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# **Disproportional Ownership Structure and IPO Long-run Performance of Entrepreneurial Firm in China**

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# **Disproportional Ownership Structure and IPO Long-run Performance of Entrepreneurial Firm in China**

## **Abstract**

This paper examines the relationship between ownership structures and IPO long-run performance in China. Although entrepreneurial firms underperform the market in general after IPO but the poor performance is mainly caused by the IPOs with ownership control wedge. Entrepreneurial firms with one share one vote structure outperform those with ownership control wedge by 30% for 3 years post-IPO in either buy-and-hold or cumulative monthly returns. Entrepreneurial firms with excess ownership control wedge have higher frequency of undertaking value-destroying related party transactions. These findings suggest that entrepreneurial firms need to improve corporate governance such as disproportional ownership structure to better safeguard the interest of long-run shareholders.

Keywords: IPO, Long-run performance, Excess control, Disproportionate ownership, Corporate governance, Entrepreneurial firms

JEL: G30, G32

## **Introduction**

Initial Public Offering (IPO)'s performance has important implications for public investors. IPO literature has clearly documented the phenomenon of pervasive long-run IPO underperformance. The literature (Ritter 1991; Loughran & Ritter 1995) shows that IPO stocks on a 3-5 year horizon underperforms the market or matching firms. Jain and Kini (1994) and Mikkelson et al. (1997) find that IPO firms experience a decline in their post-issue operating performance. Pagano et al. (1998) attribute the post-IPO fall in profitability to the window opportunity hypothesis when entrepreneurs want to take advantage of market timing.

In this paper, we examine whether the difference in ownership structure at firm level can explain IPO long-run (under)performance in China. Shleifer and Vishny (1997) point out that large owners gain major control of the corporation and extract private benefits. Large shareholders often prefer disproportional ownership structure in which their control rights are much greater than cash flow rights in emerging markets. Such disproportional ownership structure becomes a major channel to facilitate expropriation of minority shareholders (Claessens et al., 2002; Lins, 2000; Lemmon and Lins, 2003; Laeven and Levine, 2008; Bae et al., 2012). These empirical studies document a negative association between firm value/performance and disproportional ownership structure in non-IPO contexts. Yeh et al. (2008) study IPO first-day return and disproportional ownership structure in Taiwan. Different from all these studies, we

investigate IPO long-run performance in association with disproportional ownership structure in China.

Post-IPO's secondary market is important place for most small and public investors to trade IPO firms. Many IPO underwriting process favors institutional investors so that small investor can only buy hot IPOs after they are traded. It is thus relevant to understand IPO long-run performance. On the other hand, IPO market offers an ideal place to investigate the causality between performance that is observed ex post and ownership structure ex ante. Most studies on ownership and performance are subject to endogeneity problem since they are jointly determined. We hypothesize that IPO firms with pre-IPO ownership control wedge will underperform other IPO firms in the long run due to the expropriation by controlling shareholders. We not only examine IPO's long-run stock performance using both cross-sectional approaches and calendar-time portfolio analysis, but also report operating performance post-IPO. Furthermore, we try to understand the channels through which disproportional ownership decrease long-run performance post-IPO.

This paper is the first to explicitly examine the long-run performance implications of ownership control wedge in IPO literature. First, as other emerging markets, China's corporate governance system and investor protection are weak for small shareholders due to weak institutions. One implication is that the entrenchment effects of a disproportionate ownership structure are likely to be pronounced in this market. Second, small retail investors actively investing in Chinese IPOs are naïve ones, which means

IPO long-run performance is critical. Third, equity market provides a critical source of external financing for non-government owned firms, which comprise the majority of IPOs during the recent years. Most of firms in China are characterized with a concentrated and disproportional ownership structure. Our findings therefore have general implications of ownership structure and IPO firm performance in countries with weak institutions.

We utilize a comprehensive sample of non-SOEs, and the sample includes 258 IPO companies listing between 2002 and 2008 (51% of all the IPOs including SOEs). SOEs are excluded in this research primarily due to the state ownership structure and government interference<sup>2</sup>. Most listed SOEs do not exhibit disproportional ownership structure. We manually collect ownership information such as ultimate owners, controlling shareholders' cash flow and control rights. Disproportional ownership is quite pervasive: 53% of our IPO companies are characterized by excessive control rights. We find that IPOs with excess control significantly underperform both the market and other IPOs. With three-year market-adjusted buy-and-hold returns (BHR) and cumulative abnormal market-adjusted returns (CAR), IPOs with an ownership wedge underperform other by 32% and 26%, respectively. Strong long-run underperformance patterns hold with alternative measures such as CAPM or Fama-French portfolio methods. We also find IPOs with excess control rights show

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<sup>2</sup> State owned enterprises (SOEs) often are listed through share-issue privatization through which state controls a majority stake. SOEs often receive preferential treatment in bank credit, government subsidy and market entry compared to private enterprises.

significant decline in operating performance post-IPO.

We further provide analysis to understand the channels through which disproportional ownership leads to lower long-run performance. First, we rule out IPO mispricing<sup>3</sup> as a driver of underperformance for firms with excess control rights. We find that first day return is negatively associated with excess control rights. This suggests IPOs with disproportional ownership have lower underpricing, partially excluding a possibility that overpricing leads to low long-run stock returns. We furthermore link firm performance and ownership structures to related party transactions. Recent studies suggest that when corporate wealth can be transferred from listed firms to their controlling shareholders, tunneling activities lead to poor performance (Peng et al., 2010). We show that the frequency of value-destroying related party transactions is increasing in the presence and magnitude of excess control rights in IPO firms.

This paper makes significant contributions to the literature: it is the first to focus on the relation between disproportionate ownership structure and long-run performance in IPOs. It documents strong entrenchment effects of excess control rights in newly listed firms. More importantly, it contributes to the literature on IPO long-term performance. We show first time in the literature that disproportional ownership structure can explain IPO long-run underperformance. We show channels through

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<sup>3</sup> Loughran et al., (1994) document IPO underpricing is a common phenomenon. Loughran and Ritter (2002) attribute such underpricing<sup>3</sup> to irrational behavior such as speculation bubbles and market fads.

which controlling shareholders expropriate minority ones by undertaking value-destroying related party transactions.

The remainder of the paper proceeds as follows. Section 2 reviews the relevant literature and develops the hypotheses. Section 3 introduces our data and sample. Section 4 analyzes the impact of the divergence between the ultimate owner's cash flow and control rights on long-run performance. Section 5 addresses the effect of the ultimately controlling shareholders' excess control rights on the underpricing of non-state controlled IPOs, and section 6 concludes the paper.

## **1. Literature review**

The very first investigation into the divergence between cash flow and control rights by La Porta et al., (1999), which covers companies from 27 countries, suggests that controlling shareholders can gain control rights in excess of their cash flow claims through a pyramid structure and the common practice of ownership concentration. In emerging markets, particularly, where concentrated ownership structure is widespread, agency costs are more like to originate from a conflict between controlling and minority shareholders. Classens Djankov, Fan, et al., (2000), for example, identify a pyramid structure and cross shareholding as the major organizational strategy used by firms in nine East Asian economies to separate ownership and control. They also provide important evidence that entrenchment effects on corporate governance stemming from the divergence between cash flow rights and control rights can



significantly decrease firm value (Classens, Djankov, and Lang, 2002), a claim supported by several later studies (Lemmon and Lins, 2003; Laeven and Levine, 2008; Gompers et al., 2010).

Fan et al. (2011) show that the cost of expropriation is ultimately born by a controlling owner who must then devote substantial resources to mitigate the cost, while other researchers identify several channels through which large shareholders tunnel benefits. Cheung et al.'s (2006) analysis of related party transactions between Hong Kong listed companies and their controlling shareholders, for instance, associates these transactions with the wealth losses of minority shareholders. Likewise, Peng et al. (2010) provide evidence that in Chinese listed firms whose financial condition is sound, controlling shareholders use related party transactions to extract private benefits from minority shareholders.

In general, the literature on IPO performance documents two phenomena relevant for shareholders: pervasive short-run underpricing of IPOs across markets and time periods and long-run IPO underperformance of the market in the long term, usually over three- or five-year periods (Ritter, 1991). Jain and Kini (1994), for example, find that new IPOs experience declines in operating performance post issuance. For China, Chan et al. (2004) document both underpricing and long-run underperformance, while Sun and Tong (2003) show that post-issue performance is negatively related to state ownership but positively related to legal-entity ownership. Wang (2005) also documents a sharp decline in post-IPO operating performance but argues that neither

state ownership nor ownership concentration is related to performance. A negative relation between a disproportionate ownership structure and the initial return of IPOs is identified by Yeh et al. (2008), but their study focuses on the Taiwanese market only.

All these studies, however, despite being focused on ownership's effect on IPO performance, fail to explore the implication of the first-order agency problems that arise from ownership concentration; that is, the conflicts between controlling and minority shareholders. In the context of a disproportionate ownership economy, controlling shareholders are likely to have perverse incentives because of an excess of control rights. If the result is expropriation, it should be evident in IPOs. We therefore fill this research void by linking IPO performance to disproportionate ownership structure in newly listed firms.

The agency problem of disproportionate ownership structure results from conflicts of interest. In particular, through a pyramid ownership structure and cross-shareholding, controlling shareholders can exert control in excess of their cash flow rights, an imbalance that also makes them less subject to board governance and market discipline. Such entrenched controlling shareholders are more likely to pursue private benefits at the expense of minority shareholders or outside investors through such activities as related party transactions or connected party transactions in which corporate wealth can be expropriated through tunneling (Faccio et al., 2001). Fan and Wong (2002) show that in East Asian corporations, the earnings-return relation decreases with the level of controlling shareholders' excess control rights.

In the past three decades, China has undergone a profound institutional reform that has transformed its economic system from a central planning economy to a fairly decentralized market economy in which almost two-thirds of the nation's GDP is produced by the private sector (China Annuals of Statistics, 2009). Since the opening of the Shanghai Stock Exchange (SHSE) and the Shenzhen Stock Exchange (SZSE) in December 1990 and July 1991, respectively, China's stock market has developed rapidly. In the early years, the majority of Chinese listed companies were former state owned enterprises (SOEs); however, since then the number of IPOs with non-state ownership has increased gradually through share issue privatization. Between 2002 and 2007, for example, the proportion of non-state controlled listed firms among all publicly listed companies in China increased from 18% to 67%. Because SOEs have unique institutional features (e.g., fulfilling public policy objectives for employment or GDP growth; Putterman and Dong, 2000), however, they are excluded from this study.

## **2. Data and methodology**

### **2.1 Sample**

Our sample comprises all companies (excluding SOEs) that launched IPOs on the Shanghai Stock Exchange and the Shenzhen Stock Exchange between 2002 and 2008. We restrict our observations to these years because the reporting of cash flow and control rights has only been mandated in China since 2002, and our long-term performance analysis requires at least three years of post-issue data, necessitating the

inclusion of companies that went public prior to December 2008. We also exclude financial firms because of their unique accounting standards, and firms with incomplete pre- or post-issue financial information. Our final sample consists of 258 firms that launched IPOs during the 2002–2008 period. We compile our dataset by merging IPO firm characteristics, market performance, financial information, and ownership data from the Chinese Stock Market Accounting Research (CSMAR) database with related party transactions information from the RESSET database.

## 3.2. Variables

### 3.2.1. Long-term IPO performance

We evaluate the post-IPO performance of the non-state controlled firms in our sample using both market- and accounting-based measures. Our market-based performance measures are the 12-month, 24-month, and 36-month post-IPO buy-and-hold market-adjusted stock returns (BHR) and the cumulative abnormal market-adjusted stock returns (CAR). We calculate our results on the basis of monthly stock returns starting from the first month after the IPO date.

We compute the buy-and-hold market-adjusted stock returns (BHR) as follows:

$$R_{it} = \prod_{i=1}^t (1 + r_{it}) - 1$$

where  $R_{it}$  is the buy-and-hold return of stock  $i$  from month 1 to month  $t$ , and  $r_{it}$  is the monthly raw return of the stock, and

$$R_{mt} = \prod_{i=1}^t (1 + r_{mt}) - 1$$

where  $R_{mt}$  is the buy-and-hold return of the market portfolio from month 1 to month  $t$ , and  $r_{mt}$  is the monthly market return, computed as the value weighted returns of all stocks traded on the Shenzhen or Shanghai Stock Exchanges.

The buy-and-hold market-adjusted return (BHR) is thus

$$BHR_t = R_{it} - R_{mt}$$

and the cumulative abnormal market-adjusted stock returns (CAR) is

$$AR_{it} = r_{it} - r_{mt}$$

where  $AR_{it}$  is the abnormal return of stock  $i$  at month  $t$ ,  $r_{it}$  is the monthly raw return of the stock, and  $r_{mt}$  is the monthly market return, computed as the value weighted returns of all common stocks traded on the Shenzhen or Shanghai Stock Exchanges. The cumulative abnormal market-adjusted return (CAR) from event month 1 to month  $t$  is thus

$$CAR_{it} = \sum_{i=1}^t AR_{it}$$

To validate our value weighted returns of all common stocks traded on the Shanghai or Shenzhen Stock Exchanges, we use them as adjustments in our analyses of market-based performance measures: our regression results remain qualitatively similar to those using equally weighted indexes.

We also evaluate firm performance using accounting-based measures, which, however, raises the issue of all Chinese pre-IPO accounting data being subject to

accounting manipulation to fulfill listing requirements (Aharony et al., 2000). Such manipulation can create a downward bias in the accounting performance change measures, a bias that we take into account by weighting the results based on stock return measures more heavily than those based on accounting return measures. For our analysis, we adopt three industry-adjusted<sup>4</sup> accounting performance measures: sales growth, earnings growth, and the change in return on sales (ROS), calculated as the difference between the firm-specific and industry-median value of performance measure. We use ROS, calculated as net income divided by sales, rather than ROA or ROE because Fan et al. (2007) argue that measures based on equity or assets might create a downward bias on Chinese post-IPO firm performance.<sup>5</sup> Likewise, because prior studies on post-IPO performance typically compare accounting performance changes a few years before and a few years after listing (Megginson et al., 1994; D'Souza and Megginson, 1999; Wang, 2005), we use a firm's pre-IPO accounting figures as a benchmark for evaluating its post-IPO performance. We compute the change in ROS by subtracting the average ROS in the three years immediately prior to the IPO from the average of the three years of annual ROS after the IPO. The earnings (sales) growth measure is the percentage change in the average level of earnings (sales) over the three years immediately prior to the IPO to three years after the IPO. It should be noted, however, that we have omitted the accounting numbers in the IPO year

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<sup>4</sup> We employ the six-industry classifications borrowed from Firth et al. (2006): finance, industrial, commercial, public utility, property, and conglomerate (all other industries).

<sup>5</sup> See Fan et al. (2007) for more details.

because these data tend to be heavily manipulated (Fan et al., 2007).

### 3.2.2. Underpricing of IPO issues

We calculate the underpricing of an IPO issue as the return on the first day of trading (relative to the offering price):

$$\mathbf{Ret}_{i0} = \frac{\mathbf{P}_{i1} - \mathbf{P}_{i0}}{\mathbf{P}_{i0}} \times 100$$

where  $\mathbf{Ret}_{i0}$  is the initial return (underpricing) of stock  $i$ ,  $\mathbf{P}_{i0}$  is the closing price of stock  $i$  on the first trading day, and  $\mathbf{P}_{i1}$  is the offering price of stock  $i$ .

The market return on the first trading day of the new stock is

$$\mathbf{Ret}_{im} = \frac{\mathbf{P}_{i,m1} - \mathbf{P}_{i,m0}}{\mathbf{P}_{i,m0}} \times 100$$

where  $\mathbf{Ret}_{im}$  is the market return on the first trading day of the new stock  $i$ ,  $\mathbf{P}_{i,m0}$  is the closing price of the appropriate Shanghai or Shenzhen composite index that corresponds to the offering day of the new stock  $i$ , and  $\mathbf{P}_{i,m1}$  is the closing price of the appropriate Shanghai or Shenzhen composite index on the first trading day of the new stock  $i$ .

We adjust the return for the market effect as follows:

$$\mathbf{AdjRet}_{i0} = \mathbf{Ret}_{i0} - \mathbf{Ret}_{im}$$

where  $\mathbf{AdjRet}_{i0}$  is the initial return (underpricing) of stock  $i$ .

### 3.2.3. Ownership type, cash flow rights, and control rights

To examine the effects of a disproportionate ownership structure, we first identify the ultimate controlling shareholders by tracing the chain of ownership. Consistent with previous studies (La Porta et al., 1999; Claessens et al., 2002), we define control rights

as the weakest link in the chain and cash flow rights as the product of ownership stakes along the chain. To illustrate, if an ultimately controlling shareholder owns 70% of the stock of publicly traded firm A, which in turn has 35% of the stock of firm B, then the ultimately controlling shareholder controls 35% of firm C, the weakest link in the control rights chain, and has cash flow rights of 24.5%, the product of the two ownership stakes along the chain. Because of a pyramid structure, cross-shareholding, and dual-class stocks, the largest shareholders' control rights are always in excess of its cash flow rights (La Porta et al., 1999), and because controlling shareholders' control rights exceed their cash flow rights, they always have the incentive and opportunity to expropriate the wealth of minority shareholders (La Porta et al., 1999).

**[INSERT TABLE 1 ABOUT HERE]**

Table 1 provides a description of the sample. As Panel A clearly shows, the IPO firms are unevenly distributed across the sample period, which largely reflects the overall IPO pattern in China. From 2002 to 2006, the Chinese stock market experienced a serious bear market in which the Shanghai Stock Index dropped from 2,200 in mid-2001 to 1,050 in mid-2005, and only a few firms (e.g., eight in 2005) were willing to go public. Panel A also reveals that an average 53.49% of the sample firms have a disproportionate ownership structure, with the highest percentage occurring in 2005, when all the IPO firms had such a structure, and the lowest (40.91%) occurring in 2003. In the remaining years, the percentages fluctuate from 43.10% to 63.27%. The presence of a disproportionate ownership structure also varies across



industries: the highest percentage occurs in the property and real estate and commercial sectors (62.50% and 58.71), followed by the conglomerate sector (55.00%), the industrial sector (52.63%), and the public utilities sector (50.00%).

Panel B reports firm characteristics at the time of the IPO. With a mean initial return of 126.20%, the average levels of underpricing are lower than those reported in earlier research (Mok and Hui, 1998; Su and Fleisher, 1999; Chan et al., 2004). Nonetheless, the underpricing of IPOs in China is still much higher than that in developed markets (Loughran et al., 1994):<sup>6</sup> the mean (median) number of shares issued (in millions) is 34.08 (28) and the mean (median) issue price of the IPOs is 10.83 (10.04) RMB. Panel B also shows average cash flow rights of 32.15% as compared to excess control rights of 7.48%, which indicates a clear divergence between the largest shareholders' control rights and their cash flow rights in non-state controlled IPOs firms.

Panel C reports the mean and median values of the stock-based and accounting-based performance measures for the sample. It clearly shows that the average BHR and CAR of newly listed non-state controlled firms in China fall initially and then increase in the three years subsequent to their IPOs, although the median BHR of these firms remains negative. As regards the accounting-based measures, the post-IPO sales and earnings growth measures are quite substantial, averaging 124.37%

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<sup>6</sup> Please visit Jay Ritter's website at <http://bear.cba.ufl.edu/ritter/internl.htm> for the most recently updated information.

for sales and 32.75% for earnings relative to the pre-IPO period. However, the mean (median) change in the three-year average ROS of the sample is a negative -11.94% (-8.39%), reflecting a decline in Chinese IPO firms' accounting performance that is consistent with the data reported by Aharony et al. (2000) and Sun and Tong (2003).

#### **4. Disproportionate ownership structure and long-term firm performance**

In this section, we investigate how the disproportionate ownership structure of non-state controlled IPO firms affects their long-term market-based performance and accounting-based performance.

##### 4.1. Univariate tests

Figure 1 plots the mean BHRs and CARs, respectively, of non-state controlled IPOs firms in China sorted by whether or not the largest shareholders have excess control rights. In Panel A, the mean BHR of the group of IPOs firms with excess control remain negative over the three years, while the mean BHR of the group of IPOs firms without excess control exhibits as large an increase as 30% in later years. Likewise, in Panel B, the mean CAR of IPOs firms without excess control rises much more steeply than that of IPOs firms with excess control.

**[INSERT FIGURE 1 ABOUT HERE]**

Table 2 reports the mean and median values of the market-based and accounting-based performance measures for two subsamples sorted by whether or not the firms are characterized by excess control rights. In each of the three post-IPO years,

the mean and median BHRs and CARs of firms with excess shareholder control rights are statistically significantly lower than those for firms without (except for the 36-month BHRs after IPO, whose results are not significant). This finding indicates that the post-IPO market can indeed distinguish between the two groups of firms. Moreover, the magnitude of the difference in average BHRs and CARs between the two groups grows larger over time, suggesting that over the years, the market gradually perceives the negative effects of entrenchment. Our between-group comparison of accounting-based performance measures further shows that firms with excess control rights experience a more substantial drop in average ROS and slower sales and earnings growth than do their counterparts without excess control rights.

**[INSERT TABLE 2 ABOUT HERE]**

#### 4.2. Regressions

To examine the effects of disproportionate ownership structure on non-state controlled firms' post-IPO performance, we perform regression analyses using generalized least squares to control for sample heterogeneity. Tables 3 and 4 summarize our regression results using the 12-, 24-, and 36-month BHRs and CARs as dependent variables. The regressions also include the ultimately controlling shareholders' cash flow rights (Cash), the degree of excess control (Ex\_wedge), and a dummy (Ex\_dummy) equal to one if the wedge between the ultimately controlling shareholders' cash flow rights and control rights is larger than zero. The control variables are the debt-to-sales ratio (Leverage), the log of total assets (LnAsset), a

dummy (Exchange) equal to one if the new issue is listed on the Shenzhen Stock Exchange, and year and industry dummies to control for the effect of year and industry factors.

**[INSERT TABLE 3 ABOUT HERE]**

Consistent with the univariate results reported in table 2, the multivariate regression results show that firms with a disproportionate ownership structure experience a more statistically significant stock performance decline after the IPO. The magnitude of the differences in BHR and CAR between these two subsamples is also similar to the univariate results even after we control for firm-specific factors that could affect post-IPO stock return performance. As shown in table 3, firms with a disproportionate ownership structure underperform those without in BHR by 9.02% 12 months post IPO, 8.27% 24 months post IPO, and 4.93% 36 months post IPO, although the effect is not significant for the 24-month and 36-month post-IPO periods. In fact, every one percentage increase in excess control rights results in a 0.55% (0.68%, 0.77%) decrease in BHRs 12 months (24 months, 36 months) post IPO, although this decrease is not significant for the 36-month post-IPO period. Likewise, as shown in table 4, firms with a disproportionate ownership structure significantly underperform those without in CAR by 8.73% 12 months post IPO, 15.44% 24 months post IPO, and 13.63% 36 months post IPO. Again, every one percentage increase in excess control rights results in a significant 0.62% (1.04%, 1.16%) decrease in CAR 12 months (24

months, 36 months) after the IPO.

**[INSERT TABLE 4 ABOUT HERE]**

Table 5 reports the results of our regressions analyzing the effects of a disproportionate ownership structure on changes in post-IPO accounting performance, with the change in ROS, sales growth, and earnings growth as the dependent variables. The independent variables are the ultimately controlling shareholders' cash flow rights (Cash), the degree of excess control rights (Ex\_wedge), a dummy (Ex\_dummy) for excess control rights, the debt-to-sales ratio (Leverage), the log of total assets (LnAsset), a dummy (Exchange) equal to one if the new issue is listed on the Shenzhen Stock Exchange, and year and industry dummies to control for the effect of year and industry factors.

**[INSERT TABLE 5 ABOUT HERE]**

The regression results indicate that firms with a disproportionate ownership structure experience deteriorating accounting performance subsequent to their IPOs regardless of whether performance is measured by the change in ROS, sales growth, or earnings growth. The difference in the accounting variable is around -3.67% for the change in ROS, -27.07% for sales growth, and -48.56% for earnings growth, and every one percentage increase in excess control rights results in a 0.24% decline for the change in ROS, a 3.66% slower sales growth, and 3.43% slower earnings growth. These results are consistent with the univariate results reported in table 2.

According to Aharony et al. (2000), in managing their earnings, Chinese firms

typically manipulate accruals and profits from non-core operations. Therefore, to check the robustness of our results and to bring our accounting-based measures more in line with those of previous studies, we also use operating earnings/assets, operating earnings growth, and net income growth as accounting-based performance measures to test the relation between a disproportionate ownership structure and performance changes. As table 6 indicates, even using these alternative post-IPO accounting performance changes, the level of excess control rights remains negatively correlated with firms' accounting performance subsequent to the IPO. More specifically, firms whose ultimately controlling shareholders have more excess control rights experience a greater drop in operating earnings/assets and slower operating earnings growth and net income growth.

**[INSERT TABLE 6 ABOUT HERE]**

Taken together, the regression results in tables 3, 4, 5, and 6 suggest that non-state controlled firms in China that have issued IPOs generally show poorer stock returns and accounting performance when the ultimately controlling shareholders can exert control through a pyramidal structure or cross-shareholding using control rights that are in excess of cash flow rights.

#### 4.3 Calendar-time analysis

The above findings raise another important issue: whether IPOs without excess control who outperform IPOs with excess control also outperform the market. To answer this question, we perform an additional analysis of the returns of non-state

controlled IPO firms using calendar time. Specifically, we compile portfolios by including firms that went public within the 36-month period and then both equally weight the observations and value weight them based on the first trading day's market capitalization for each company.

**[INSERT TABLE 7 ABOUT HERE]**

As table 7 shows, the equally weighted portfolios of IPO firms with excess control show monthly excess returns relative to the equally weighted market index for the Shanghai (A share market) and Shenzhen exchanges (A share market and Growth Enterprise Market) of -0.56%. Relative to the value weighted market index of -0.21%, however, neither firms with excess control nor those without differ statistically from zero. Also on a monthly basis, the IPOs firms without excess control on average underperform both the value and equally weighted market index by -0.37 and -0.01, respectively. Using the value weighted calendar-time portfolios, however, both IPOs with and without excess control underperform the value and equally weighted market indexes, although relative to the market, the underperformance is not significantly different from zero.

**[INSERT TABLE 8 ABOUT HERE]**

Table 8 reports the results of a calendar-time regression analysis using monthly portfolios of non-state controlled IPOs with and without excess control compiled by including all issues undertaken in the 36 months prior to the month of observation. We run both CAPM and Fama and French (1993) regressions, using the monthly returns of

these portfolios between January 2002 and December 2008 as the dependent variable. Consistent with the univariate tests, we find that both equally and value weighted IPOs with excess control underperform the market, with alphas of about -0.16% (CAPM) and -0.27% (Fama and French) for equally weighted and -0.28% and -0.30% for value weighted IPOs with excess control calendar-time portfolios, respectively. In neither set of regressions are the alphas statistically different from zero, and the alphas for the equally weighted IPOs without excess control, although positive, are insignificant. Nor does the value weighted portfolio of IPOs without excess control differ significantly from the market. Whereas all non-state controlled IPOs show positive exposure to firm size (the SMB factor) with SMB coefficients that are positive and significantly different from zero at both the 1% and 5% levels of significance, the book-to-market (HML factor) coefficients are not significant. Overall, therefore, these results indicate that although IPOs with excess control underperform IPOs without excess control, neither type performs differently from the market.

#### 4.4 Disproportionate ownership structure and related party transactions

On the assumption that controlling shareholders can expropriate minority shareholders by tunneling the wealth of listed firms, we now explore whether a firm with disproportionate ownership structure is more likely to conduct tunneling activities. Using related party transactions as proxies, we measure the effect of the wedges between cash flow rights and control rights on the probability of a firm undertaking tunneling transactions using the likelihood of a firm undertaking a value-destroying



related party transaction as the dependent variable. Because there is no accurate measure of exactly how much benefit is transferred through these transactions, as in prior studies (Cheung et al., 2006, 2009), we use the market reaction to related party transaction announcements as a proxy. A negative market reaction indicates tunneling, which reduces firm value and goes against the interests of minority shareholders. We define value-destroying related party transactions as any connected transaction associated with negative cumulative abnormal market-adjusted stock returns (CARs) over trading day windows [0,+1], [-1,+1], [-2,+2], [-2,+5] relative to the announcement day (day 0). The independent variables are the ultimately controlling shareholders' cash flow rights (Cash), the degree of excess control rights (Ex\_wedge), a dummy (Ex\_dummy) for excess control rights, the debt-to-sales ratio (Leverage), the log of total assets (LnAsset), a dummy (Exchange) equal to one if the new issue is listed on the Shenzhen Stock Exchange, and year and industry dummies to control for the effect of year and industry factors. We report the estimates of our logistic models in table 9.

**[INSERT TABLE 9 ABOUT HERE]**

As the table clearly shows, firms with a disproportionate ownership structure are more likely to engage in value-destroying related party transactions, and the likelihood of a firm's engaging in such transactions increases with the divergence between cash flow rights and control rights. Moreover, consistent with Cheung et al.'s (2006) findings, the cash flow rights of controlling shareholders and firm size are negatively related to value-destroying related party transactions. Overall, the evidence in table 9

indicates a positive relation between disproportionate ownership and the likelihood of controlling shareholders expropriating minority shareholders. This relation is stronger for IPO firms with a wider wedge between controlling shareholders' cash flow rights and control rights. This evidence further indicates that, in long-term, the underperformance of IPOs with excess control rights relative to IPOs without excess control rights is partly driven by their higher likelihood of undertaking value-destroying related party transactions.

## **5. Disproportionate ownership structure and initial IPO returns**

This section examines how the disproportionate ownership structure of non-state controlled IPO firms affects initial IPO returns (underpricing). Table 10 reports the mean and median market-adjusted initial stock returns for our sample, sorted by controlling shareholders' excess control rights and year. As the table shows, in most years, firms with a disproportionate ownership structure show smaller initial returns than firms without, a difference in mean (median) market-adjusted initial return of 112.53% versus 140.89% (88.24 versus 101.70), which is significant at the 5% (10%) level. These results support our hypothesis that the largest controlling shareholders' excess control rights have a negative impact on the initial returns of non-state controlled IPO firms.

**[INSERT TABLE 10 ABOUT HERE]**

To distinguish the effect of a disproportionate ownership structure on the initial

returns of non-state controlled firms, we also perform a regression analysis that controls for additional firm, industry, year, and institutional factors in China's IPO markets. The dependent variable in this model is the IPO's initial stock return, including both the unadjusted initial return (FirstDayReturn) and the market-adjusted return (AdjustedFirstDayReturn). Our key independent variables are the degree of the excess control rights (Ex\_wedge) and a dummy (Ex\_dummy) for the largest shareholders having excess control rights. As in table 9, when we include the key independents and only control for year and industry factors, the estimated coefficients are significantly negative at the 1% level for the degree of excess control rights (Ex\_wedge) and at the 10% level for the presence of largest shareholders' excess control rights (Ex\_dummy).

We then run further regressions that include additional control variables suggested by prior research on IPO underpricing. Chowdhry and Sherman (1996), for example, suggest that underpricing can be affected by the time gap between the offering and the listing. That is, because the information known by issuers, underwriters, and investors is asymmetrical (Baron, 1982; Rock, 1986), the longer the time lags between the offering and the listing, the higher the risk to investors and thus the greater the probability of underpricing. In fact, both Chan et al. (2004) and Su (2004) provide empirical evidence that IPO underpricing in China is positively related to the offering-to-listing time lag. To capture the effects of this information asymmetry, we include the natural logarithm of the number of days between the offering and listing

dates (LnDays), together with other variables commonly used in related studies of Chinese IPOs (Su and Fleisher, 1999; Chan et al., 2004; Chen et al., 2004). These latter, used here as independent variables, include the ultimately controlling shareholders' cash flow rights (Cash); the age of the firms(LnAge), represented by the natural logarithm of one plus the age in years of the company from the date on which it was first listed (with any part of a year treated as a whole year); the issue size (LnIssueSize), represented by the natural logarithm of the number of shares issued; and a dummy (Exchange) equal to one if the new issue is listed on the Shenzhen Stock Exchange.

**[INSERT TABLE 11 ABOUT HERE]**

The results of these multiple regressions, shown in table 11, indicate that the time lag between the IPO date and the first trading date is insignificant in explaining IPO underpricing. Although this result contrasts with those of earlier studies (Mok and Hui, 1998; Su and Fleisher,1999; Chen et al.,2004), it is consistent with more recent findings that the time lag in the Chinese IPO market has been dramatically shortened, thereby removing previously unknown factors caused by the long time lag (Yu and Tse, 2006). The coefficients for the degree of excess control rights (Ex\_wedge) and the dummy variable (Ex\_dummy) remain negative, the second significantly so at the 10% (5%) level. The marginally lower initial return, or smaller underpricing, associated with a disproportionate ownership structure is consistent with our second hypothesis that, in non-state controlled IPO firms, the excess control rights enjoyed by ultimately controlling shareholders become entrenched in a disproportionate ownership structure,

thereby giving largest controlling shareholders less incentive to underprice new issues.

These results, which support our second hypothesis, are also consistent with Yeh et al.'s (2008) findings for Taiwan.

## **6. Conclusions**

Public investors invest in IPOs at capital markets because they believe in the issuing firms' future prospects, financial performance, and corporate governance. In China, the world's largest emerging economy, although the IPO market is actively attracting critical financing from retail investors, the long-run IPO performance is proving dismal. Many newly listed firms are essentially controlled by private owners through a complex pyramid ownership structure, which gives their controlling shareholders greater control rights in excess of their cash flow rights. Under this disproportionate ownership structure, controlling shareholders are incentivized to expropriate minority shareholders. IPOs with the disproportional ownership structure should be deemed as bad investment in the long run for public investors.

Utilizing a hand-collected data on ownership for publicly listed non-SOEs, we show that IPO firms characterized by excess control rights significantly underperform other IPOs in the long-run stock and operating performance. Our findings thus suggest that the conflict between large controlling shareholders and minority shareholders remains the primary agency problem because of the significant entrenchment effect generated by disproportional ownership structures. Furthermore we show that IPO

firms with excess control show significantly lower first day return but are associated with higher frequency of value-destroying related party transactions, suggesting that the latter reason can explain IPO-run poor performance.

This research has important implications for both investors and regulators. First, small public investors interested in IPOs must understand the ownership structure of the newly listed firm and rationally discount the price of such firms commensurate with the adverse incentives of controlling shareholders. Disproportional ownership structures have to be considered as an important corporate governance issue. Regulators, for their part, must recognize that the current investor protection systems need to address the challenge of protecting minority investors in corporations characterized by a complex and disproportionate ownership structure.

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**Table 1: Sample and Variables Summary statistics**

This table presents summary information on the sample of non-state controlled IPO firms in China. Panel A reports the sample by year of IPO and by industry sector. Panel B lists the IPO firm characteristics, including initial return, market-adjusted initial return, firm age, issue size (i.e., the number of shares issued in millions), the number of days between the offering and listing dates, the listing date issue (ordering) price, the ultimately controlling shareholders' cash flow rights, and the level of excess control rights (i.e., the difference between the ultimately controlling shareholders' cash flow rights and control rights). Panel C reports statistics for the two market-based performance measures of non-state controlled Chinese firms that went public during 2002–2008 and for the accounting-based performance measures of non-state controlled Chinese firms that went public during 2002–2007 (for which we need 3 years of accounting data prior to the IPO and 3 years of accounting data after the IPO). The market-based performance measures are the buy-and-hold market-adjusted returns (BHRs) and the cumulative market-adjusted stock returns (CARs) accumulated for 12, 24, and 36 months starting from one month after the IPO month. We calculate the CARs measure based on monthly market-adjust stock returns, and compute the market returns as the weighted returns for all common stocks traded on the Shenzhen or Shanghai stock exchanges. The accounting return measures are the change in return on sales (ROS), sales growth, and earnings growth. The change in ROS is measured as the difference between the average annual ROS for the three years after the IPO and that for the three years before the IPO year, adjusted by the specific industry median. The sales (earnings) growth variables are the growth rates of sales (earnings) from the average annual sales (earnings) in the three years before the IPO year to that in the three years after the IPO year, adjusted by the specific industry median.

**Panel A: Distribution of firms by IPO year and industry**


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IPO year	Firms with excess control	Firm without excess control	Total	Percentage of IPOs with excess control
2002	6	6	12	50.00
2003	9	13	22	40.91
2004	31	18	49	63.27
2005	8	0	8	100.00
2006	20	14	34	58.82
2007	39	36	75	52.00
2008	25	33	58	43.10
Public utilities	12	12	24	50.00
Real estate	5	3	8	62.50
Conglomerate	5	5	10	55.00
Industrial	110	99	209	52.63

Commercial	6	1	7	58.71
Total	138	120	258	53.49

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**Panel B: Characteristics of IPO firms**

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	Mean	Median	Min	Max	Std. dev.
Initial return (%)	126.20	92.50	-9.00	538.12	101.71
Market-adjusted initial return (%)	125.72	90.70	-5.72	525.75	100.49
Firm age (Years)	5.86	5.00	2.00	21.00	3.01
Issue size (in millions)	34.08	28.00	12.50	210.00	21.03
Days elapsed between offering and listing	15.38	15.50	9.00	25.00	3.44
Offer price	10.83	10.04	2.60	36.00	5.01
Cash flow rights (%)	32.15	30.16	0.00	78.18	15.94
Excess control rights (%)	7.48	1.82	0.00	34.66	9.28

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**Panel C: Market-based performance and accounting-based performance**

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	Mean	Median	Min.	Max.	Std. dev.	Obs.
Market-adj. BHR 12 months after IPO (%)	-18.64	-8.19	-272.39	284.59	71.26	258
Market-adj. BHR 24 months after IPO (%)	0.82	-6.49	-372.65	462.05	89.29	258
Market-adj. BHR 36 months after IPO (%)	8.26	-5.24	-388.87	2186.91	209.65	244
CAR 12 months after IPO (%)	-6.45	-7.25	-130.61	130.58	46.19	258
CAR 24 months after IPO (%)	6.32	5.80	-116.44	166.46	56.30	258
CAR 36 months after IPO (%)	13.88	13.18	-133.60	208.30	67.52	244
Change in ROS (%)	-11.94	-8.39	-811.43	55.71	68.75	200
Growth in sales (%)	124.37	82.87	-152.23	1693.90	196.61	200
Growth in earnings (%)	32.75	27.73	-788.55	1098.69	194.48	200

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**Table 2: Mean and median statistics of post-IPO performance measures**

This table presents the mean and median values for market-based performance measures of non-state controlled Chinese firms that went public during 2002–2008 and for the accounting-based performance measures of non-state controlled Chinese firms that went public during 2002–2007. The firms are sorted by whether or not the ultimately controlling shareholders have cash flow rights in excess of their control rights. The market-based performance measures are the buy-and-hold market-adjusted returns (BHRs) and the cumulative market-adjusted stock returns (CARs) accumulated for 12, 24, and 36 months starting from one month after the IPO month. We calculate the CARs measure based on monthly market-adjusted stock returns and compute market returns as the weighted returns for all common stocks traded on the Shenzhen and Shanghai stock exchanges. We use 258 firms to compute the BHRs and CARs for 12 and 24 months and 244 firms to compute the BHRs and CARs for 36 months. The accounting return measures are the change in return on sales (ROS), sales growth, and earnings growth. The change in ROS is measured as the difference between the average annual ROS for the three years after the IPO and that for the three years before the IPO year, adjusted by the specific-industry median. The sales (earnings) growth variables are the growth rates of sales (earnings) from the average annual sales (earnings) in the three years before the IPO year to that in the three years after the IPO year, adjusted by the specific industry median. We use a total of 200 firms to compute the change in ROS, sales growth, and earnings growth. \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

	Obs		With excess	Without excess	Difference	<i>p</i> -value of mean
Market-adj. BHR over the market 12 months	258	Mean	-24.08	-12.39	-11.69*	0.0947
		Median	-12.92	-0.38	-12.54***	0.0045
Market-adj. BHR 24 months after IPO (%)	258	Mean	-12.87	16.57	-29.44***	0.004
		Median	-17.04	9.43	-26.47***	0.002
Market-adj. BHR 36 month after IPO (%)	244	Mean	-6.52	25.70	-32.22	0.116
		Median	-17.62	8.49	-26.11***	0.009
CAR 12 months after IPO (%)	258	Mean	-13.44	1.59	-15.03***	0.004
		Median	-20.17	6.08	-26.24***	0.002
CAR 24 months after IPO (%)	258	Mean	-4.49	18.76	-23.25***	0.000
		Median	-9.29	22.98	-32.27***	0.000
CAR 36 months after IPO (%)	244	Mean	1.92	27.99	-26.08***	0.001
		Median	2.08	24.03	-21.95***	0.003
Change in	200	Mean	-15.37	-7.48	-7.88	0.211

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ROS (%)		Median	-5.87	-8.43	2.57	0.808
Growth in sales (%)	200	Mean	119.64	130.53	-10.89	0.350
		Median	69.29	98.06	-28.77	0.233
Growth in earnings (%)	200	Mean	16.51	53.85	-37.33*	0.089
		Median	9.11	56.67	-47.56	0.151

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**Table 3: GLS regression results for the effects of disproportionate ownership structure on the post-IPO stock performance (BHRs)**

In this table, the dependent variable is market-based performance, measured as the accumulated BHRs for 12, 24, and 36 months, starting from one month after the IPO month. The BHR measures are calculated based on monthly market-adjusted stock returns; market returns are computed as the value weighted returns for all common stocks traded on the Shenzhen and Shanghai stock exchanges. The independent variables, measured at IPO year, include the ultimately controlling shareholders' cash flow rights (Cash), the degree of excess control rights (Ex\_wedge), and a dummy (Ex\_dummy) equal to one if the wedge between the ultimately controlling shareholders' cash flow rights and control rights is larger than zero. Also included are the debt-to-sales ratio (Leverage), the log of total assets (LnAsset), a dummy (Exchange) equal to one if the new issue is listed on the Shenzhen Stock Exchange, and year and industry dummies. *p*-values are in parentheses; \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Market-adj. BHR 12 months after IPO		Market-adj. BHR 24 months after IPO		Market-adj. BHR 36 months after IPO	
Const	-99.663 (0.247)	-104.640 (0.201)	38.142 (0.720)	80.852 (0.454)	391.199** (0.039)	450.645** (0.015)
Cash	0.125 (0.453)	0.254* (0.089)	0.249 (0.249)	0.352 (0.101)	0.055 (0.892)	0.137 (0.710)
Ex_wedge	-0.548* (0.058)		-0.680** (0.029)		-0.773 (0.194)	
Ex_dummy		-9.018** (0.046)		-8.271 (0.161)		-4.931 (0.657)
LnAsset	4.960 (0.255)	5.087 (0.216)	-2.744 (0.621)	-5.097 (0.363)	-19.934** (0.040)	-23.361** (0.013)
Leverage	-0.004 (0.939)	-0.054 (0.275)	-0.007 (0.920)	0.008 (0.917)	-0.011 (0.930)	0.021 (0.860)
Exchange	25.805*** (0.008)	29.161*** (0.001)	3.339 (0.856)	1.731 (0.928)	-9.132 (0.875)	-20.905 (0.703)
Industry	Included	Included	Included	Included	Included	Included
Year	Included	Included	Included	Included	Included	Included
Obs.	258	258	258	258	244	244
Adj. $R^2$	0.256	0.250	0.339	0.301	0.283	0.250

**Table 4: GLS regression results of the effects of a disproportionate ownership structure on the post-IPO stock performance (CARs)**

In this table, the dependent variable is market-based performance, measured as the market-adjusted stock returns (CARs) accumulated for 12, 24, and 36 months, starting from one month after the IPO month. The CAR measures are calculated based on monthly market-adjusted stock returns; market returns are computed as the value weighted returns for all common stocks traded on the Shenzhen and Shanghai stock exchanges. The independent variables, measured at the year of the IPO, include the ultimately controlling shareholders' cash flow rights (Cash), the degree of excess control rights (Ex\_wedge), and a dummy (Ex\_dummy) equal to one if the wedge between the ultimately controlling shareholders' cash flow rights and control rights are larger than zero. Also included are the debt-to-sales ratio (Leverage), the log of total assets (LnAsset), a dummy (Exchange) equal to one if the new issue is listed on the Shenzhen Stock Exchange, and year and industry dummies. *p*-values are in parentheses; \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	CAR 12 months after IPO		CAR 24 months after IPO		CAR 36 months after IPO	
Const	-45.113 (0.583)	-46.644 (0.577)	-90.984 (0.400)	-2.312 (0.983)	238.746* (0.062)	281.776** (0.029)
Cash	0.139 (0.405)	0.203 (0.200)	0.176 (0.406)	0.330 (0.101)	-0.207 (0.402)	-0.116 (0.627)
Ex_wedge	-0.620** (0.026)		-1.037*** (0.003)		-1.162*** (0.007)	
Ex_dummy		-8.734* (0.070)		-15.437*** (0.009)		-13.627* (0.078)
LnAsset	2.486 (0.551)	2.168 (0.607)	3.830 (0.484)	-0.979 (0.856)	-12.559* (0.051)	-15.083** (0.020)
Leverage	-0.059 (0.278)	-0.080 (0.160)	-0.192*** (0.007)	-0.107 (0.143)	-0.008 (0.910)	0.025 (0.736)
Exchange	29.187*** (0.007)	28.945*** (0.007)	3.942 (0.731)	1.751 (0.880)	-15.111 (0.410)	-17.457 (0.364)
Industry	Included	Included	Included	Included	Included	Included
Year	Included	Included	Included	Included	Included	Included
Obs.	258	258	258	258	244	244
Adj. <i>R</i> <sup>2</sup>	0.311	0.300	0.304	0.299	0.313	0.305



**Table 5: GLS regression results for the effects of a disproportionate ownership structure on the post-IPO accounting-based performance**

In this table, the dependent variable is, alternately, change in ROS, sales growth, and earnings growth. The change in ROS variable is measured as the difference between the average annual ROS three years post IPO year and that of the three years before the IPO year, adjusted by the specific industry median. The sales (earnings) growth variables are the growth rates of sales (earnings) from the average annual sales (earnings) in the three years before the IPO year to that in the three years after the IPO year, adjusted by the specific industry median. The independent variables, measured at the year of the IPO, include the ultimately controlling shareholders' cash flow rights (Cash), the degree of excess control rights (Ex\_wedge), a dummy (Ex\_dummy) equal to one if the wedge between the ultimately controlling shareholders' cash flow rights and control rights are larger than zero, the debt-to-sales ratio (Leverage), the log of total assets (LnAsset), a dummy (Exchange) equal to one if the new issue is listed on the Shenzhen Stock Exchange, and year and industry dummies. *p*-values are in parentheses; \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Change in ROS		Growth in sales		Growth in earnings	
Const	-0.784 (0.982)	-0.268 (0.994)	-9.756*** (0.004)	-8.958** (0.012)	-12.455*** (0.002)	-12.663*** (0.002)
Cash	-0.023 (0.734)	-0.047 (0.461)	-0.006 (0.412)	0.005 (0.451)	-0.001 (0.941)	0.004 (0.644)
Ex_wedge	-0.216* (0.068)		-0.037*** (0.000)		-0.033*** (0.005)	
Ex_dummy		-3.863** (0.037)		-0.271 (0.129)		-0.501** (0.017)
LnAsset	2.004 (0.251)	2.142 (0.217)	0.561*** (0.001)	0.477*** (0.009)	0.698*** (0.001)	0.701*** (0.001)
Leverage	-0.059 (0.116)	-0.081** (0.032)	-0.003 (0.393)	-0.002 (0.560)	-0.010*** (0.002)	-0.012*** (0.000)
Exchange	13.753 (0.260)	19.040 (0.186)	0.570 (0.150)	0.552 (0.156)	1.441*** (0.001)	1.284*** (0.001)
Industry	Included	Included	Included	Included	Included	Included
Year	Included	Included	Included	Included	Included	Included
Obs.	200	200	200	200	200	200
Adj. $R^2$	0.841	0.844	0.094	0.028	0.134	0.141

**Table 6: GLS regression results for the effects of disproportionate ownership structure on the post-IPO accounting-based performance**

In this table, the dependent variable is, alternately, the change in operating earnings/assets (OE/A), the operating earnings growth, and the net income growth. The change in the OE/A variable is measured as the difference between the average annual OE/A of the three years post IPO and that of the three years pre IPO, adjusted by the specific industry median. The operating earnings (net income) growth variables are the growth rates of the operating earnings (net income) from the average annual operating earnings (net income) of the three years before the IPO year to that of the three years after the IPO year, adjusted by the specific industry median. The independent variables, measured at the year of the IPO, include the ultimately controlling shareholders' cash flow rights (Cash), the degree of excess control rights (Ex\_wedge), a dummy (Ex\_dummy) equal to one if the wedge between the ultimately controlling shareholders' cash flow rights and control rights is larger than zero, the debt-to-sales ratio (Leverage), the log of total assets (LnAsset), a dummy (Exchange) equal to one if the new issue is listed on the Shenzhen Stock Exchange, and year and industry dummies. *p*-values are in parentheses; \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Change in OE/A		Growth in operating earnings		Growth in net income	
Const	8.433 (0.632)	15.849 (0.380)	-12.074*** (0.006)	-10.890** (0.012)	-13.698*** (0.002)	-12.369*** (0.007)
Cash	-0.064** (0.032)	-0.063** (0.037)	0.001 (0.868)	0.004 (0.640)	-0.001 (0.866)	0.001 (0.871)
Ex_wedge	-0.084** (0.043)		-0.031** (0.018)		-0.037*** (0.004)	
Ex_dummy		-0.631 (0.474)		-0.486** (0.035)		-0.575** (0.011)
LnAsset	0.655 (0.367)	0.335 (0.635)	0.656*** (0.003)	0.586*** (0.007)	0.769*** (0.000)	0.695*** (0.002)
Leverage	-0.025** (0.041)	-0.026** (0.029)	-0.010*** (0.002)	-0.010*** (0.005)	-0.012*** (0.000)	-0.013*** (0.000)
Exchange	0.797 (0.686)	1.667 (0.408)	1.220*** (0.006)	1.041** (0.022)	1.533*** (0.001)	1.380*** (0.002)
Industry	Included	Included	Included	Included	Included	Included
Year	Included	Included	Included	Included	Included	Included
Obs.	200	200	200	200	200	200
Adj. $R^2$	0.784	0.774	0.090	0.060	0.142	0.116

**Table 7: Calendar-time market-adjusted performance**

The sample, which covers January 2002 to December 2008, comprises 138 non-state controlled IPOs whose largest shareholders have excess control rights and 120 non-state controlled IPOs whose largest shareholders have no excess control rights. We compile the monthly portfolios of IPO groups by including all issues undertaken in the three years previous to the month of observation. We then calculate average monthly excess returns for each calendar year, adjusting all common stocks traded on the Shenzhen and Shanghai Stock Exchanges (A shares and Growth Enterprise Market) by both equal and value weighting. Both the equally weighted and value weighted calendar-time portfolios are based on initial trading day market capitalization. *p*-values are in parentheses; \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

Year	IPOs with excess control rights		IPOs without excess control rights	
	Relative to EW market (percent)	Relative to VW market (percent)	Relative to EW market (percent)	Relative to VW market (percent)
Panel A: Equally weighted calendar-time portfolio				
2002	-0.28	-0.61	-0.97	-1.30
2003	0.51	-1.03	-0.86	-2.40***
2004	0.01	0.03	0.84	0.86
2005	1.04	0.65	1.94*	1.55
2006	-1.37**	-3.12*	-0.96	-2.71
2007	-4.42**	-0.17	-3.81**	0.43
2008	0.70	2.58	0.93	2.81
Mean	-0.56	-0.21	-0.37	-0.01
Panel B: Value weighted calendar-time portfolio				
2002	-0.11	-0.44	-1.31	-1.64
2003	0.40	-1.13*	-0.81	-2.35**
2004	-0.09	-0.07	1.14	1.16
2005	1.22	0.83	1.90**	1.52
2006	-0.83	-2.58	-0.88	-2.63
2007	-5.21***	-0.96	-4.63**	-0.38
2008	0.07	1.95	0.75	2.64
Mean	-0.69*	-0.34	-0.49	-0.13

**Table 8: CAPM and Fama and French (1992) three-factor regressions on calendar-time portfolio returns**

The sample, which covers January 2002 to December 2008, comprises 138 non-state controlled IPOs whose largest shareholders have excess control rights and 120 non-state controlled IPOs whose largest shareholders have no excess control rights. We compile the monthly portfolios of the IPO groups by including all issues undertaken in the three years previous to the month of the observation. Here,

$$R_{pt} - R_{ft} = \alpha + \beta(R_{mt} - R_{ft}) + sSMB_t + hHML_t + e_t$$

where  $R_{pt} - R_{ft}$  is the equally or value weighted return of these portfolios less the risk-free rate (monthly rate of one-year fixed term deposit rate from CSMAR ) and  $R_{mt} - R_{ft}$  is the value weighted market return on all common stocks traded on the Shenzhen and Shanghai Stock Exchanges (A shares and Growth Enterprise Market) minus the risk-free rate. SMB (small minus big) is the difference each month between the return on small and large capitalization firms; HML (high minus low) is the difference each month between the return of a portfolio containing high book-to-markets stocks and the return of a portfolio containing low book-to-market stocks. Both equally weighted and value weighted calendar-time portfolios are based on initial trading day market capitalization. *p*-values are in parentheses; \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively

	IPOs with excess control				IPOs without excess control			
	CAPM		Fama and French		CAPM		Fama and French	
	Equally weighted	Value weighted	Equally weighted	Value weighted	Equally weighted	Value weighted	Equally weighted	Value weighted
Alpha	-0.162 (0.824)	-0.281 (0.684)	-0.274 (0.738)	-0.301 (0.710)	0.017 (0.983)	-0.097 (0.900)	0.032 (0.971)	-0.155 (0.864)
RMRF	0.892*** (0.000)	0.876*** (0.000)	0.886*** (0.000)	0.872*** (0.000)	0.927*** (0.000)	0.916*** (0.000)	0.922*** (0.000)	0.912*** (0.000)
SMB			0.472*** (0.001)	0.303** (0.029)			0.451*** (0.004)	0.353** (0.024)
HML			0.084 (0.420)	0.066 (0.520)			0.109 (0.338)	0.069 (0.551)
<i>N</i>	78	78	78	78	78	78	78	78
adj. <i>R</i> <sup>2</sup>	0.626	0.643	0.669	0.657	0.611	0.608	0.646	0.625

**Table 9: Logistical regressions on the likelihood of undertaking value-destroying related party transactions**

In this table, the dependent variable is a value-destroying connected transactions dummy that equals one if the firm has undertaken a connected transaction associated with negative cumulative abnormal market-adjusted stock returns (CARs) over trading day window [0,+1], [-1,+1], [-2,+2], [-2,+5] relative to the announcement day (day 0). The sample includes a total of 4,106 related party transactions over 36 months for 244 IPO firms, starting from one month after the IPO month. We calculate the CARs based on daily market-adjusted stock returns and compute the market returns as the value weighted returns for all common stocks traded on the Shenzhen or Shanghai stock exchanges. The independent variables, measured at the year of the IPO, include the ultimately controlling shareholders' cash flow rights (Cash), the degree of excess control rights (Ex\_wedge), and a dummy (Ex\_dummy) equal to one if the wedge between the ultimately controlling shareholders' cash flow rights and control rights are larger than zero. Also included are the debt-to-sales ratio (Leverage), the log of total assets (LnAsset), a dummy (Exchange) equal to one if the new issue is listed on the Shenzhen Stock Exchange, and year and industry dummies. *p*-values are in parentheses; \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable	=1 if CAR[0,+1] < 0		=1 if CAR[-1,+1] < 0		=1 if CAR[-2,+2] < 0		=1 if CAR[-2,+5] < 0	
Const	9.051*** (0.000)	6.284*** (0.000)	8.816*** (0.000)	7.382*** (0.000)	21.233*** (0.000)	19.965*** (0.000)	18.787*** (0.000)	16.943*** (0.000)
Cash	-0.014*** (0.000)	-0.021*** (0.000)	-0.029*** (0.000)	-0.034*** (0.000)	-0.018*** (0.000)	-0.022*** (0.000)	-0.012*** (0.000)	-0.018*** (0.000)
Ex_wedge	0.037*** (0.000)		0.020*** (0.000)		0.018*** (0.000)		0.027*** (0.000)	
Ex_dummy		1.022*** (0.000)		0.842*** (0.000)		0.551*** (0.000)		0.748*** (0.000)
LnAsset	-0.470*** (0.000)	-0.328*** (0.000)	-0.297*** (0.000)	-0.227*** (0.003)	-0.944*** (0.000)	-0.880*** (0.000)	-0.838*** (0.000)	-0.740*** (0.000)
Leverage	-0.001 (0.150)	-0.001* (0.096)	-0.003*** (0.000)	-0.003*** (0.000)	0.003*** (0.000)	0.003*** (0.000)	0.001 (0.235)	0.001 (0.395)
Exchange	0.414*** (0.004)	0.517*** (0.000)	0.766*** (0.000)	0.737*** (0.000)	1.212*** (0.000)	1.241*** (0.000)	0.965*** (0.000)	1.037*** (0.000)
Industry	Included	Included	Included	Included	Included	Included	Included	Included
Year	Included	Included	Included	Included	Included	Included	Included	Included
<i>N</i>	4106	4106	4106	4106	4106	4106	4106	4106
pseudo <i>R</i> <sup>2</sup>	0.116	0.132	0.100	0.115	0.157	0.161	0.168	0.176

**Table 10: Mean and median statistics of initial returns**

This table reports mean and median statistics of the initial (first day) stock returns of non-state controlled IPOs grouped by whether or not the Chinese IPO firm is subject to excess shareholder control during 2002–2008. The initial return of an IPO is measured as the difference between the closing stock price on the first trading day and the offering price, and then divided by the offering price adjusted by market return. \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, 1% levels, respectively.

		Market-adjusted initial returns (%)					
	Obs.		Excess control > 0	Excess control = 0	Difference	<i>p</i> -value of mean difference	<i>p</i> -value of median difference
2002	12	Mean	113.85	139.28	-25.44	0.318	1.000
		Median	98.69	89.90	8.79		
2003	22	Mean	65.60	54.92	10.68	0.215	0.333
		Median	54.45	45.96	8.49		
2004	49	Mean	70.00	75.34	-5.34	0.392	0.836
		Median	60.24	52.00	8.24		
2005	8	Mean	30.49				
		Median	27.35				
2006	34	Mean	91.88	97.06	-5.18	0.400	0.327
		Median	82.97	87.14	-4.17		
2007	75	Mean	178.07	235.59	-57.52***	0.010	0.061
		Median	166.70	198.88	-32.19*		
2008	58	Mean	122.39	126.08	-3.69	0.441	0.931
		Median	28.38	33.43	-5.05		
Total	258	Mean	112.53	140.89	-28.35**	0.011	0.0867
		Median	88.24	101.70	-13.46*		

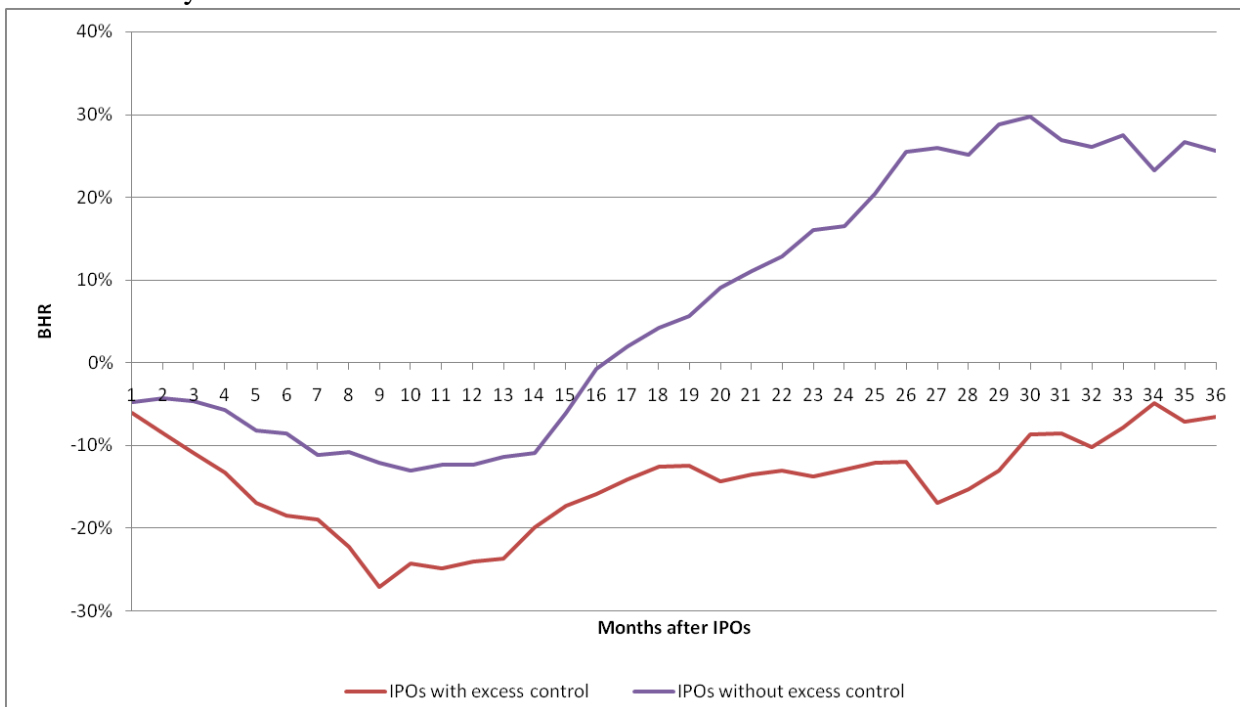
**Table 11: GLS Regression results for the effects of a disproportionate ownership structure on the underpricing**

In this regression model, the dependent variables are the unadjusted initial return (FirstDayReturn) and the market-adjusted return (AdjustedFirstDayReturn). The independent variables are the ultimately controlling shareholders' cash flow rights (Cash); the degree of excess control rights (Ex\_wedge); a dummy (Ex\_dummy) equal to one if the wedge between the ultimately controlling shareholders' cash flow rights and control rights is larger than zero.; and firm age (LnAge), represented by the natural logarithm of one plus the age in years of the company from the date on which it was first listed (with any part of a year treated as a whole year). Also included are the natural logarithm of the number of days between the offering and listing dates (LnDays); issue size, (LnIssueSize) represented by the natural logarithm of the number of shares issued; a dummy (Exchange) equal to one if the new issue is listed on the Shenzhen Stock Exchange, and industry and year dummies. *p*-values are in parentheses; \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	First day return				Adjusted first day return			
Constant	171.18*** (0.00)	157.26*** (0.00)	603.25*** (0.00)	590.93*** (0.00)	166.33*** (0.00)	167.96*** (0.00)	677.46*** (0.00)	648.65*** (0.00)
Cash			0.123 (0.610)	0.165 (0.451)			0.042 (0.874)	-0.072 (0.734)
Ex_wedge	-1.118*** (0.000)		-0.556 (0.119)		-1.265*** (0.000)		-0.482 (0.193)	
Ex_dum y		-15.089* (0.054)		-15.673* (0.050)		-16.222* (0.053)		-19.344** (0.016)
LnAge			-0.217 (0.978)	6.534 (0.394)			-0.284 (0.971)	12.198* (0.096)
LnDays			3.739 (0.852)	7.044 (0.712)			-1.398 (0.948)	-12.564 (0.552)
LnIssueSi ze			-25.75*** (0.003)	-27.13*** (0.001)			-28.52*** (0.001)	-27.26*** (0.001)
Exchange			-23.232 (0.185)	-20.152 (0.212)			-24.754 (0.134)	-16.033 (0.303)
Industry	Included	Included	Included	Included	Included	Included	Included	Included
Year	Included	Included	Included	Included	Included	Included	Included	Included
<i>N</i>	258	258	258	258	258	258	258	258
adj. <i>R</i> <sup>2</sup>	0.509	0.393	0.539	0.489	0.529	0.384	0.467	0.461

**Figure 1: Mean post-IPO buy-and-hold market-adjusted stock returns (BHRs) from one to 36 months after the initial trading month**

**Panel A: Buy-and-Hold Return over the market**



**Panel B: Cumulative Return over the market**

