPANIES

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## Abstract

This study investigates the impact of the ultimate corporate ownership structure, particularly the divergence of ultimate controlling shareholder's control rights and cash flow rights, on the capital structure decisions among firms listed in Chinese market where the legal protection for creditors and minority shareholders is weak. I find that firms with a wider divergence between the ultimate controlling shareholder's control rights and cash flow rights have significantly higher leverage level of capital structure. I also identify factors that affect this relation, including state ownership, institutional ownership, the presence of large tradable shareholders and NTS reform. My results suggest that leverage-increasing motivation of ultimate controlling shareholders with the risk of expropriation dominates in Chinese market and raising debt is a tool for them to maintain control over resources and corporate decisions to facilitate their self-dealing expropriation.

**Keywords:** Ultimate Ownership Structure; Control Rights; Cash Flow Rights; Capital Structure; Expropriation

## 1. INTRODUCTION

In the recent two decades, research in the area of corporate governance has increasingly shifted in focus from the classic or typical agency conflict between managers and shareholders (Jensen and Meckling, 1976) to the conflict of interest between controlling shareholders and minority shareholders (Shleifer and Vishny, 1997; Morck et al., 2005; Djankov et al., 2008) since the worldwide existence of dominant shareholders and the divergence between the dominant shareholders' control rights and cash flow rights via the prevalent use of pyramid ownership structures, multiple control chains, and dual class shares in many publicly listed firms are documented*. In such firms, the divergence between control rights and cash flow rights may lead to agency conflicts between large controlling shareholders and other investors. The high control rights create the incentives and chances of controlling shareholders to engage in various self-dealing activities† to divert and transfer corporate resources for private benefits while the low cash flow rights expose the controlling shareholders to very limited direct financial costs of such activities (Shleifer and Vishny, 1997; Johnson et al., 2000a). As a result, the divergence between the ultimate controlling shareholder's control rights and cash flow rights is treated as a proxy for the risk of expropriation (e.g., Faccio et al., 2003; Claessens et al., 2002; Paligorova and Xu, 2012).

Previous research on the financial implications of the divergence between control rights and cash flow rights of ultimate controlling shareholders has mainly focused on its effect on corporate valuation and the destructive value of the divergence between control rights and cash flow rights of ultimate controlling shareholders has been widely studied (eg., Claessens et al., 2002; Lemmon and Lins, 2003; Laeven and Levince, 2008; Gompers et al., 2010). In this paper, I focus on another financial implication of the existence of dominant shareholders and the divergence between control rights and cash flow rights of such dominant shareholders. Specifically, I examine the impact of ultimate ownership structure on firms' leverage level of capital structure and identify leverage as one possible tool the ultimate controlling shareholders use to control more recourse to affiliate their expropriating activities.

Capital structure is an essential issue in corporate finance and some of recent research on corporate capital structure has begun to focus on the effect of ultimate corporate ownership structure on firms' capital structure and borrowing behaviors. However, the relationship between the ultimate ownership structure and leverage policy is complex. According to existing corporate governance literature, the divergence of ultimate controlling shareholder's control rights and cash flow rights can

* For example, La Porta et al. (1999) examine the ownership structure of large corporations in 27 wealthy economies and find that the firms are typically controlled by families or the state, especially in countries with poor legal protection of minority shareholders. Claessens et al. (2000) examine the separation of ownership and control for 2,980 corporations in nine East Asian countries including Hong Kong, Indonesia, Japan, South Korea, Malaysia, the Philippines, Singapore, Taiwan, and Thailand. They find that, in all countries, voting rights frequently exceed cash-flow rights via pyramid structures and cross-holdings and that more than two-thirds of firms are controlled by a single shareholder. Faccio and Lang (2002) analyze the ultimate ownership and control of 5,232 corporations in 13 Western European countries and find 53.99% of European firms have only one controlling owner and a substantial discrepancy between ownership and control in Belgium, Italy, Norway, Sweden, and Switzerland. Masulis et al. (2011) investigate 28,635 firms in 45 countries and find that on average, 19% of listed firms belong to family-controlled business groups, rising to over 40% in some emerging markets.

† Such activities can take many forms, including asset sales or transfers to controlling shareholders or other corporations they control at favorable prices, making inter-corporate loans to the controlling shareholder or its affiliates, and committing assets as collaterals for loans borrowed by the controlling shareholder (Johnson et al., 2000b; Djankov et al., 2008).

both decrease and increase corporate leverage. On the one hand, existing literature suggests that dominant shareholders with the incentives to expropriate other investors prefer to lower leverage level of capital structure because debt constrains their expropriation by imposing fixed obligations and commitments on corporate cash flow (interest and principal payments) and by increasing monitoring from creditors (Jensen and Meckling, 1976; Jensen, 1986; Zwiebel, 1996; Lang et al., 1996; Harvey et al., 2004). However, on the other hand, controlling shareholders with wide divergence of control rights and cash flow rights may prefer debt because raising debt facilitates expropriation of affiliates. Stulz (1988) and Ellul (2008) argue that higher leverage allows the dominant shareholders to control more resources without diluting their control over the corporation and the non-dilution motive is particularly strong in the presence of large divergence between control rights and cash flow rights (Du and Dai, 2005). This study attempts to disentangle these two motivations (leverage-decreasing and leverage-increasing motivations) for the use of leverage among firms with divergence of ultimate controlling shareholders' control rights and cash flow rights in Chinese market. I shed light on the effect of ultimate ownership structure on firms' leverage level of capital structure and on the role of leverage in ultimate controllers' expropriation.

In this paper, I examine the relation between the divergence between the control rights and cash flow rights (control-ownership divergence) of a firm's ultimate controlling shareholder and the firm's leverage level of capital structure using a data set of 9,873 firm-year observations in China during the period from 2003 and 2012. I focus on Chinese market for several reasons. First, the divergence between ultimate controlling shareholder's control rights and cash flow rights exists prevalently among listed firms in China. According to my data, about 46.27 percentage of listed firms in China exhibit access control rights (control rights exceeds cash flow rights) of the ultimate controllers during the sample period. The prevalence of such divergence will provide sufficient observations for my empirical study.

Second, Ellul (2008) and Faccio et al. (2010) show that legal system and its enforcement has fundamental effects on debt contract in a country and the propensity of firms with wide divergence between ultimate controlling shareholder's control rights and cash flow rights to control and expropriate more resources is strengthened in environment with a weak legal system and legal enforcement. The legal system and protection of creditors and minority shareholders in China is poor compared with that in developed countries such as U.S. The leverage-decreasing and leverage-increasing motivations will play different role with such institutional structure. In China, because of weak protection of creditors and minority shareholders, the ultimate owners have more incentives and capabilities to expropriate resources. My results show that, in Chinese market, the leverage-increasing motivation overweighs the leverage-decreasing motivation and leverage increases with the risk of expropriation (the control-ownership divergence of ultimate controlling shareholders), which is consistent with the argument that high risk of expropriation is positively associated with leverage ( Faccio et al., 2010).

Third, although the relation between ultimate corporate ownership structures and capital structure has been investigated by some studies in several economies‡, no comprehensive study on the relation between the ultimate ownership structure and capital structure based on Chinese market has been investigated. One study closely relevant to mine is conducted by Liu and Tian (2012). They examine the effect of excess control rights on the leverage decisions made by Chinese non-SOEs before and after the Non-tradable share reform (NTS reform) from 2004 to 2010. They find that firms with excess control rights have more excess leverage and excess leverage in firms with excess control rights decreases after NTS reform. However, their focus is on non-SOEs going through Chinese non-tradable share reform. To the best of my knowledge, my study is the first to investigate the relation between the ultimate ownership structure and leverage level of capital structure comprehensively and identify the mechanisms through which the association can be strengthened or mitigated based on Chinese listed firms.

Fourth, China is not only the world's largest emerging economy but also the largest transitional economy. She is representative of the other emerging markets in that she shares many similarities such as backgrounds in legal enforcement, government quality, and regulatory backdrop. As a result, the findings based on Chinese market can be generalized to other emerging or transitional economy.

My analysis shows that a greater divergence between ultimate controlling shareholders control rights and cash flow rights which is a proxy for risk of expropriation is associated with higher leverage in Chinese listed firms. I apply two definitions of the control-ownership divergence: Control-ownership wedge (Ccwedge) is the difference between the control rights and cash flow rights of the ultimate controller of the firm. Control-ownership ratio (Ccratio) is the ratio of control rights to cash flow rights of the ultimate owner of the firm. The significantly positive effect of ultimate ownership structure on leverage level of capital structure is robust to two different definitions of control-ownership divergence and to different regression methodologies. The results are consistent with the hypothesis that ultimate controlling shareholders with incentives to expropriation prefer raising debt to control more resources (leverage-increasing motivation). And, the results of my study can be supported by the argument that when legal protection for creditors and other investors is weak, controlling shareholders seek to control more resources to expropriate those resources from debtors and minority shareholders because controlling shareholders are able to shift downside

‡ Du and Dai (2005) examine the effects of separation of control rights and cash flow rights on corporate capital structure choice in nine East Asian countries (Hong Kong, Indonesia, Japan, Malaysia, the Philippines, Singapore, South Korea, Taiwan and Thailand) and provide support for the leverage-increasing non-dilution entrenchment effect on corporate leverage of the separation of cash flow rights and control rights. Faccio et al. (2010) study five largest West European economics (France, Germany, Italy, Spain, and the UK) and the same nine East Asian economies and find that the ratio of ownership rights to control right has a significantly negative impact on leverage in economics where creditor protection is weak; but a significantly positive impact in economics where creditor protection is strong. Paligorova and Xu (2012) find negative relationship between leverage and the ratio of ownership to control rights in G7 countries.

risk onto the debt-holders by delaying or repudiating payments without suffering from sufficient punishment or loss (Faccio et al., 2010).

Besides, I also investigate the mechanisms through which the association between the divergence between ultimate owner's control rights and cash flow rights and leverage can be strengthened or mitigated among Chinese listed firms. The idea is that the effect of the control-ownership divergence of ultimate owners on leverage should be weakened in situations where the divergence between control rights and cash flow rights is less likely to result in expropriation and other detrimental activities by the ultimate controlling shareholders. I focus on the following sets of factors that may influence the relation between the control-ownership divergence and leverage level: state ownership, institutional ownership, the presence of large tradable shareholders and NTS reform. I find that the effect of the control-ownership divergence on leverage level of capital structure is larger if it is state-owned enterprise. The effect is diminished for firms with higher institutional ownership. The effect is also weakened for firms with the presence of shareholders holding large amount of tradable shares. The effect of the control-ownership divergence on leverage level of capital structure is reduced after NTS reform. My results suggest that factors that facilitate or constrain self-dealing and tunneling activities (expropriation) affect the relation between the divergence between ultimate control rights and cash flow rights and the leverage level of capital structure.

The aftermentioned analyses focus on the potential problem for interpreting my results, i.e., the issue of endogeneity. Although it is less likely that a firm's leverage can affect the ultimate ownership formation, it is possible that firm-specific characteristics unaccounted or excluded in my model specification affect both the control-ownership divergence and the leverage level of capital structure. The joint determination of ultimate ownership structure and capital structure by unobserved or uncontrolled factors could potentially bias the results.

To address the concern of endogeneity, I employ the instrumental variables approach. I use the industry average measure of control-ownership divergence (Control-ownership wedge, Control-ownership ratio) as instruments for the firm specific control-ownership divergence. Firms' control-ownership divergence is heavily influenced by the divergence of industry peers since firms in the same industry tend to share commonalities in the factors that affect their control-ownership divergence. However, the industry average control-ownership divergence level is less likely to directly influence the capital structure of a particular firm in that industry except through the firm's control-ownership divergence. Hence, the average industry control-ownership divergence should be a reasonable instrumental variable of divergence of a specific firm. In the first stage, I estimate a firm's control-ownership divergence (Control-ownership wedge, Control-ownership ratio) as a function of the instrumental variable as well as all the control variables in the model specification and obtain a predicted level of control-ownership divergence for each firm. In the second stage, I use the predicted control-ownership divergence and then re-estimate Eq. (1). My results indicate that, after controlling for endogeneity, the divergence between the ultimate owner's control rights and cash flow rights still has a significantly positive impact on leverage. I also use each firm's lagged one period control-ownership divergence as instrument for the current firm control-ownership divergence and find similar results.

This study contributes to several strands of existing literature. The first contribution to capital structure literature is to show how the ultimate ownership structure affects the leverage level of capital structure in Chinese listed firms. To my knowledge, this study is the first paper to report evidence on this relation with a large sample size based on Chinese market. Prior studies show that the separation of control rights and cash flow rights enables the ultimate owners to engage in various detrimental activities to expropriate firm value (e.g., Johnson et al., 2000b; Morck et al., 2003; Paligorova and Xu, 2012). My results suggest that the expropriating and controlling incentives caused by the control-ownership divergence plan an important role in determining firm leverage level of capital structure and that, to some extent, capital structure serves as a tool for ultimate owners to expropriate others by putting more resources on the control of the controllers. My findings also contributes to the controlling ownership structure literature (e.g., Claessens et al., 2000; Faccio and Lang, 2002) by showing how the elements or formation of ultimate ownership structure intensify the controllers' moral hazard problems and influence firm financing policies, which are the important channels through which the control-ownership divergence affect firm value. In addition, the paper also provides support to the law and institutional literature (e.g., Ellul, 2008; Boubaker, 2007; Faccio et al., 2010) by showing how law and institutions factors mitigate or enhance the impact of ultimate controlling shareholders' expropriating incentives on capital structure.

The remainder of the paper proceeds as follows. Section 2 develops the hypotheses. I discuss the sample construction process and variable definitions in Section 3. Section 4 presents the methodologies and empirical results of the baseline regressions, instrumental variable estimations and the interaction between ultimate ownership structures and various factors. I conclude the paper in Section 5.

## 2. DEVELOPMENT OF HYPOTHESES

The wide control-ownership divergence of ultimate owners is a measure of risk of expropriation. These owners have the incentives to expropriate others and engage in self-dealing and tunneling activities rather than create value for the firms because on the one hand they do not bear the full cost of the financial distress of firms or enjoy much of the upside shocks to the firms due to the low cash flow rights and on the other hand high control rights give them the power to control the firms' decisions. In addition, because of the complex shareholding relation chains, the ultimate owners can use fund for their own benefit without being easily detected by outsiders. Although existing literature suggests both leverage-decreasing and leverage-increasing

motivations of dominant shareholders with the incentive to expropriate other investors, I hypothesize that leverage-increasing motivation dominates among Chinese listed firms because of the weak legal system. For example, Allen et al. (2005) find that the protection of corporate shareholders and creditors in China is weaker compared to that in the 49 countries studied by La Porta et al. (1998) because of the poor enforcement of law. Bankruptcy laws are often poorly enforced and courts are often very costly for resolving conflicts (Fan et al., 2011). Although China has adopted laws to protect shareholders and creditors, the enforcement of these laws is weak. As found by Boubaker (2007), what really matters is debt laws enforcement rather than the existence of those laws.

The weak legal system such as poor protection of creditors in Chinese market makes the constraints and monitoring effect of debt less concerned to the ultimate owners with high risk of expropriation because they can easily transfer the distress cost to creditors and other shareholders (e.g., refuse interest and principal payments) without suffering legal punishment and makes the non-dilution financing effect more favored by them (e.g., Du and Dai, 2005; Faccio et al., 2010). As a result, ultimate controllers with risk of expropriation (wide control-ownership divergence) tend to increase the firms' leverage level of capital structure to control more resource.

H1. Controlling shareholders with wide control-ownership divergence have the incentives to raise more debt for the purpose of expropriation.

Although since the economic reform in late 1970s, China has been gradually transformed into a market economy and the private sector has developed and expanded rapidly, the state ownership of many companies is still an important institutional feature in Chinese market. Literatures on state ownership show that state ownership enhance firms' access to debt (e.g., Firth et al., 2008; Li et al., 2009) because of the state-owned bank lending environment in China. They argue that state-owned banks in China have the obligations to lend to state-owned enterprises (SOEs) due to political and social objectives. Easier excess to borrowings may lead SOEs with the risk of expropriation to increase leverage.

H2a. The positive relationship between ultimate owners' control-ownership divergence and leverage is more pronounced in state-owned enterprises (SOEs).

Institutional investors play an important role in monitoring corporate governance. Because of their information advantages and special status (large amounts of investment at stake), institutional investors have the incentive and capabilities to monitor the target firms (Shleifer and Vishny, 1997; Grinstein and Michaely, 2005 and Lin et al., 2011). The external monitoring from institutional investors will increase the costs of ultimate controllers engaging in expropriation or self-dealing activities. As a result, the monitoring role of institutional investors will restrain the incentives of controlling shareholders with risk of expropriation to control more resources by raising debt.

H2b. The positive relationship between ultimate owners' control-ownership divergence and leverage is less pronounced in firms with high amount of institutional ownership.

It is more difficult and less likely for the controlling shareholders to engage in expropriation in the presence of large tradable shareholders. Shareholders holding tradable shares value firm performance and have the incentives to restrain controlling shareholders with risk of expropriation from extracting private benefits because share prices and firm performance are closely relevant to their own wealth. So, large tradable shareholders have the incentives and abilities to enhance monitoring and the presence of such shareholders can lower the tunneling incentives of controlling shareholders and in turn, lower their incentives to control extra resource through debt.

H2c. The positive relationship between ultimate owners' control-ownership divergence and leverage is less pronounced in firms with the presence of large tradable shareholders.

NTS reform stared in 2005 is aimed to solve the split share structure and allow the huge non-tradable shares to be traded gradually in the market and finally make all NTS tradable. By the end of 2007, 1,254 firms, representing over 97% of the Chinese A-share market capitalization at the time, had completely reformed (Li et al., 2011). Liu and Tian (2012) find that in China the tunneling by the controlling shareholders reduced after the Non-tradable share reform (NTS reform) because the wealth of the controlling shareholders are tied more closely to the market price and performance of the firms after the NTS reform. So, after the NTS reform, the overall incentives of ultimate controlling shareholders to control more resources by raising debt will be reduced.

H2d. The positive relationship between ultimate owners' control-ownership divergence and leverage is less pronounced after the NTS reform.

## 3. DATA AND VARIABLES

### 3.1. Sample construction

All Chinese listed firms have been required by the CSRC (China Securities Regulatory Commission) to list the identities of their ultimate owners as well as the control chains in their annual reports since 2004. I draw the sample of Chinese listed companies on the Shanghai Stock Exchange or the Shenzhen Stock Exchange during 2003-2012. I start the research from 2003 because since then the ultimate owners' data are available for my study. Financial data and the control rights and cash flow rights of ultimate controlling shareholders of each public company are drawn from the China Stock Market and Accounting Research Database (CSMAR). According to the two-digit industry code of CSRC, 13 industries are separately identified. Because financial firms have financial ratios that make them difficult to compare to other firms, firms in financial industry are excluded to make the sample more homogenous. In order to mitigate the influence of outliers, I plan to delete all continuous variables at the 1% and 99% levels each firm-year.

### 3.2. Variables definitions

The dependent variable is leverage, which is the ratio of total liabilities to total assets. I use data on both control rights and cash flow rights from

CSMAR to measure the control-ownership divergence. CSMAR adopts the calculation methods of La Porta et al. (1999) to obtain control right and cash flow right. Control right is the weakest layer among all shareholding relation chains. Cash flow right is obtained by multiplying the proportion held by each layer of shareholding relation chain. For example, firm A is the biggest shareholder of firm B with 40% ownership and B is the biggest shareholder of firm C with 30% ownership. At the same time, firm A is not controlled by some shareholder. Firm A is the ultimate controller of firm C and it holds 30% (min (40%, 30%)) control right and 12% (40% × 30%) cash flow right of firm C. I construct two variables to measure the divergence between control rights and cash flow rights. Following Lin et al. (2011), Control-ownership wedge (Ccwedge) is the difference between the control rights and cash flow rights of the ultimate controller of the firm. Control-ownership ratio (Ccratio) is the ratio of control rights to cash flow rights of the ultimate owner of the firm.

Besides the ultimate ownership structure, I also control a set of variables to capture various characteristics and factors having been found to influence the choice of capital structure. I control for borrower firm characteristics including firm size, cash, tangibility, profitability, zscore and taxrate. Firm size (Size) is measured as the logarithm of total assets. Large firms have lower probability of default (Rajan and Zingales, 1995), less informational opacity (Bharath et al., 2011) and, therefore, should be more favored by lenders and have higher leverage level. Cash level (Cash) is the ratio of cash and cash equivalents to total assets and measures the firm's resources available on hand. So, high level of cash reduces the incentive to raise debt. Firm tangibility (Fixedratio) is measured as the ratio of net fixed assets to total assets. Tangible assets are viewed as collateralization for debt and issuing debt secured by tangible assets reduces lender's risk (Williamson, 1988; Chen, 2004). So, I predict a positive relationship between a firm's leverage and the tangibility of its assets. I define profitability (ROA) as the ratio of the sum of total profits and financial expenses to total assets. The negative relation between leverage and profit is supported by the Pecking order hypothesis. Retained profit will reduce a firm's reliance on debt finance. I apply Zscore to measure a firm's financial health. Previous studies find that leverage is positively related to the probability of default (Ross, 1977; Harris and Raviv, 1990). In addition, firms facing financial distress may increase debt to pop up their companies. Since high financial health implies low probability of default and financial distress, I predict a negative relationship between leverage and Zscore. As interest on corporate debt is tax deductible, corporate tax create a debt tax shield that should influence the use of debt. Debt financing should be more favorable in situations with higher corporate tax rates. I control for the impact of taxes on leverage by including each firm's effective tax rate (Taxrate). Table 1 provides the detailed definitions for all of the variables used in this study, Table 2 reports summary statistics for the sample. On average, the ultimate owners' control-ownership divergence is prevalent in Chinese listed firms. Table 3 presents the Pearson correlation matrix of the variables used in my analysis. Two measures of control-ownership divergence are positively and significantly correlated with leverage. The univariate analysis in Table 3 shows that the relations between leverage level and control variables are overall consistent with my prediction, except for the negative correlation between leverage and tangibility measure. Table 1 provides detailed definitions of variables.

**Table 1.** Definitions of variables

| ***Name*** | ***Definition*** |
|---|---|
| ***Leverage*** | The ratios of total liabilities to total assets. |
| ***Control-ownership wedge (%)(Ccwedge)*** | The difference between the control rights and cash flow rights of the ultimate controlling shareholder of the firm multiplied by 100. |
| ***Control-ownership ratio (Ccratio)*** | The ratio of control rights to cash flow rights of the ultimate controlling shareholder of the firm. |
| ***Size*** | The logarithm of total assets. |
| ***Cash*** | The ratio of cash and cash equivalents to total assets. |
| ***Fixedratio*** | Fixed assets ratio=the ratio of net fixed assets to total assets. |
| ***ROA*** | The ratio of the sum of total profits and financial expenses to total assets. |
| ***Zscore*** | The degree of a firm's financial health= (3.3×Pretax Income + Sales + 0.25×Retained Earnings + 0.5× (Current Assets-Current liabilities))/Total Assets. |
| ***Taxrate*** | Effective income tax rate, the ratio of income tax expense to total profits. |
| ***SOE*** | A dummy variable that takes the value of 1 for state owned enterprises and zero for non-state owned enterprises. |
| ***IO*** | A dummy variable that takes the value of 1 for firms with institutional ownership no less than 10% and zero otherwise. |
| ***HOLD*** | A dummy variable that takes the value of 1 for firms with the sum of shareholding percentage of top ten negotiable shareholders no less than 10% and zero otherwise. |
| ***NTS*** | A dummy variable that takes the value of 1 for the observations from 2008 onwards and zero otherwise. |

**Table 2.** Descriptive statistics

| *Variables* | *Mean* | *STD* | *25%* | *Median* | *75%* |
|---|---|---|---|---|---|
| $Leverage_t$ | 0.495 | 0.181 | 0.367 | 0.506 | 0.631 |
| $Ccwedge_t$ | 5.781 | 8.040 | 0 | 0 | 11.454 |
| $Ccratio_t$ | 1.404 | 0.771 | 1 | 1 | 1.538 |
| $Size_{t-1}$ | 21.607 | 1.066 | 20.848 | 21.484 | 22.221 |
| $Cash_{t-1}$ | 0.201 | 0.148 | 0.097 | 0.162 | 0.264 |
| $Fixedratio_{t-1}$ | 0.284 | 0.182 | 0.144 | 0.257 | 0.405 |
| $ROA_{t-1}$ | 0.068 | 0.044 | 0.037 | 0.058 | 0.086 |
| $Zscore_{t-1}$ | 1.003 | 0.650 | 0.596 | 0.869 | 1.251 |
| $Taxrate_{t-1}$ | 0.209 | 0.145 | 0.124 | 0.184 | 0.278 |

*This table presents the descriptive statistics of the variables in the analysis, including the mean, standard deviation (STD), 25% percentile, median and 75% percentile. The sample includes 9,873 firm-year observations during the period from 2003 to 2012. $Leverage_t$ is leverage level at time t. Detailed definitions of variables are reported in Table 1.*

**Table 3.** Correlation matrices of variables

| | $Leverage_t$ | $Ccwedge_t$ | $Ccratio_t$ | $Size_{t-1}$ | $Cash_{t-1}$ | $Fixedratio_{t-1}$ | $ROA_{t-1}$ | $Zscore_{t-1}$ | $Taxrate_{t-1}$ |
|---|---|---|---|---|---|---|---|---|---|
| $Leverage_t$ | 1 | | | | | | | | |
| $Ccwedge_t$ | 0.025** | 1 | | | | | | | |
| $Ccratio_t$ | 0.023** | 0.699*** | 1 | | | | | | |
| $Size_{t-1}$ | 0.319*** | -0.001 | -0.054*** | 1 | | | | | |
| $Cash_{t-1}$ | -0.231*** | 0.035*** | -0.001 | -0.028*** | 1 | | | | |
| $Fixedratio_{t-1}$ | -0.018* | -0.033*** | -0.020** | 0.072*** | -0.366*** | 1 | | | |
| $ROA_{t-1}$ | -0.280*** | 0.040*** | -0.005 | 0.081*** | 0.177*** | 0.039*** | 1 | | |
| $Zscore_{t-1}$ | -0.105*** | 0.032*** | -0.019* | 0.047*** | 0.217*** | -0.154*** | 0.403*** | 1 | |
| $Taxrate_{t-1}$ | 0.137*** | -0.033*** | 0.002 | -0.001 | -0.066*** | 0.005 | -0.113*** | -0.005 | 1 |

*This table presents Pearson correlations of the variables in the analysis. $Leverage_t$ is leverage level at time t. Detailed definitions of variables are reported in Table 1. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.*

## 4. EMPIRICAL RESULTS

The effect of control-ownership divergence of ultimate controlling shareholders on leverage level in capital structure

In this section, I examine the impact of the divergence between control rights and cash flow rights of ultimate controlling shareholders on leverage level (H1) using multivariate analysis. My empirical model to test H1 follows Du and Dai (2005), Faccio et al. (2010) and Paligorova and Xu (2012):

Leveraget= f (divergence measuret, sizet-1, casht-1, tangibilityt-1, profitabilityt-1, zscoret-1, taxratet-1, industry dummies, firm and time effect) (1)

I use two regression methodologies to estimate eq. (1). First, I use a regression model with fixed-industry effect and with standard errors clustered in the two dimensions of firm and year (proposed by Petersen, 2009) to adjust the standard errors for heteroskedasticity, serial-, and cross-sectional correlation. I also use the fixed firm and year effect regression model for eq. (1) to eliminate the time-invariant firm effect§. The regression results of the two regression models are reported in Table 4 on the following page.

In column (1) of Table 4, when Ccwedge is used as a measure of control-ownership divergence, the estimated coefficient on *Ccwedge* is positive (0.001) and significant (p=0.012). Therefore, firms with wide divergence of control rights and cash flow rights of ultimate owners have higher level of leverage. In terms of the economic significance, when *Ccwedge* increases by one standard deviation (8.040), leverage ratio on average will increase by 0.008. Given that the mean leverage level of the whole sample is 0.495, the effect represents an increase in leverage of 1.62%. In column (2), when replacing the measure of control-ownership divergence by *Ccratio*, the estimated coefficient on Ccratio is positive (0.008) and significant (p=0.075). In terms of the economic significance, when Ccratio increases by one standard deviation (0.771), firms' leverage will increase by 0.006, representing an increase in leverage ratio of 1.25%. The effects of ultimate ownership structure on leverage are economically and statistically significant with both measures of control-ownership divergence.

Columns (3) and (4) show the fixed-effect regression results of eq. (1). The results for the main explanatory variables are generally consistent with that in columns (1) and (2) and support my hypotheses. The coefficient estimates on *Ccwedge* and *Ccratio* are significant with the predicted signs and with relatively larger magnitude. The results for the control variables are overall consistent with the predicted signs except for tangibility.

### 4.1. Instrumental variables estimation

As the ultimate ownership structure of a firm and the firm's leverage policy can be endogenously determined by firms rather than exogenously given, the above analysis is subject to endogeneity problems. If a firm's ultimate ownership structure

§ Results from the Hausman Test suggest that fixed-effect models is more appropriate in my tests than random effect models.

and leverage are driven by the same underlying forces or common omitted factors simultaneously, my models and analyses may create a spurious relation between control-ownership divergence and leverage. To address the potential endogeneity of ultimate ownership structure and leverage, I use instrumental variables estimation and use the industry average control-ownership divergence for each firm as instrument for the firm's control-ownership divergence. For example, I use the industry average control-ownership wedge as instruments for each firm's control-ownership wedge. Control-ownership wedge at the firm level is influenced by that of its industry peers since firms in the same industry tend to share commonalities in the factors that affect the ultimate ownership structure. However, the industry average control-ownership wedge is less likely to be closely related with the capital structure of a particular firm. Hence, the industry average control-ownership wedge can make a reasonable instrumental variable for the control-ownership wedge of a specific firm. For similar arguments, I also use the lagged one period control-ownership divergence as the second type of instruments for each firm's control-ownership divergence. The firm-level control-ownership divergence is estimated as a function of the instrumental variable as well as all of the control variables and the predicted value of control-ownership divergence is then included in eq. (1) to replace the original control-ownership divergence value. The fixed-effect regressions of eq. (1) are re-estimated in the second stage of the model and the results are shown in Table 5.

**Table 4.** The effect of the divergence between ultimate owner's control rights and cash flow rights on leverage

| | *OLS* | *OLS* | *FE* | *FE* |
|---|---|---|---|---|
| | *Leverage* | *Leverage* | *Leverage* | *Leverage* |
| ***Ccwedge*** | 0.001** (0.012) | | 0.002*** (0.000) | |
| ***Ccratio*** | | 0.008* (0.075) | | 0.006*** (0.004) |
| ***Size*** | 0.056*** (0.000) | 0.057*** (0.000) | 0.054*** (0.000) | 0.055*** (0.000) |
| ***Cash*** | -0.234*** (0.000) | -0.232*** (0.000) | -0.085*** (0.000) | -0.085*** (0.000) |
| ***Fixedratio*** | -0.041 (0.145) | -0.042 (0.140) | -0.049*** (0.000) | -0.050*** (0.000) |
| ***ROA*** | -0.942*** (0.000) | -0.940*** (0.000) | -0.504*** (0.000) | -0.508*** (0.000) |
| ***Zscore*** | -0.003 (0.667) | -0.003 (0.705) | -0.019*** (0.000) | -0.018*** (0.000) |
| ***Taxrate*** | 0.091*** (0.000) | 0.090*** (0.000) | 0.002 (0.807) | 0.002 (0.791) |
| ***Intercept*** | -0.593*** (0.000) | -0.606*** (0.000) | -0.591*** (0.000) | -0.613*** (0.000) |
| ***Industry dummy*** | Yes | Yes | No | No |
| ***Firm effect*** | Yes | Yes | Yes | Yes |
| ***Time effect*** | Yes | Yes | Yes | Yes |
| ***Number of observations*** | 9,873 | 9,873 | 9,873 | 9,873 |
| ***Number of firms*** | 1,802 | 1,802 | 1,802 | 1,802 |
| $R^2$ | 0.284 | 0.284 | 0.148 | 0.144 |

*This table presents the results of eq. (1) with industry effect and with standard errors clustered in firm and year dimensions (proposed by Petersen, 2009) and fixed-effect regression results of eq. (1). The numbers in brackets are the p-values. Detailed definitions of variables are reported in Table 1. Significance at the 10%, 5% and 1% levels is indicated by *, ** and ***, respectively.*

I present results of both first-stage and second-stage of the instrumental variables estimation in Table 5. The coefficients on the instruments are always positive and significant in the first-stage with different measures of control-ownership divergence and with different instruments. The partial R2 of the first-stage range from 0.020 to 0.250 and the partial F-statistic of the first-stage range from 160.467 to 2407.574. The relatively high partial R2 and partial F-statistic is indicative of validation of the selected instruments. The Hausman test (large F-statistics) strongly rejects the exogeneity of ultimate ownership structure and justifies the use of 2SLS rather than OLS. The coefficients on the control-ownership divergence measures are overall consistent with that in Table 4 and provide support for my hypothesis. Although the coefficient is insignificant (p=0.164) at conventional levels when Ccratio is used as main explanatory variables and when lagged one period Ccratio is used as instrument, the sign is consistent with prediction. Therefore, my findings on the effect of the divergence between ultimate owner's control rights and cash flow rights on leverage appear to be robust to the instrumental variables estimation.

## 4.2. Factors influencing the association between ultimate ownership structure and leverage

In this subsection, I examine the mechanisms through which the association between the divergence between ultimate owner's control rights and cash flow rights and leverage can be strengthened or weakened among Chinese listed firms. The idea is that the effect of the control-ownership divergence of ultimate owners on leverage should be weakened in situations where the divergence between control rights and cash flow rights is less likely to result in expropriation and other detrimental activities by the ultimate controlling shareholders. I focus on the following set of factors that may influence the relation between

the control-ownership divergence and leverage level: state ownership, institutional ownership, the presence of large tradable shareholders and NTS reform.

**Table 5.** The effect of the divergence between ultimate owner's control rights and cash flow rights on leverage (Instrumental variables estimation)

| | *(1)* | | *(2)* | | *(3)* | | *(4)* | |
|---|---|---|---|---|---|---|---|---|
| | ***First-stage*** | ***Second-stage*** | ***First-stage*** | ***Second-stage*** | ***First-stage*** | ***Second-stage*** | ***First-stage*** | ***Second-stage*** |
| ***Ccwedge*** | | 0.013*** (0.000) | | | | 0.003*** (0.000) | | |
| ***Ccratio*** | | | | 0.143*** (0.000) | | | | 0.013 (0.164) |
| ***Indccwedge*** | 0.614*** (0.000) | | | | | | | |
| ***Indccratio*** | | | 0.651*** (0.000) | | | | | |
| ***Lagccwedge*** | | | | | 0.460*** (0.000) | | | |
| ***Lagccratio*** | | | | | | | 0.139*** (0.000) | |
| ***Size*** | 0.594*** (0.000) | 0.045*** (0.000) | 0.045*** (0.000) | 0.050*** (0.000) | 0.122 (0.152) | 0.048*** (0.000) | 0.007 (0.494) | 0.049*** (0.000) |
| ***Cash*** | -0.018 (0.967) | -0.082*** (0.000) | -0.062 (0.208) | -0.075*** (0.000) | 0.337 (0.391) | -0.079*** (0.000) | 0.009 (0.859) | -0.079*** (0.000) |
| ***Fixedratio*** | -0.164 (0.769) | -0.049*** (0.000) | 0.051 (0.402) | -0.064*** (0.000) | -0.347 (0.488) | -0.050*** (0.000) | 0.061 (0.313) | -0.052*** (0.000) |
| ***ROA*** | -3.809** (0.032) | -0.454*** (0.000) | -0.426** (0.028) | -0.431*** (0.000) | -1.320 (0.392) | -0.499*** (0.000) | -0.316* (0.093) | -0.506*** (0.000) |
| ***Zscore*** | 0.558*** (0.002) | -0.028*** (0.000) | 0.033* (0.091) | -0.025*** (0.000) | 0.103 (0.514) | -0.019*** (0.000) | 0.020 (0.534) | -0.018*** (0.000) |
| ***Taxrate*** | 0.194 (0.614) | 0.000 (0.979) | 0.005 (0.899) | 0.000 (0.965) | 0.199 (0.557) | 0.012 (0.163) | 0.016 (0.690) | 0.012 (0.163) |
| ***N*** | 9,586** | 9,586 | 9,586 | 9,586 | 8,704 | 8,704 | 8,704 | 8,704 |
| ***Partial F*** | 213.353 | | 160.467 | | 2407.574 | | 490.094 | |
| ***Partial R²*** | 0.026 | | 0.020 | | 0.250 | | 0.064 | |
| ***Hausman test*** | F=47.06 (P=0.000) | | F=53.35 (P=0.000) | | F=112.41 (P=0.000) | | F=109.90 (P=0.000) | |

*This table presents the results of the first-stage and second-stage regression of the instrumental variables estimations of eq. (1), where industry average control-ownership divergence and lagged one period control-ownership divergence are used as instruments, respectively. Detailed definitions of variables are reported in Table 1. P-values are reported in brackets. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.*

**Table 6.** Factors influencing the association between ultimate control-ownership divergence and leverage

| | *SOE* | | *IO* | | *HOLD* | | *NTS* | |
|---|---|---|---|---|---|---|---|---|
| | ***leverage*** | ***leverage*** | ***leverage*** | ***leverage*** | ***leverage*** | ***leverage*** | ***leverage*** | ***leverage*** |
| ***Ccwedge*** | 0.001*** (0.000) | | 0.002*** (0.000) | | 0.002*** (0.000) | | 0.002*** (0.000) | |
| ***Ccwedge x Factor*** | 0.002*** (0.001) | | -0.001*** (0.000) | | -0.001*** (0.000) | | -0.001*** (0.000) | |
| ***Ccratio*** | | 0.004* (0.065) | | 0.019*** (0.000) | | 0.016*** (0.000) | | 0.016*** (0.000) |
| ***Ccratio x Factor*** | | 0.032*** (0.000) | | -0.021*** (0.000) | | -0.019*** (0.000) | | -0.023*** (0.000) |
| ***Factor*** | -0.021*** (0.000) | -0.055*** (0.000) | 0.014*** (0.000) | 0.036*** (0.000) | 0.010*** (0.001) | 0.029*** (0.000) | 0.009*** (0.003) | 0.034*** (0.000) |
| ***Size*** | 0.052*** (0.000) | 0.053*** (0.000) | 0.052*** (0.000) | 0.053*** (0.000) | 0.053*** (0.000) | 0.054*** (0.000) | 0.053*** (0.000) | 0.054*** (0.000) |
| ***Cash*** | -0.084*** (0.000) | -0.085*** (0.000) | -0.085*** (0.000) | -0.085*** (0.000) | -0.084*** (0.000) | -0.084*** (0.000) | -0.085*** (0.000) | -0.085*** (0.000) |
| ***Fixedratio*** | -0.049*** (0.000) | -0.051*** (0.000) | -0.049*** (0.000) | -0.051*** (0.000) | -0.049*** (0.000) | -0.051*** (0.000) | -0.050*** (0.000) | -0.051*** (0.000) |
| ***ROA*** | -0.504*** (0.000) | -0.503*** (0.000) | -0.509*** (0.000) | -0.505*** (0.000) | -0.503*** (0.000) | -0.498*** (0.000) | -0.499*** (0.000) | -0.496*** (0.000) |
| ***Zscore*** | -0.020*** (0.000) | -0.020*** (0.000) | -0.020*** (0.000) | -0.019*** (0.000) | -0.020*** (0.000) | -0.019*** (0.000) | -0.019*** (0.000) | -0.019*** (0.000) |
| ***Taxrate*** | 0.002 (0.774) | 0.003 (0.731) | 0.004 (0.590) | 0.005 (0.535) | 0.003 (0.671) | 0.004 (0.647) | 0.004 (0.666) | 0.004 (0.617) |
| ***Intercept*** | -0.557*** (0.000) | -0.567*** (0.000) | -0.568*** (0.000) | -0.599*** (0.000) | -0.577*** (0.000) | -0.604*** (0.000) | -0.587*** (0.000) | -0.601*** (0.000) |
| ***Firm Effect*** | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| ***Time Effect*** | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| ***Number of observations*** | 9,873 | 9,873 | 9,873 | 9,873 | 9,873 | 9,873 | 9,873 | 9,873 |
| ***Number of firms*** | 1,802 | 1,802 | 1,802 | 1,802 | 1,802 | 1,802 | 1,802 | 1,802 |
| ***R²*** | 0.151 | 0.148 | 0.151 | 0.150 | 0.151 | 0.149 | 0.152 | 0.152 |

** Observasions with only one firm in a industry-year are dropped.

*This table presents regression results of eq. (2) to examine the factors influencing the association between ultimate control-ownership divergence and leverage. Factor represents state ownership, institutional ownership, the presence of large tradable shareholders and NTS reform. Detailed definitions of variables are reported in Table 1. P-values are reported in brackets. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively*

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$$\text{Leverage}_t = f(\text{divergence measure}_{t-1}, \text{divergence measure} \times \text{factor}, \text{factor}, \text{size}_{t-1}, \text{cash}_{t-1}, \text{tangibility}_{t-1}, \text{profitability}_{t-1}, \text{zscore}_{t-1}, \text{taxrate}_{t-1}, \text{industry dummies, firm and time effect}) \quad (2)$$

Eq. (2) is used to test H2a, H2b, H2c, and H2d. In eq. (2), divergence measure is *Ccwedge* or *Ccratio* and factor represents state ownership, institutional ownership, the presence of large tradable shareholders and NTS reform. This equation is used to test and compare the association between control-ownership divergence and leverage under different situations defined by the above four factors. The results are shown in Table 6, where:

- SOE is a dummy variable that takes the value of 1 for state owned enterprises and zero for non-state owned enterprises to capture state ownership property.
- IO is a dummy variable that takes the value of 1 for firms with institutional ownership no less than 10% and zero otherwise to capture institutional ownership.
- HELD is a dummy variable that takes the value of 1 for firms with the sum of shareholding percentage of top ten negotiable shareholders no less than 10% and zero otherwise to capture the presence of large tradable shareholders.
- NTS is a dummy variable that takes the value of 1 for the observations from 2008 onwards and zero otherwise to capture the difference before and after the Non-tradable share reform (NTS reform).

The coefficients on the interactions are all significant with predicted signs. So, the research findings indicate that the effect of the control-ownership divergence on leverage level of capital structure is more pronounced if it is state-owned enterprise because SOEs have more access to obtain borrowings. The effect is diminished for firms with higher institutional ownership and is also weakened for firms with the presence of shareholders holding large amount of tradable shares because the presence of large amount of institutional ownership and large tradable shareholders imposes monitoring and constrains over ultimate controllers' behaviors. The effect of the control-ownership divergence on leverage level of capital structure is less pronounced after NTS reform because the overall incentives of ultimate controlling shareholders to control and expropriate resources are reduced after NTS reform.

My results suggest that factors that strengthen or constrain self-dealing and tunneling activities (expropriation) influence the relation between the divergence between ultimate control rights and cash flow rights and the leverage level of capital structure.

## 5. CONCLUSION

In this paper, I explore how ultimate ownership structures of Chinese listed firms influence their leverage decisions. I find strong evidence that leverage-increasing motivation of ultimate controlling shareholders with the risk of expropriation dominates in Chinese market, where the legal protection for creditors and minority shareholders is weak. The research findings indicate that the positive association between the divergence between the control-rights and cash-flow rights of the largest ultimate owner of a firm and leverage are robust across different regression methodologies and to different estimates of the variables.

In addition, I also identify several factors that have potential influence on the effect of ultimate ownership structure on leverage, including state ownership, institutional ownership, the presence of large tradable shareholders and NTS reform. The empirical results indicate that the effect of the control-ownership divergence on leverage level of capital structure is more pronounced for state-owned firms and is less pronounced for firms with large institutional ownership, with the presence of large tradable shareholders, and after the Non-tradable share reform. So, institutions and mechanisms that facilitate or constrain self-dealing and tunneling activities (expropriation) affect the relation between the divergence between ultimate control rights and cash flow rights and the leverage level of capital structure. These results contribute to our understanding of the motivation and role of raising debt with the presence of ultimate control-ownership divergence in Chinese market, a less developed market compare with western countries.

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