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1-1-2010

How does the separation of ownership and control affect corporate performance: The impact of earnings management in China

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Recommended Citation

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Keywords

does, separation, ownership, control, affect, corporate, performance, impact, earnings, management, China

Disciplines

Business | Social and Behavioral Sciences

Publication Details

How does the separation of ownership and control affect corporate performance: the impact of earnings management in China

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Abstract

This paper examines the impact of disproportional ownership on true firm performance when firm performance is adjusted for the effect of earnings management. Results from regression analysis indicate that the separation between control and cash flow rights of family/or individual-controlled listed firms in China decreases firm performance when firm performance is adjusted for the effect of earnings management than when firm performance is measured as reported performance. The results also show that separation is significantly positively related with true firm performance in firms with low cash flow rights concentration. The main disproportional ownership mechanism, pyramidal structures is also investigated in the paper. We find that pyramidal structure substantially increases earnings management and hence reduces true performance while it constrains earnings management significantly in low cash flow concentrated firms. Adjusting for the impact of earnings management substantially increases the measured importance of disproportional ownership structures of controlling shareholder on firm performance.

Keywords: separation, control and ownership, firm performance, earnings management

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1. Introduction

In this paper, we examine the effect of disproportional ownership structure on corporate performance with an explicit control for earnings management. Specifically, we use accrual-adjusted performance instead of raw performance following Cornett et al. (2008). In particular, we explore the effect of separation in control and ownership of China's family-controlled or individual-controlled listed firms on earnings management and test whether the measured importance of ownership variables is increased when true performance is used. This is an issue not hitherto examined by prior studies conducted in countries such as the United States and the United Kingdom where the ownership structure is dispersed and the conflicting interests of shareholders and managers are a major agency problem.

In many countries, especially Asian countries in the world, where concentrated ownership is prevalent, agency problems mainly arise from the agency conflicts between controlling shareholders and minority shareholders. Extant literature (e.g., Shleifer and Vishny, 1997) has investigated that ownership structure can significantly influence both corporate performance and earnings management. Shleifer and Vishny (1997) argue that controlling shareholders are likely to appropriate firm resources as control-cash flow rights difference increases. In other words, conflicting interests among shareholders might lower firm performance.

Recent research measures the agency problems by the divergence between the ultimate owner's cash flow rights and control rights. Ever since then, their methodology of agency problems measurement has been used extensively. For example, Classens et al. (2002) and Lemmon and Lins (2003) use this methodology to examine the impact of agency problems on firm value in emerging economies. They conclude that in general, the divergence between the controlling shareholders' cash flow rights and control rights has negative and significant impact on firm value, measuring in Tobin's q and stock market returns. However, it is not obvious whether the separation of control rights from cash flow rights affects operating performance. For example, Bennedsen and Nielsen (2009) show that disproportional ownership structures reduce firm value but do not affect firm performance and hence argue that disproportional ownership does not lead to less efficiently used corporate resources from European large firms.

Furthermore, Lemmon and Lins (2003) pointed out that ownership structure plays a key role in determining the expropriation on minority shareholders, which is also related with earnings management activities. That is, when controlling shareholders' disproportional ownership affects both firm performance and earnings management, the true effects of ownership structure on firm performance after adjusting the impact of earnings management might change as well. For example, the research of Black (2001), Black et al. (2002), Gompers et al. (2003) shows a significant effect of corporate governance variables on firm performance. Cornett et al. (2008) point out that the impact of corporate governance on firm performance changes when the true firm performance is measured. Cornett et al. (2008) further argue that if both earnings management and corporate performance are likewise impacted by governance mechanisms then the influence of these governance mechanisms on reported firm performance is probably partly cosmetic.

These studies on ownership structure share one common feature. They all regress Tobin's q or market-to-book ratio as proxies for firm value or firm performance on measures of the separation between control and cash flow rights. However, these studies fail to properly identify true firm performance which is adjusted for the effects of earnings management.

China has become the second-largest economy in the world following US in 2006 based on purchasing power parity (PPP) (CIA, 2007). In terms of the report from the Economist (2008), China's gross domestic product (GDP) increased 11.4% on average at yearly base to 24.66 trillion yuans (or approximately 3.43 trillion US dollars) in 2007. China, a large and emerging economy with a specific institutional background, now provides a good example for us to investigate the true impact of ownership variables on firm performance adjusting for earnings management effects. China servers as an interesting setting for the current study for the following reasons.

First, institutional investors are believed to play an important role in western countries (Chung et al., 2002) while they basically hold a small amount of shares in Chinese listed firms and thus cannot play any important role in monitoring management. Therefore, controlling shareholders are believed to determine firm performance in many respects and hence we can focus on the impact of disproportional ownership in China's listed firms.

Secondly, because China's listed firms have a highly concentrated ownership structure mostly dominating by a large shareholder, a key agency problem with a concentrated ownership structure is the expropriation of minority shareholders by controlling shareholders. This kind of agency issue is even more acute in china due to the specific ownership feature that controlling shareholders hold non-tradable and tradable shares while minority shareholders only own tradable shares. That is, in response to the divergence between non-tradable and tradable shares, the conflicting interests of controlling and minority shareholders have long been recognized as the source of substantial agency problems in China such as tunnelling. Thus, managers and directors of listed firms incline to manage earnings for controlling shareholders' interests rather than their own entrenchment.

Moreover, while shares are mostly widely held in US and the number of pyramidal structures is small, China' listed firms are featured with highly-concentrated ownership, and family/or individual-controlled firms are mostly pyramidal structures. Maury (2006) suggests that family control mitigates the agency problem between shareholders and managers, but increases the conflicts of interests between controlling shareholders and minority shareholders when shareholder protection is weak and control is high, which is exactly the case of China. Thus, family/or individual-controlled firms from China's listed corporations based on a seven-year panel data set are used to investigate the impact of agency problem.

A simple analysis on the relation between divergence and operating performance can be problematic if we do not consider earning management. As shown in Haw et al. (2004), earnings management is substantially increased by the divergence between control and cash flow rights by using data from 9 East Asian and 13 Western European countries.

This study empirically examines the relation between disproportional ownership of controlling shareholders and firm performance after taking account of the effect of earnings management. We find that the separation of control and cash flow rights significantly increases earnings management only when the cash flow rights is highly concentrated. We also find that separation can restrain earnings management in firms with lower cash flow right concentration and hence boost true firm performance when the effect of earnings management is excluded. In terms of control-enhancing

mechanisms (which deviates from one share-one vote) such as pyramids and cross-holdings structure, we find that pyramidal structure dramatically increases earnings management and decreases true performance. Furthermore, in firms with lower cash flow concentration, pyramids are likely to weaken earnings management and thus enhance true corporate performance. Consequently, adjusting for the impact of earnings management substantially increases the measured importance of disproportional ownership structures of controlling shareholder on firm performance.

The paper proceeds in five sections. The next section reviews the literature on ownership structure and earnings management. Section 3 introduces the data used in our study, presents the models to identify earnings management, and discusses the empirical approach. Section 4 presents empirical results and further robustness tests. A final section concludes.

2. Separation of control and ownership and earnings management

2.1 Earnings management

It's recognized for years in accounting and finance literature that managers use the latitude in accounting rules to manage accounting numbers and to serve their own or the firm's interests in a wide variety of contexts (see, for example, Chen and Yuan, 2004). In Healy and Wahlen (1999)'s review article, they conclude that the evidence is consistent with earnings management "to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers. " They also points out that if financial reports are used to convey managers' information on their firms' performance, managers must be allowed to exercise judgment in financial reporting. However, management's discretion on judgment may lead to earnings management, under certain circumstances, even fraud.

China's stock market is under a weak legal context which provides little protection for minority shareholders. There were increasingly outbreaks of corporate scandals in China's listed firms during the early 2000s. Likewise, the interests of minority shareholders were infringed by the controlling shareholders to a large extent.

In prior literature, Klein (2002), Dechow et al. (1996) and Beasley (1996) all find that earnings management can be restrained by well-designed corporate governance

structures. For instance, Bedard et al. (2004) suggest that the proportion of independent directors on board of directors decreases the magnitude of earnings management.

2.2 Ownership structure

2.2.1   Separation of control and ownership

La Porta et al. (1999), Claessens et al. (2000) and Faccio and Lang (2002) provided evidence that controlling shareholders of publicly listed firms in most countries have substantial control rights in excess of their cash flow rights. In Chinese listed firms, one major owner usually holds a substantial percentage of shareholdings. When controlling shareholders have control in excess of their cash flow rights, they incline to expropriate minority shareholders by seeking personal benefits. Supporting this view, Claessens et al. (2002) examined the impact of disproportional ownership on market value of equity across countries and found that cash flow rights of the largest shareholder is positively related to market-to-book ratio whilst the separation between control and cash flow rights is negatively related to market-to-book ratio. On the other hand, opposite evidence was provided, showing that omitted variable problems may affect the results. For example, La Porta et al. (2002) point out that the difference between control and cash flow rights of the controlling shareholder is not significantly associated with Tobin's q when country-wide indices of investor protection is involved in their models. Likewise, Cronqvist and Nilsson (2003) used fixed effects regression models from a panel of Swedish firms over 1991-1997 and did not find significant relationship between the difference in control and cash flow rights and firm value. However, it is not obvious whether the divergence affects operating performance. For example, Joh (2003) documented that a high difference between control and cash flow rights shows low firm profitability from 5,829 Korean firms during 1993-1997 while Bennedsen and Nielsen (2009) showed that separation reduces firm value but does not affect firm performance

Moreover, in light of the specific non-tradable shares in China's listed firms, large non-tradable shareholders typically have different interests from those of minority shareholders. In other words, the interests of non-tradable shareholders are not directly influenced by market share price due to the non-tradability of non-tradable shares. Consequently, concentrated ownership structure provides controlling

shareholders potential to make company decisions and hence expropriate minority shareholders to their own benefits (Zou et al., 2008).

In addition, ownership structure, more specifically, divergence between control and cash flow rights, affects the monitoring mechanisms a firm uses and hence influences the monitoring of earnings management activity. Evidence provided from Asian countries, Chen et al. (2010) employed data from Taiwan to show that high-growth firms with a high control-cash flow rights' separation are more likely to engage in earnings management. Thus, we predict that the earnings management is high when the difference between control and cash flow rights is high and hence the true firm performance is low after adjusting the effects of earnings management.

The magnitude of earnings management is affected both by the incentives and the opportunity of controlling shareholders to expropriate minority shareholders. Jensen and Meckling (1976) suggest that because private benefits of controlling shareholders are determined by its cash flow rights, cash flow rights can increase the controlling shareholders to pay out dividends (e.g., Claessens et al., 2000). Thus, lower cash flow concentration weakens the controlling shareholders' motivation for managing earnings since they have less cash flow incentives. Described above, when controlling shareholders' control rights exceed their cash flow rights they are more likely to expropriate firm resources. More specifically, expropriation is more likely to occur when the difference between control and cash flow rights is large and when their position is secure (Joh, 2003). Combined together, we expect that controlling shareholders with large separation of control from cash flow rights decline to manage earnings when their position is unsecure, that is, when the cash flow concentration is low.

2.2.2 Control-enhancing mechanisms

Under "one share-one vote" there is no separation between control and cash flow rights. Therefore, disproportional ownership is referred to as the deviations from one share-one vote and hence as the use of mechanisms to separate control rights from cash flow rights in firms. Shareholders typically use several explicit mechanisms (i.e., control-enhancing mechanisms) to acquire control with less proportional economic interests in corporations, e.g., stock pyramids and cross-ownership. Controlling

shareholders build pyramids by controlling firms "through a chain of companies", which is another form of separating ownership and control (La Porta et al., 1999).

Deviations from "one share-one vote" are found all over the world. Dual-class shares are proved to be rare in Eastern Asian countries while pyramids and cross-ownership structures are common (Claessens et al., 2000). Claessens et al (2002) further identify that most of the deviations from "one share-one vote" occur due to pyramidal control.

Bennedsen and Nielsen (2007) examined the effects of disproportional ownership on firm value for a large sample in 14 Western European countries. They found that disproportional ownership caused by pyramids is the second most detrimental to firm value, following dual-class shares while other control-enhancing mechanisms do not have significant impact on firm value. However, Villalonga and Amit (2006) investigated the effects of control-enhancing mechanisms including dual-class, voting agreements, pyramids and others by using US data. Their results suggest that control via pyramids do not affect firm value when control is measured as the separation from cash flow rights.

Controlling shareholders have control rights in excess of their cash flow rights, mainly through the use of pyramids as well as participating in management. The power of these controlling shareholders is obviously not under supervision of other shareholders (La Porta et al., 1999). Thus, we expect more expropriation of the minority shareholders and hence more earnings management in firms with pyramidal structures. However, lower cash flow concentration provides the controlling shareholders less incentives to manage earnings. For example, Nguyen and Xu (2010) found that within the sample of firms with dual class structure, the divergence between control and cash flow rights is negatively related with earnings management. Furthermore, dual-class structure creates a high difference between control and cash flow rights, which provides controlling shareholders a majority of control rights despite of their smaller residual claims. Moreover, the concentrated control rights can effectively reduce the likelihood of displacing management in a hostile takeover. Thus, managers will have less incentive to manage earnings when they do not need to worry about dismissal. In addition, the smaller cash flow rights will also reduce the possible private benefits from earnings management activities (Nguyen and Xu, 2010).

Therefore, we also expect lower earnings management in firms with pyramidal structure and lower cash flow concentration.

3. Data and models

3.1 Sample

Prior research finds that earnings management is more prevalent in poorly performing firms (e.g., Kothari et al., 2005) and when applied to firms with extreme corporate performance the standard models of discretionary accruals may not be reliable (Dechow et al., 1995). Here, following Cornett et al. (2008), we look at factors affecting earnings management in "normal" times when even good performing firms are influenced. That is, firms which received special treatment (ST)[2] during the sample window are deleted. Thus, here the potential limitations of empirical discretionary accruals models can be ignored in this study because the sample of firms is free of financial distress. The study of Claessens et al. (2000) showed that the separation of cash-flow and control rights is most pronounced in family-controlled firms and small firms. Therefore, our research focuses on family-controlled and individual-controlled firms.

Specifically, we constructed the dataset by merging the following two separate databases. First, we used accounting and other corporate governance data from the database developed by SinoFin Information Services[3]. Second, we assembled family-controlled and individual-controlled data from China Stock Market and Accounting Research Database (CSMAR) developed by Shenzhen GTA Information Technology Company.

We then exclude all financial firms[4] because they are subject to fundamentally different regulatory regimes and internal governance structures. Due to data availability of cash flow rights and control rights of ultimate controller, the final

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[2] CSRC released the Special Treatment (ST) regulation in 1998 that firms are specially treated if they make losses for two successive years.

[3] Prior research has used SinoFin data set in their studies on China's corporate governance, for example, see, Kato and Long, 2006.

[4] Our industry classification follows Chen et al. (2006), listed Chinese firms are classified to 6 industries: Finance, Utilities, Property and Construction, Conglomerates, Industrial and Manufactory, Commercial.

sample consists of data on 5 non-financial industries during the time periods from 2003 to 2009.

We then delete observations without the availability of ownership structure, and accounting and financial data that this study needs. After these adjustments, we are left with a sample of 1775 firm-years over sample period 2003-2009. In our regressions, unlike the study of Cornett et al. (2008), the variables of the economic determinants of firm performance and earnings management are contemporary[5]. Table 1 defines all the variables in our panel regression analysis.

(Insert Table 1 here)

3.2 Discretionary accruals

Dechow et al. (1995) claim the so-called "modified Jones (1991) model" as the model that provides the most power for detecting earnings management after they compare several models of discretionary accruals. Furthermore, Bartov et al. (2001) advocate the use of the modified Jones model when it is estimated cross-sectional using other firms in the same industry. Most models of discretionary accruals refer to discretionary accruals as the difference between actual and "normal" accruals, estimated by a regression formula. Firstly, the modified Jones model estimates normal accruals as a fraction of lagged assets from the following equation:

$$\frac{TA_{jt}}{Assets_{jt-1}} = \alpha_0 \frac{1}{Assets_{jt-1}} + \beta_1 \frac{\Delta Sales_{jt}}{Assets_{jt-1}} + \beta_2 \frac{PPE_{jt}}{Assets_{jt-1}} \quad (1)$$

Where TA_{jt} is total accruals for firm j in year t. Total accruals are calculated as earnings before interests and tax (EBIT)[6]. $Assets_{jt}$ is total assets for firm j in year t, $\Delta Sales_{jt}$ is change in sales for firm j in year t, and PPE_{jt} is property, plant, equipment for firm j in year t.

In response to the research of Hribar and Collins (2002), compared with balance sheet, cash flow statement is preferred in computing total accruals when there are events

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[5] As a sensitivity test, we rerun our analyses with lagged performance measurements and receive similar results.

[6] EBIT is not required to be reported in income statement of China's listed firms. Therefore, we employ operating income as proxy for EBIT.

such as mergers and acquisitions which change balance sheet but not income statement. Following Cornett et al. (2008), we also compute total accruals as operating income (proxy for earnings before extraordinary items and discontinued operations) minus operating cash flows from continuing operations. Discretionary accruals as a portion of the book value of assets, %DA, are calculated as:

$$\%DA = \frac{TA_{jt}}{Assets_{jt-1}} - (\hat{\alpha}_0 \frac{1}{Assets_{jt-1}} + \hat{\beta}_1 \frac{\Delta Sales_{jt} - \Delta Re ceivables_{jt}}{Assets_{jt-1}} + \hat{\beta}_2 \frac{PPE_{jt}}{Assets_{jt-1}}) \quad (2)$$

Where hats refer to as estimated values from regression Eq.1. Modified Jones model adds $\Delta Re ceivables_{jt}$, which attempts to identify the amounts of aggressive recognition of questionable sales in sales changes, to the original Jones model. Following prior research on earnings management (e.g., Bergstresser and Philippon, 2006), the value of discretionary accruals is normally used as a proxy for the magnitude of earnings management. We run fixed effects regressions in the sample period when the results of regressions will be discussed in detail in later section.

To investigate the effects of ownership structure and other corporate governance factors on earnings management, we use the model as follows when we control the firm-specific characteristics:

$$\%DA = \alpha_0 + \alpha_1 SEPARATION + \alpha_2 CASHRIGHT + \alpha_3 DUAL$$
$$+ \alpha_4 BOARDIND + \alpha_5 LBOARDSIZE + \alpha_6 LOSS + \alpha_7 LASSETS + \alpha_8 LEV + \varepsilon_{it} \quad (3)$$

In Table 2, we present summary statistics concerning board composition, ownership structure, and firm-specific measures for family-controlled and individual-controlled firms. Like the studies of Claessens et al. (2000), we measured the ownership structure in terms of cash flow rights and control rights and hence computed separation, the divergence between control and cash flow rights. We therefore carefully followed the chain of ownership and used pyramiding structures and cross-holdings to distinguish between control rights and cash flow rights. We defined the ultimate owner as the state with the largest control rights[7] when summing direct and indirect ownership (Yeh and Woidtke, 2005).

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[7] Following La Porta et al. (1999), I classify the largest shareholder with summing direct and indirect ownership as the ultimate owner. Take a look at the ownership structure in China's listed firms, a singular ultimate owner mostly likely presents.

(Insert Table 2 here)

Panel A in Table 2 presents measures of cash-flow and control rights for the sample. Cash-flow rights (CASHRIGHT) is defined as the cash flow rights of the largest shareholder. Control rights (CONTROL) is defined as the voting rights of the largest shareholder. SEPARATION is defined as control rights less cash-flow rights, and DSEP is a dummy variable indicating whether the SEPARATION is greater than zero. Low cash-flow concentration (LCFC) is also a dummy variable that equals one when cash-flow rights is smaller than median cash-flow rights of full sample. Like ownership patterns in many other countries, ownership is concentrated and the largest shareholder mostly has control rights in excess of cash flow rights. Average cash flow rights in the sample is 23.1% while average control rights is 33.4%. The difference results in separation of 10.2% and 77.8% observations in our sample have control rights in excess of cash flow rights. In terms of different control-enhancing mechanisms in ownership disproportional sample, pyramids dominate 69% of full sample, compared to cross-holdings and other mechanisms.

3.3 Firm performance

In order to investigate the effect of ownership structure on corporate performance, we measure the reported firm performance as ROA, net income/assets, mostly used in prior research as measurement of firm performance. However, as a result of managers' influence over accruals (for example, accounts receivable) as well as the treatment of amortization, ROA is likely to be manipulated by CEO (Dechow et al., 1996). In order to measure true firm performance without management manipulation, we use the difference between ROA and %DA as proxy for unmanaged true performance. Therefore, exclusion of discretionary components makes this firm performance a more true performance compared with reported ROA, which might be cosmetic due to management discretion in accounting treatment.

Two measurements of firm performance were reported in Table 2, Panel B: ROA and ROA-%DA. The average ROA based on reported earnings is 4.71%, and the mean performance measurement based on unmanaged true earnings (i.e., the effect of discretionary accruals on reported performance is removed) is 3.3%.

Then we investigate whether industry adjustment makes any difference in firm performance. For each firm, we identify industry comparison firms as all firms listed on stock exchanges within the same industry[8]. Industry-adjusted performance is the firm's performance in any year minus the average industry value for that year. We measure firm performance alternatively as reported ROA, net income/Assets, or true performance adjusted for discretionary accruals, (net income/Assets)-%DA. Industry adjusted performance is zero either by using net income/assets or by using (net income/assets)-%DA

To compare the results between reported performance and true performance, we use following regression analyses when firm characteristics are controlled:

$$NETINCOME / ASSETS = \alpha_0 + \alpha_1 SEPARATION + \alpha_2 CASHRIGHT + \alpha_3 DUAL + \alpha_4 BOARDIND + \alpha_5 LBOARDSIZE + \alpha_6 LOSS + \alpha_7 LASSETS + \alpha_8 LEV + \varepsilon_{it}$$

$$(4)$$

Where NETINCOME/ASSETS is referred to as reported ROA in the paper and other variables are defined in Table 1.

$$NETINCOME / ASSETS - \%DA = \alpha_0 + \alpha_1 SEPARATION + \alpha_2 CASHRIGHT + \alpha_3 DUAL + \alpha_4 BOARDIND + \alpha_5 LBOARDSIZE + \alpha_6 LOSS + \alpha_7 LASSETS + \alpha_8 LEV + \varepsilon_{it}$$

$$(5)$$

Where (NETINCOME/ASSETS)-%DA is referred to as true performance excluding the effects of earnings management.

3.4 Ownership structure

Take Xiamen Haoshiguang Co. as an example for identifying cash flow rights, control rights and separation. The diagram of Xiamen Haoshiguang Co. in Fig. 1 illustrates the complexity of computing cash flow and control rights separately when ownership pyramids are present. Following the method in Claessens et at. (2000), voting rights

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[8] Our industry classification follows Chen et al. (2006), listed Chinese firms are classified to 6 industries: Finance, Utilities, Property and Construction, Conglomerates, Industrial and Manufactory, Commercial.

were computed on the weakest link in the chain of shares owned by entities that are in turn controlled by the ultimate owner[9]. Additionally, if there are two parallel controlling chains connecting one firm and its controlling shareholders, the sum of the weakest links in each of the chain of shares was measured as control rights. We therefore calculated Huang Shaoliang's control rights to be 14.57%, which equals the weakest link in the chain of control through Xinwang Co., Xufei Co., Xudao Co., Guangcaihong Co. and Xufei Group Co. In contrast, the cash flow rights of Huang Shaoliang in Xiamen Haoshiguang Co. was calculated to be 1.08%, which equals 14.57%*(32%*69.97%+29%*51%)*50%*40%.

(Insert Figure 1 here)

To examine the effect of separation in control and cash flow rights further, we divide the sample according to whether controlling shareholders' control rights exceed their cash flow or ownership rights. We then compare the individual components of separation, control and cash flow rights, and earnings management and firm performance across the two sub-samples. The results are showed in Table 3. Control rights exceeds cash flow rights in 1,425 firm-years and is equal to cash flow rights in 350 firm-years. Controlling shareholders in the two sub-sample control around 34% and 30% of the firm's voting rights, on average, respectively, but controlling shareholders in firms with a separation only own 20% of the firm's cash flow rights. Therefore, the separation appears to be the result of maintaining control while reducing cash flow rights. Moreover, 56.6% observations in firms with a separation are low cash flow concentrated while only 23.4% observations in firms without a separation are low cash flow concentrated. That is, separation in control and cash flow rights is more attributable to lower cash flow rights. In addition, reported ROA and earnings management are both lower for firms with a separation while true ROA shows no difference in two sub-samples. Taken together, these results suggest that controlling shareholders in firms with a separation are more likely to transfer resources out of firm to their own benefits and thus their true performance do not show much difference from their counterparts even though their reported ROA are much higher.

(Insert Table 3 here)

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[9] Following Claessens et at. (2000), We use 10% cut-off to identify the controlling shareholdings.

Table 4 presents values according to the ranges of cash flow rights. We divide our sample to three different ranges when cash flow rights is less than or equal to 20%, greater than 20% and less than or equal to 20%, and greater than 30%. Cash flow rights is less than or equal to 20% for the majority of firms. For this group of firms, reported ROA is only a little smaller than the other two sub-samples but their true performance is the highest among three groups as well as the separation. Taken together, the results in Table 3 and 4 suggest that stronger entrenchment effects of separation in control and cash flow rights do not exist in lower cash flow concentrated firms, on the contrary, the separation in lower cash flow concentrated firms even shows positive effects on true firm performance.

(Insert Table 4 here)

3.5 Other variables

We include several control variables in the regression analysis to account for firm-specific characteristics that influence firm performance, for example, nature log of board size. The nature log can mitigate the difference in board size across firms and hence reduce heteroskedasticity. We also use nature log of assets for the same reason. To examine our hypotheses in terms of board characteristics, we collect data on the proportion of independent directors (BOARDIND), board size (LBOARDSIZE) and CEO/Chair duality (DUAL).

Because free-riding problems among directors increase with board size (Jensen, 1993), smaller boards are expected to be more effective monitors than large boards. However, large boards are likely to be more effective monitors than small boards because they are harder controlled by management and thus can more effectively protect shareholders' interests (Zahra and Pearce, 1989). Most prior U.S. studies use two proxies for board independence, the proportion of outside directors, and a dummy variable showing whether the board has a majority of outside directors (Bedard et al, 2004). However, the percentage of independent directors on the board of China's listed firms is seldom greater than 50%, which is quite different from their U.S. counterparts, therefore we only use the proportion of independent directors as proxy for board independence.

Firm size is measured by nature log of assets (LASSETS). Prior literature has shown that firm size is positively associated with firm performance significantly (for example, Cornett et al., 2008). Thus, we use LASSETS as our proxy for firm size.

Leverage is also expected to play an important role in determining firm performance in terms of the potential agency costs of debt (Iyengar et al, 2005). We therefore include leverage rate (LEV) as control variable, which is measured as the book value of debt to the book value of shareholders' equity.

LOSS is used to measure a net loss for two consecutive years, which is considered to be one determinant variable for earnings management (Chen et al., 2010).

Panel A of Table 2 represents the summary statistics of firm-specific characteristics. On average, leverage is 1.43, and the average proportion of independent directors on board is 59.7% when average number of directors serving on board is 6. 21.4% firms in our sample have the same person sitting on both CEO and chairman of board positions. Only 3% firms have net loss for prior two consecutive years.

4. Empirical results

We estimate two sets of regressions[10]. The first set investigates earnings management, and treats the value of discretionary accruals divided by assets as the dependent variable. The explanatory variables are corporate governance variables related to ownership structure and firm-specific control variables. The second set of regressions examines how firm performance relates to the same set of variables, both with and without adjustment for earnings management.

4.1 Earnings management

Table 5 shows fixed effects results of the earnings management proxied by discretionary accruals. Discretionary accruals are computed from the modified Jones model, using Eq. 2 above. A fixed effects longitudinal regression model is used in our study when the standard errors are reported in parentheses.

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[10] In contrast to Cornett et al. (2008), our study is based on a panel data set, which mitigates a possible endogeneity problem by estimating fixed-effects models.

(Insert Table 5 here)

As shown by Table 5, column 2 shows the results of Eq.3. The coefficient on SEPARATION is positively significantly associated with earning management, supporting our expectation that the higher the control-cash flow rights separation the higher the earnings management.

To further investigate if cash flow concentration can affect the relationship between separation and earnings management, we divide the full sample to three different sub-samples across different cash flow concentration (less than or equal to 20%, from 20%-30%, and greater than 30%, respectively) in columns 3, 4, and 5. The magnitude of earnings management is only significantly negatively related with separation when cash flow rights is high (greater than 30%). Consistent with our prediction, when both the cash flow concentration and separation are high, the controlling shareholders will have incentive and opportunity of managing earnings. In column 6, an interaction term LCFC*SEPARATION is added to test the additional effect of low cash flow concentration. The coefficients on LCFC*SEPARATION are -0.0037 at better than 5% significance. The results also support our expectation that high divergence between control and cash flow rights can reduce earnings management when a firm has low concentrated cash flow rights.

4.2 Firm performance

A potential issue is the potential endogeneity issue between ownership structure and firm performance (Lins, 2003). By using Hausman test (1978), no serious endogeneity issue is found in our models.

Table 6 and 7 indicate regression results of firm performance on ownership variables and firm-specific variables. We use reported firm performance (ROA), net income/assets, which can be referred to as unadjusted performance, as the dependent variable in Table 6. The reported performance reflects managers' discretionary accounting treatments. Then we employ unmanaged (true) performance, which is computed as the difference between ROA and %DA, as the dependent variable in Table 7. The adjusted (true) performance is expected to exclude management discretions.

(Insert Table 6 here)

In Table 6, separation and cash flow rights both significantly increase the reported performance in model 1, and LCFC*SEPARATION decreases the reported performance significantly while separation substantially increases it in model 5. Other ownership variables do not show any significant relationship with reported performance in all models.

(Insert Table 7 here)

Table 7 represents the regression results by using the same model as Table 6, but the dependent variable is measured as the unmanaged (true) performance, ROA-%DA. Even though separation significantly increases earnings management in model 1, it has no significant relationship with true performance. In model 4, the coefficients on SEPARATION is -0.0078 at better than 1% significance due to the substantial increase in earnings management in Table 5. Likewise, after adjusting for the effects of earnings management, the coefficients on LCFC*SEPARATION are positively significantly related with true performance in model 5 while separation is negatively associated with true performance.

4.3 Further tests

In order to examine the effects of disproportional ownership structures, we divide our full sample to two sub-samples in Table 8, firms with pyramidal structures and firms with other control-enhancing mechanisms. We can see from Table 8 that separation is positively significantly associated with earnings management only in pyramids sub-sample. Moreover, after removing the effects of earnings management, separation between control and cash flow rights reduces true performance significantly, which is consistent with our expectation that the negative effects of separation is likely to be stronger in firms with pyramidal structures.

(Insert Table 8 here)

To further examine the effects of cash flow rights concentration, we add a dummy variable PYRAMID, which equals one when the firm is pyramidal structured and zero otherwise, in our models. It can be seen from Table 9 that the coefficients on PYRAMID is 0.02, significantly related with earnings management, and hence significantly associated with true performance. Lower cash flow concentration is also significantly related with earnings management while marginally significantly related

with true performance. Consistent with our prediction, the interaction item LCFC*PYRAMID reduces earnings management significantly and hence substantially increases the true performance, at better than 5% significance.

(Insert Table 9 here)

Prior studies used different measures of separation between control and cash flow rights, for example, Bennedsen and Nielsen (2007) employed a dummy indicating that control rights exceed cash flow rights. We also use separation dummy to rerun our models as robustness test in model 6 of Table 5, 6 and 7. The results are mostly consistent with our prior models.

Like the research of Claessens et al. (2002), the issue of reverse causality is not a serious issue in our study because it is implausible that controlling shareholders quickly change the cash flow and control structures of their corporations in response to temporary change of firm performance.

5. Conclusions

Our analysis suggests that earnings management (proxied by discretionary accruals) responds dramatically to disproportional ownership. Earnings management is higher when there is higher separation of control and cash flow rights. Earnings management also increases in response to the pyramidal structures.

The results also suggest that the negative impact of separation on reported profitability may have been covered by the effect of earnings management. As the likely impact of earnings management is removed from profitability estimates, the measured importance of disproportional ownership structure increases. Therefore, the results suggest that a simple analysis on the relation between disproportional ownership structure and operating performance can be problematic if we do not consider earning management.

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Table 1 Definitions of variables

This table provides variable definitions used in the empirical analysis

Variable	Definition
Firm performance	
ROA	The average roa, which is calculated as net income divided by the book value of assets of the current year
Board characteristics	
BOARDIND	Proportion of independent directors on board
LBOARDSIZE	Natural log of the total number of directors serving on the board
Ownership structure	
SEPARATION	Control rights less cash flow rights
CONTROL	The proportion of votes controlled by the largest shareholder group
CASHRIGHT	The proportion of cash flow rights owned by the largest shareholder group
DSEP	A dummy variable that equals one when separation is positive and equals zero, otherwise
LCFC	A dummy variable that equals one when cash flow rights is smaller than median cash flow rights of full sample and equals zero, otherwise
PYRAMID	A dummy variable that equals one when the control-enhancing mechanisms are pyramids and equals zero, otherwise
Firm-level control variables	
LASSETS	Natural log of the book value of assets$_{t-1}$
LEV	Leverage rate (debt/equity)
DUAL	A dummy variable that equals one when the chairman and CEO positions are held by the same person and equals zero, otherwise
LOSS	A dummy variable that equals one when the net income is negative for the previous two years.
INDUSTRY	Dummy variables, 6 industries following Chen et al. (2006)

Table 2. Descriptive statistics

Panel A: Descriptive statistics on ownership and firm-specific variables					
Variable	Mean	Median	Standard deviation	25th percentile	75th Percentile
BOARDIND	0.5973	0.5	0.2195	0.5	0.6667
BOARDSIZE	5.7498	6	1.5298	5	6
SEPARATION	10.238	9.1292	8.9275	1.3562	16.9197
CONTROL	33.3822	29.85	14.2297	23.005	42.3
CASHRIGHT	23.1323	20.6656	14.7523	11.4724	31.2211
DSEP	0.778	1	0.4156	1	1
LCFC	0.4963	0	0.5001	0	1
PYRAMID	0.6901	1	0.4626	0	1
LASSETS	20.944	20.8742	0.8457	20.3734	21.4507
LEV	1.4328	0.9089	7.8998	0.4897	1.5544
DUAL	0.214	0	0.4102	0	0
LOSS	0.0302	0	0.1712	0	0

Table 2 Descriptive statistics

Panel B: Descriptive statistics on accruals and average performance					
Variable	Mean	Median	Standard deviation	25th percentile	75th Percentile
$\%DA = \dfrac{Discretionary\_accruals}{Assets}$	0.014	0.0032	0.0961	-0.0334	0.0525
Abs(%DA)	0.0642	0.042	0.0729	0.0176	0.0853
Performance measures					
Reported: ROA=net income/assets	0.0471	0.037	0.0431	0.0187	0.0648
True: ROA-%DA	0.033	0.0364	0.0994	-0.011	0.0831
Industry-adjusted performance					
Reported: ROA=net income/assets	0.0000	-0.0082	0.0413	-0.0253	0.0165
True: ROA-%DA	-0.0000	0.0034	0.0983	-0.0437	0.0518

Financial statement data of family-controlled and individual-controlled publicly listed Chinese firms are obtained from CSMAR database for each year, 2003-2009. Following Chen et al. (2006), for each firm, I identify 6 industries. Industry-adjusted performance is the firm's net income in any year minus the average industry value for that year. I measure firm performance alternatively as reported ROA, net income/Assets, or performance adjusted for discretionary accruals as true firm performance, net income/Assets-%DA. Normal discretionary accruals are computed as Eq. (2). %DA (percentage discretionary accruals) are residuals between accrual accruals and normal accruals as a fraction of assets defined by the modified Jones model. Other variables definitions are given in Table 1.

Table 3. Comparison between family-controlled and individual-controlled firms with or without a divergence in control and cash flow rights

Variables	DSEP=1 Mean (Stand. Dev.) N=1425	DSEP=0 Mean (Stand. Dev.) N=350	T-value for difference in means
ROA	0.0444 (0.0427)	0.058 (0.043)	-5.32***
%DA	0.0127 (0.2556)	0.0223 (0.0794)	-1.8*
ROA-%DA	0.0324 (0.1029)	0.0357 (0.0837)	-0.55
CASHRIGHT	20.2861 (13.738)	30.4064 (13.544)	-12.38***
CONTROL	33.8108 (14.0385)	30.4067 (13.544)	4.09***
LCFC	0.5656 (0.4959)	0.2343 (0.4109)	12.26***

Measures of reported firm performance, earnings management, true performance, and ownership are presented separately for firms with or without a divergence in control and cash flow rights. Variable definitions are given in Table 1.

***:P<0.01, **:P<0.05, *: P<0.1.

Table 4. Reported firm performance, earnings management, true performance, and ownership across different ranges of cash flow rights.

CASHRIGHT	Observations	ROA Mean (Stand. Dev.)	%DA Mean (Stand. Dev.)	ROA-%DA Mean (Stand. Dev.)	SEPARATION Mean (Stand. Dev.)
0-20%	894	0.0411 (0.0427)	0.0079 (0.089)	0.0332 (0.093)	13.8884 (8.4985)
20-30%	436	0.0484 (0.0433)	0.0155 (0.0892)	0.0329 (0.0903)	8.232 (9.2625)
>30%	445	0.0578 (0.0415)	0.0249 (0.114)	0.0329 (0.1186)	7.3427 (7.8164)

Averages of reported firm performance, earnings management, true firm performance, and separation are presented for sample firms grouped according to levels of cash flow rights. Standard deviations are given in parentheses. Variable definitions are given in Table 1.

Table 5. Regression analysis of earnings management on ownership variables

Discretionary accruals computed by performance-matched modified Jones model over 2003-2009. The dependent variable is discretionary accruals divided by assets, computed by Eq. 3.

	Multivariate Tests					
	(Dependent variable=%DA)					
Variables	Model 1	Model 2 (Cash flow rights<=20%)	Model 3 (20%<Cash flow rights<=30%)	Model 4 (Cash flow rights>30%)	Model 5	Model 6
SEPARATION	0.0014** (0.0006)	-0.0000 (0.001)	-0.0008 (0.0019)	0.0078*** (0.0026)	0.0045*** (0.0014)	
CASHRIGHT	0.0006 (0.0004)	-0.0002 (0.0014)	-0.0015 (0.0028)	-0.001 (0.0016)	0.0002 (0.0006)	-0.0001 (0.0006)
LCFC					0.0169 (0.0197)	0.0144 (0.0242)
LCFC*SEPARATION					-0.0037** (0.0014)	
DSEP						0.0415* (0.0223)
DSEP*LCFC						-0.0433* (0.0247)
BOARDIND	-0.0034 (0.002)	0.0058 (0.0276)	-0.0356 (0.0482)	0.0238 (0.0601)	-0.0054 (0.0199)	-0.0049 (0.02)
LBOARDSIZE	-0.006 (0.0195)	-0.0143 (0.0257)	0.01 (0.046)	-0.0004 (0.0594)	-0.0055 (0.0194)	-0.0068 (0.0195)
DUAL	0.008 (0.0102)	-0.002 (0.0144)	0.0091 (0.0237)	0.02 (0.0308)	0.0079 (0.0102)	0.0083 (0.0102)
LEV	-0.0098** (0.005)	-0.0139** (0.0065)	-0.0183 (0.0162)	-0.0003 (0.0162)	-0.009* (0.005)	-0.009* (0.0049)
LASSETS	0.0068 (0.0074)	-0.0017 (0.012)	-0.0024 (0.0189)	-0.0186 (0.0188)	0.0043 (0.0074)	0.0059 (0.0074)
LOSS	0.0944 (0.134)	-	-	-	0.0849 (0.134)	0.1085 (0.1634)

***:$P<0.01$, **:$P<0.05$, *: $P<0.1$. Standard errors are listed in parenthesis. Variable definitions are given in Table 1.

Table 6. Determinants of reported performance (ROA) in terms of ownership variables.

Reported firm performance (ROA), net income/assets, which can be referred to as unadjusted performance, is used as the dependent variable.

		Multivariate Tests				
		(Dependent variable=ROA)				
Variables	Model 1	Model 2 (Cash flow rights<=20%)	Model 3 (20%<Cash flow rights<=30%)	Model 4 (Cash flow rights>30%)	Model 5	Model 6
SEPARATION	0.0005** (0.0002)	0.0005 (0.0004)	0.0000 (0.0007)	-0.0000 (0.0006)	0.0015*** (0.0005)	
CASHRIGHT	0.0003** (0.0001)	-0.0004 (0.0005)	-0.0004 (0.001)	-0.0007* (0.0004)	0.0001 (0.0002)	0.0001 (0.0002)
LCFC					0.0042 (0.0067)	-0.0052 (0.0082)
LCFC*SEPARATION					-0.0012** (0.0005)	
DSEP						0.0105 (0.0075)
DSEP*LCFC						-0.0016 (0.0084)
BOARDIND	0.012* (0.0067)	0.0165* (0.01)	0.028* (0.0169)	-0.0056 (0.0134)	0.0113* (0.0067)	0.0116* (0.0067)
LBOARDSIZE	-0.0001 (0.0066)	0.0021 (0.0094)	-0.0072 (0.0161)	-0.0272** (0.0132)	0.0000 (0.0066)	0.0000 (0.0066)
DUAL	0.0017 (0.0035)	0.0008 (0.0053)	-0.0037 (0.0083)	-0.0045 (0.0068)	0.0017 (0.0034)	0.0018 (0.0035)
LEV	-0.0121*** (0.0017)	-0.0097*** (0.0023)	-0.0225*** (0.0057)	-0.0074** (0.0036)	-0.0118*** (0.0017)	-0.0118*** (0.0017)
LASSETS	0.0035 (0.0025)	0.0021 (0.0044)	0.0028 (0.0066)	-0.0057 (0.0042)	0.0026 (0.0025)	0.0033 (0.0025)
LOSS	-0.0541 (0.0453)	-	-	-	-0.0566 (0.0453)	-0.0509 (0.0552)

***:$P<0.01$, **:$P<0.05$, *: $P<0.1$. Standard errors are listed in parenthesis. Variable definitions are given in Table 1.

Table 7. Determinants of true firm performance (PERF) in terms of ownership variables.

The dependent variable is measured as the true performance, net income/assets-%DA.

	Multivariate Tests					
	(Dependent variable=ROA-%DA)					
Variables	Model 1	Model 2 (Cash flow rights<=20%)	Model 3 (20%<Cash flow rights<=30%)	Model 4 (Cash flow rights>30%)	Model 5	Model 6
SEPARATION	-0.001 (0.0006)	0.0006 (0.001)	0.0008 (0.0019)	-0.0078*** (0.0026)	-0.003** (0.0013)	
CASHRIGHT	-0.0003 (0.0004)	-0.0002 (0.0014)	0.0011 (0.0028)	0.0003 (0.0016)	-0.0000 (0.0006)	0.0002 (0.0006)
LCFC					-0.0127 (0.0198)	-0.0196 (0.0242)
LCFC*SEPARATION					0.0025* (0.0014)	
DSEP						-0.031 (0.0223)
DSEP*LCFC						0.0417* (0.0247)
BOARDIND	0.0154 (0.02)	0.0108 (0.0277)	0.0637 (0.0468)	-0.0294 (0.0597)	0.0167 (0.02)	0.0165 (0.02)
LBOARDSIZE	0.0059 (0.0195)	0.0164 (0.0259)	-0.0171 (0.0447)	-0.0268 (0.059)	0.0055 (0.0195)	0.0069 (0.0195)
DUAL	-0.0063 (0.0102)	0.0028 (0.0145)	-0.0128 (0.023)	-0.0245 (0.0306)	-0.0062 (0.0102)	-0.0065 (0.0102)
LEV	-0.0023 (0.005)	0.0043 (0.0065)	-0.0042 (0.0157)	-0.0072 (0.0161)	-0.0028 (0.005)	-0.0028 (0.0049)
LASSETS	-0.0033 (0.0074)	0.0038 (0.012)	0.0052 (0.0184)	0.0129 (0.0187)	-0.0017 (0.0075)	-0.0025 (0.0074)
LOSS	-0.1485 (0.1341)	-	-	-	-0.1415 (0.1344)	-0.1594 (0.1345)

***:P<0.01, **:P<0.05, *: P<0.1. Standard errors are listed in parenthesis. Variable definitions are given in Table 1.

Table 8. Determinants of reported firm performance, earnings management, and true firm performance (PERF) in terms of control-enhancing mechanisms: pyramids and other ownership disproportional.

	Control-enhancing mechanisms					
	PYRAMIDS			OTHERS		
Variables	Dependent variable=net income/assets	%DA	Dependent variable=ROA-%DA	Dependent variable=net income/assets	%DA	Dependent variable=ROA-%DA
SEPARATION	0.0003 (0.0003)	0.00019** (0.0008)	-0.0015* (0.0008)	0.0000 (0.0006)	0.0011 (0.0004)	-0.0011 (0.0014)
CASHRIGHT	0.0005*** (0.0002)	0.0009 (0.0006)	-0.0005 (0.0006)	-0.0000 (0.0003)	-0.0002 (0.0008)	0.0002 (0.0008)
BOARDIND	0.0122 (0.0076)	0.0103 (0.0246)	0.0019 (0.0246)	-0.001 (0.0147)	-0.0377 (0.0362)	0.0368 (0.036)
LBOARDSIZE	0.0086 (0.0073)	-0.0021 (0.0236)	0.0108 (0.0236)	-0.0289* (0.0151)	-0.0201 (0.0371)	-0.0087 (0.037)
DUAL	-0.0031 (0.0041)	0.0029 (0.0131)	-0.006 (0.0131)	0.0152** (0.0073)	0.0076 (0.0179)	0.0076 (0.0179)
LEV	-0.0113*** (0.0017)	-0.0101* (0.0056)	-0.0012 (0.0056)	-0.014** (0.0057)	-0.0111 (0.014)	-0.0028 (0.0139)
LASSETS	0.0019 (0.0029)	0.0034 (0.0092)	-0.0015 (0.0092)	0.0035 (0.0059)	0.0309** (0.0145)	-0.0274* (0.0145)
LOSS	-0.0533 (0.0427)	0.0987 (0.1375)	-0.152 (0.1377)	-	-0.1415 (0.1344)	-0.1594 (0.1345)

***:$P<0.01$, **:$P<0.05$, *: $P<0.1$. Standard errors are listed in parenthesis. Variable definitions are given in Table 1.

Table 9. Determinants of reported firm performance, earnings management, and true firm performance (PERF) in terms of control-enhancing mechanisms, pyramid dummy.

Variables	Dependent variable=net income/assets	%DA	Dependent variable=ROA-%DA
CASHRIGHT	0.0002 (0.0001)	0.0006* (0.0003)	-0.0003 (0.0003)
PYRAMID	-0.0059 (0.0044)	0.0231** (0.0095)	-0.0277*** (0.0104)
LCFC	-0.006 (0.0049)	0.0222** (0.011)	-0.0225* (0.0119)
PYRAMID*LCFC	-0.0016 (0.0051)	-0.032*** (0.0113)	0.026** (0.0122)
BOARDIND	0.0125** (0.0056)	-0.0031 (0.0039)	0.0157 (0.0146)
LBOARDSIZE	-0.0017 (0.0049)	-0.0027 (0.0108)	0.0005 (0.0118)
DUAL	0.0016 (0.0026)	0.0004 (0.0059)	-0.0011 (0.0063)
LEV	-0.0131*** (0.0012)	-0.0022 (0.0026)	-0.0111*** (0.0028)
LASSETS	0.0017 (0.0015)	0.0034 (0.0029)	-0.0014 (0.0033)
LOSS	-0.0618* (0.0322)	-0.0126 (0.096)	-0.0647 (0.0986)

***:$P<0.01$, **:$P<0.05$, *: $P<0.1$. Standard errors are listed in parenthesis. Variable definitions are given in Table 1.

Figure 1. Xiamen Haoshiguang Co. example.

Source: Data obtained from company prospectuses. The arrow indicates the direction of control.