



Does Corporate Ownership Matter for Firm Performance? Evidence from Chinese Stock Exchanges

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ABSTRACT

This paper examines the impact of corporate ownership structure and ownership concentration (OC) on the corporate performance of listed firms in China. Ordinary least square and two-stages least squares models are used to capture the relationship between the independent variables and firm performance by considering the possible endogeneity of both performance and ownership variables. The ownership structure variables (executive shares, State shares, legal shares, and Negotiable A-shares) are negatively related with firm performance measured by Tobin's Q ratio. The proportion of state-owned shares and negotiable A-shares are significantly correlated with the firm profitability. Second, the results show that Chinese firm ownership is severely concentrated. The top ten largest shareholders accounted for 60% of the outstanding shares in 2017 and had a strong positive relationship with firm performance. In contrast, the largest shareholder's OC ratio variable has a significant negative relationship with the firm performance.

Keywords: Ownership Structure, Ownership Concentration, Firm Performance, China, Endogeneity

JEL Classifications: G1, G10, G18, G32

1. INTRODUCTION

In the last decades, the opening up of China's market to the global trade through macroeconomic and institutional reforms has positively influenced its rise among the most powerful nations, making China the second largest economy in the world. Initially, the Chinese market was largely dominated by private family business and state-owned firms under a socialist economic regime. This dualist form has evolved towards a public-private partnership trying to upgrade to a Western model of corporate ownership by the creation of international markets for the exchange of shares in state-owned enterprises (SOEs). However, the private sector was restricted from getting involved in large industrial businesses, as well as the production and distribution of necessary items and services in order for the government to promote and control the agricultural sector. Later, the First Company Law (1904)

initiated the decentralization and the concurrence in the business environment via the introduction of a new model of corporate ownership and control with the establishment of foreign firms in the form of Limited Liability companies in China (Robert and Minkang, 1995).

This law also established the manner companies should be organized, the stakeholders' rights and the rules regulating the activities using the Western style as a benchmark. While it has occasioned some 272 companies to register with the Chinese government between 1904 and 1908 (Goetzmann and Koll, 2005), these new structures were influenced by kinship networks and state patronage. Thus, this first business code miscarried to change Chinese companies into modern enterprises because the state control was preponderant in the managerial decisions hindering the stakeholders' rights of control and ownership. Also, the first

Company law failed to effectively promote the emersion of the Chinese stock exchanges namely, Shanghai and Shenzhen stock markets at the early 1990s owing to families and entrepreneurs scaring to lose control on their business. This pattern has shifted forward by using the various amendments of the first corporate code to its latest version in 2014. It also stimulated the expansion of the private sector as well as the possibility for qualified and licensed foreign investors to take a stake in the SOEs in China under some restrictions (Heather et al., 2015). China Corporate Law distinctly stated that only the majority shareholders having important voting rights are entitled to have control over the company. However, shareholders' control also does not imperatively mean having the majority of votes since there may be a de facto controller to whom shareholders resign their rights¹. The willingness of shareholders to control the company can be justified by the fact that directors and managers may pursue their interests aside from the company's benefit. China has undertaken some reforms to further the private sector's stake in publicly listed companies (Zhang and Freestone, 2013)

More than 3000 active enterprises are registered in Chinese stock markets including Shanghai, Shenzhen and Hong Kong in 2018. The shares of these listed companies are categorized into five types: Tradable A-shares, State shares, Employee Shares, Legal person shares and Foreign shares (H-shares, B-shares and other shares). The tradable A-shares are the most owned (76%) contrary to State shares and Legal person shares (5%, respectively) by the end of 2017². The Chinese stock markets, especially the Shanghai stock exchange (SSE), are among the top five largest stock exchanges regarding market capitalization (Broadstock & Filis, 2014). These large stock markets constitute a profitable opportunity for financing innovative small and medium enterprises and thereby enhancing the Chinese economic growth. Besides, the restructuration and regulation of corporate ownership and control under an effective liberalization of the domestic market would strengthen the firm performance. As a result, this could be beneficial to the Chinese economy, which exploits only a third of the financial potential existing on its stock exchanges (Kimberly, 2018).

Several studies highlighted the complexity of the Chinese firm's ownership structure and its impact on firm performance. For example, C. Wang (2005) found that SOEs carried on a positive impact on the performance of listed Chinese companies while in contrast, other researchers found a negative impact (Qi et al., 2000; Sun and Tong, 2003; Wei and Varela, 2003; Wei et al., 2005). However, some studies more radically confirm that there is no relationship between State ownership and firm performance in China (Hess et al., 2010; Rathnayake and Sun, 2017). Further, Sun and Tong (2003) and Qi et al. (2000) found a strong positive effect of legal person ownership while Wei et al. (2005) revealed a strong adverse effect on firm performance. Moreover, Wei and Varela (2003) found that institutional and foreign ownership have inconclusive effects on firm performance which is measured by Tobin's Q in Shanghai-listed firms. On the other hand, Qi et al. (2000) found a little evidence in support of a positive correlation

between corporate performance and the proportion of tradable shares owned by either domestic or foreign investors. Finally, the effects of ownership concentration (OC) in general on firm performance have received limited attention in previous researches (Chen et al., 2018).

Following Demsetz and Villalonga (2001), several studies considered the endogeneity of ownership structure up to some extent in Chinese firms (Liu et al., 2011; Liu, 2014; Wei et al., 2005). None of these studies consider more than two measures of ownership structure. This study considered both firm performance and ownership structure as endogenous variables. Then, four major types of ownership structures are individually considered and examined simultaneously throughout this reasoning (executive shares, State shares, legal shares, and Negotiable A-shares).

This paper contributes to the current literature in several aspects. First, this paper discovers the impact of different ownership structures on the performance of Chinese listed firms. Secondly, the study focuses on the importance of OC for corporate performance by separately using two critical measures namely the proportion of shares held by the largest shareholder and the proportion of shares held by the top 10 shareholders (TOP10). Finally, this study collects new updated evidence to worldwide literature by using a more recent and a detailed sample of >90% of Chinese listed firms. To our best knowledge, no any prior study has examined both these aspects of ownership structure and OC in the Chinese market before. Thus, our study aims to fill this gap.

In this study, we used a sample of 3348 listed firms to investigate the relationship between ownership structure and firm performance. Moreover, we compared the results obtained by ordinary least square (OLS) and two-stages least squares (2SLS) considering the likely endogeneity of ownership structure variables, respectively. Our results showed that the four types of firms ownership structure are negatively related to company performance, which was measured by Tobin's Q ratio. Secondly, we also significantly unveiled a positive nexus between firm performance and TOP10 shareholders' OC rate. In contrast, the largest shareholder's OC ratio has a significant and negative relationship with firm performance. Nevertheless, the results indicated that firm performance has a significant influence on all major four types of ownership structures in China which we considered in this study.

We believe the results will bring about an understanding of recent tendencies in Chinese firm ownership structures. Moreover, the findings of this study would provide some meaningful insights into many parties. This study will help the Private Companies to have a distinct idea about the relationship between firm performance and ownership structure. The potential investors in stock markets will be able to analyze critically when to choose the correct investment opportunities and the relationship between ownership structure and firm performance. This study will help the general public who are willing to obtain the general knowledge about the Chinese stock exchanges. Finally, for the academic field, the results of this study should strengthen the ownership structure and firm performance literature.

1 PRC company Law 2014 Chapter XIII, Article 216.

2 Author computation from the database on the official websites of SSE and SZSE exchanges and CSMAR database from 1990 to 23rd July 2018.

The remainder of this study is organized as follows: Section 2 presents the literature review; section 3 exposes the institutional characteristics of Chinese stock exchanges and legal overview of Chinese firms; section 4 exhibits the data and methodology. Then, the detailed analysis of ownership structure and corporate performance in China is examined in section 5. Finally, the last part sums up the significant findings and outlines some issues for future research.

2. LITERATURE REVIEW

Ownership structure is highly concentrated in many countries in the world. The literature supports that a highly concentrated ownership structure brings diverse problems. The main problem is the conflict between the company's management and stockholders (agency problem). Conflicts of interests may also occur between minority shareholders and larger shareholders in highly diversified ownership structure (Claessens et al., 2000; La Porta et al., 2002). Usually, larger shareholders actively control the company by appointing company director board and executives among their family relatives or close friends. Accordingly, these controlling larger stockholders are about to steal the other shareholders' rights since minority shareholders have limited control to monitor the major shareholders effectively (Dyck and Zingales, 2004). There is a considerable deviation between control and cash flow rights of the major shareholders who frequently take away firm funds via related party transactions (Claessens et al., 2000; La Porta et al., 2002).

The recent empirical literature on the relationship between ownership structure and firm performance gives support to mixed results. Kapopoulos and Lazaretou (2007) used two measures of corporate ownership namely important shareholdings and managerial shareholdings and captured firm performance by Tobin's Q. The authors find a positive linear nexus between ownership structure and firm profitability. Then, their findings unveil that the concentration of shares between shareholders favors the control and regulation of managers' attitude, enhancing thereby the firm performance. Moreover, Wang (2005), in its study reveals that SOEs carry on a positive impact on the performance of listed Chinese companies through the supervision and control over the management process in order to achieve more profits. In contrast, Sun and Tong (2003) conclude that SOEs negatively affect the performance of the listed firms in China. In addition, the relation between a firm's market performance and ownership structure is then examined by Wei and Varela (2003) and found that Tobin's Q is significantly negatively related to state shares and that institutional and foreign ownership have inconclusive effects on firm performance in Shanghai-listed firms in 1994-1996. However, some studies more radically confirm that there are no relationships between State ownership and firm performance in China (Hess et al., 2010; Rathnayake and Sun, 2017).

Demsetz (1983) documented that, when investigating the impact of ownership structure on the firm performance, the endogeneity of ownership structure should be considered. To test Demsetz's endogenous hypothesis, several studies consider the endogeneity

of ownership structure up to some extent in Chinese firms. Wei et al. (2005) studied a large sample of 5,284 observations of Chinese privatized listed firms from 1991 to 2001. Robust results showed that both state and institutional shares are significantly negatively related to Tobin's Q while foreign shares are significantly positively related. Further, they tested for potential endogeneity of ownership variables and found that ownership variables are not endogenous. In contrast, clear evidence for the endogeneity of ownership structure is found by Liu et al. (2011) from a sample of 1200 Chinese listed firms from 2007 to 2009. The structural equation model showed a significant positive relationship between ownership structure and firm performance. Ownership structure played by two aspects, the OC and outside block-holders. Furthermore, Liu (2014) focused on a sample which covers 1088 Chinese listed firms from 2003 to 2012 and found that there is a positive mutual association between company performance and OC where endogenous ownership structure is measured by OC and manager ownership.

Mishra and Ramana (2018) analyzed the effect of ownership structure on bank performance in India from 2008-2009 to 2012-2013 by using OLS and random effect estimators. They found that the influence of ownership structure depended on the measure of the bank's performance. Thus, the foreign banks had performed well relative to the domestic banks in India when bank performance was measured by net interest margin, but the results were contrary using return on assets.

Another trend of studies investigates the link between OC and firm performance. OC may have a positive impact on corporate performance because of the high cost of pursuing private interests in such ownership structure. Similarly, numerical researchers found that higher concentration of ownership will lead to better alignment of agency problem (Gomes, 2000; Kaplan and Minton, 1994; Lins, 2003). Besides, Nguyen et al. (2015) suggest weak corporate governance can be tackled via OC, which can be a means for controlling the managerial decisions and by this way increasing the profit of the company. Most recently, Wang (2018) confirmed that high levels of concentration in Chinese listed firms positively impact on firm performance which is measured by Tobin's Q ratio. However, Wang (2018) considered the cumulative shareholding held by investors who own 5% or more of a firm's total share capital as the measure for OC.

Nonetheless, it may be ascertained that OC at a higher level associated with the lack of technical competence from the majority shareholders can prevent the efficacy of the managers' decisions to make the company more profitable. Accordingly, the OC would be prejudicial to the firm performance after an optimal threshold. Thus, the occurrence of no separation between ownership and control could have an adverse effect on the firm performance (Claessens et al., 2002; Jameson, et al., 2014; Morck et al., 2000).

In literature, control variables such as firm size, leverage (debt to total assets' book value) and the ratio of intangible assets to total assets are considered which may influence the firm performance (Kapopoulos and Lazaretou, 2007; Yang, 2017). A positive effect

of Firm size on performance is expected as the firm having good performance grows rapidly (Liu et al., 2011). However, Firm with large size also could negatively affect its performance owing to agency problems. Firm size is approximated using the natural logarithm of total assets. Leverage is an essential tool of governance like ownership (Lingmin, 2016). Leverage provides more incentives for companies having high levels of debt contrary to well-performing companies. A negative sign for leverage is predicted, and the long-term debt ratio is used as a proxy. The intangible assets ratio variable evaluates the effect of the research-development (R&D) and advertising. Companies with a higher endowment in R&D investment could have high performance since they are more long-sighted and possess more resources for gainful innovations. The firm performance can be improved through advertising because the items could be traded at a higher price compared to the other companies.

Based on the above explanations, the following hypotheses are developed in this study.

H₁: The ownership structure has a significant relationship with firm performance.

H₂: The OC has a significant relationship with firm performance.

H₃: State ownership has a negative relationship with firm performance.

H₄: The initial public offering (IPO) firm size has a positive relationship with firm performance.

H₅: The leverage has a negative relationship with firm performance.

H₆: The intangible assets ratio has a positive relationship with firm performance.

3. INSTITUTIONAL CHARACTERISTICS

The shares of listed enterprises in China have a particular structure being categorized into two primary forms designed for specific users. Thus, the first form is about the domestic A-shares encompassing four types such as tradable A-shares, Legal person shares, State shares and Employee shares only reserved to Chinese citizens while the second is foreign shares regrouping H-shares, B-shares, and other shares. Furthermore, the domestic securities traded on the two Chinese Stock Markets namely the SSE and the shenzhen stock exchange (SZSE), respectively opened in December 1990 and April 1991, are under the control of the Chinese Securities Regulatory Committee established in 1987. The number of listed companies on these two Stock Exchanges has tremendously augmented from 1604 on December 31, 2008 to over 3500 on July 23, 2018 with the total market capitalization of above 50,000 billion RMB (Table 1).

The traded shares are categorized as foreign (N, H, and B-shares) and domestic (A-shares) whose certain of them can be publicly traded without any restriction for raising funds for foreign

institutional businesses and SOE in China. The minimum required for a firm to make an IPO through tradable A-shares is 25% of the total outstanding shares. The tradable A-shares are shares of Chinese enterprises denominated in RMB, negotiated on the SSE and SZSE exchanges markets. A-shares were initially traded only by Chinese citizens, but from 2003 they are also traded by qualified and selected foreign investors (Xu et al., 2005). The other types of A-shares are made up of Legal person shares, State shares, and Employee shares. State shares are non-publicly traded shares exclusively negotiated by local and central governments, which can be transferred to local institutions under the agreement of the regulatory committee in charge of the securities in China. As a result, the State shares account for about 5% of the listed companies in the two Chinese Stock markets (SSE and SZSE) on July 23, 2018.

The shares from the Legal person (also known as C-shares) are detained by any local financial institution not only limited to banks and having at least a non-state shareholder or institution with a legal person status. The employee shares are dedicated to the administrators and labourers of a listed firm as a reward to its workers. In contrast, B-shares are only authorized to foreign people in business and other restricted local firms while H-shares and N-shares refer to shares of listed enterprises respectively in the Hong Kong stock exchange (HKSE) and New York stock exchange. Similarly, the other forms of foreign shares, outside of the SSE and SZSE Exchanges but related to Chinese authority, are Red-chips and P-chips registered on the HKSE and S-chips listed on Singapore Stock market.

The statistics reported in Table 2 reveals that A-shares account for about 77% of the total shares of the normal (active) trading companies while B-shares represent only 3%. Although most of the companies are listed on the (SZSE, about 59%), these two shares principally derive from those registered on the (SSE, approximately 51%).

Table 1: Characteristics of China's stock exchanges

Stock exchange (s)	SSE	SZSE	Total
Launch year	1990	1991	
Number of listed companies (stock)	1416	2147	3563
Market capitalization (stock) in RMB billions	31,647	22,478	
Terminated or delisted companies	50	165	215
Active trading companies	1366	1982	3348

Source: Author's computations. This table shows the characteristics of Chinese stock exchanges separately. The data collected from official stock exchange websites and CSMAR database from 1990 to July 23, 2018. SSE: Shanghai stock exchange, SZSE: Shenzhen stock exchange

Table 2: Sample profile

Stock exchange (s)	SSE	SZSE	Total
Normal trading companies	1366	1982	3348
Types of tradable shares			
No of A Shares' companies	1318	1256	2574
No of B Shares' companies	48	46	94
Chi next (innovative and growing up firms)		680	680

Source: Author's computations. This table shows the sample statistics based on the official stock exchange websites and CSMAR database from 1990 to July 23, 2018 excluding delisted and suspicious companies. SSE: Shanghai stock exchange, SXSE: Shenzhen stock exchange

Table 3: Variables in the study

Variable	Symbol	Measurement
Performance measure		
Tobin's Q	TOBIN	Tobin's Q=(market capitalization+debt.)/total assets
Ownership structure		
State shares	STSH	The percentage of shares held by the state
Executive shares	EXSH	The percentage of executive shares held by company executives
Legal shares	LGLSH	The percentage of legal person shares held by shareholders
Negotiable A shares	NGASH	The percentage of tradable A-shares held by individuals
Ownership concentration		
Largest shareholder rate	LRGE	The proportion of shares held by the largest shareholder
Top ten holders' rate	TOP10	The proportion of shares held by the top 10 shareholders
Control variables		
Size	SIZE	Log (total assets)
Leverage	LEV	Long-term debt/total assets
Intangible assets ratio	INTNG	Log (net intangible assets/total assets)
Industrial sector firms	IND	Dummy variable equals 1 for Industrial sector firms
Utility sector firms	UTIL	Dummy variable equals 1 for Utility sector firms
Real-estate sector firms	REAL	Dummy variable equal 1 for Real-Estate sector firms

Source: Author's own. This table indicates the list of variables used in the study. The net amount of intangible assets item includes R&D expenditures, goodwill, patent, non-patent technology, trademark, copyright, land use right, etc., after deducting amortization and impairment

4. DATA AND METHODOLOGY

There are 3563 companies listed in the SSE and SZSE markets in China³. This study uses the CSMAR database excluding delisted and suspicious companies. The final sample data of this study consists of 3348 active trading companies and data refers to the accounting year ended on December 31, 2017 in China. In order to be consistent with many previous studies, 75 firms in the banking and financial sector were excluded in a subsample for further examination.

To measure the firm performance, we employed the Tobin's Q ratio directly from the CSMAR database as a proxy. There are six independent variables used in this study (Table 3). State shares (STSH) are the percentage of state shares held by shareholders. Executive shares (EXSH) are the percentage of executive shares held by company executives. Legal shares (LGLSH) are the percentage of legal person shares held by shareholders. Moreover, negotiable A-shares (NGASH) are expressed as the percentage of tradable A-shares held by individuals. Two independent variables have been used to measure the OC which are namely the percentage shareholdings by the largest shareholder (LRGE) and the percentage shareholdings by the TOP10. Some control variables are also added to consider other sources (variables) which may influence the firm performance (Tobin's Q). Control variables are the firm size, leverage (debt to total assets' book value) and the ratio of intangible assets to total assets (Kapopoulos and Lazaretou, 2007).

Firm performance is not only explained by ownership structures, but also performance may impact ownership structures (Demsetz and Villalonga, 2001). As a result, the investigation of the relationship between endogenous ownership structure and firm performance requires a specific modelling framework fitting a simultaneous system of two equations. Further, we examine in the first equation the effect of ownership structure on the firm

performance while we inverse this relationship in the second equation, i.e., we investigate whether, on the contrary, the firm performance influences its ownership structure. To simplify the analysis and for reasons of space, the two equations are estimated by OLS and 2SLS, then we consider the sector of activities of listed Chinese companies using dummy variables. Above all, we estimate the following equations:

$$TOBIN_i = \alpha_i + \beta_1 OS_i + \beta_2 TOP10_i + \beta_3 LRGE_i + \beta_4 SIZE_i + \beta_5 LEV_i + \beta_6 INTNG_i + \epsilon_i \quad (\text{Eq. 1})$$

$$OS_i = \alpha_i + \beta_1 TOBIN_i + \beta_2 SIZE_i + \beta_3 LEV_i + \beta_4 INTNG_i + \epsilon_i \quad (\text{Eq. 2})$$

Where TOBIN = Tobin's Q ratio, OS = Ownership structure variables, TOP10 = Top ten holders' rate, LRGE = Largest shareholder rate, SIZE = Size, LEV = Leverage, INTNG = Intangible asset ratio, ϵ = Error term, $i = i^{\text{th}}$ observation. Detailed definitions of variables are reported in Table 3.

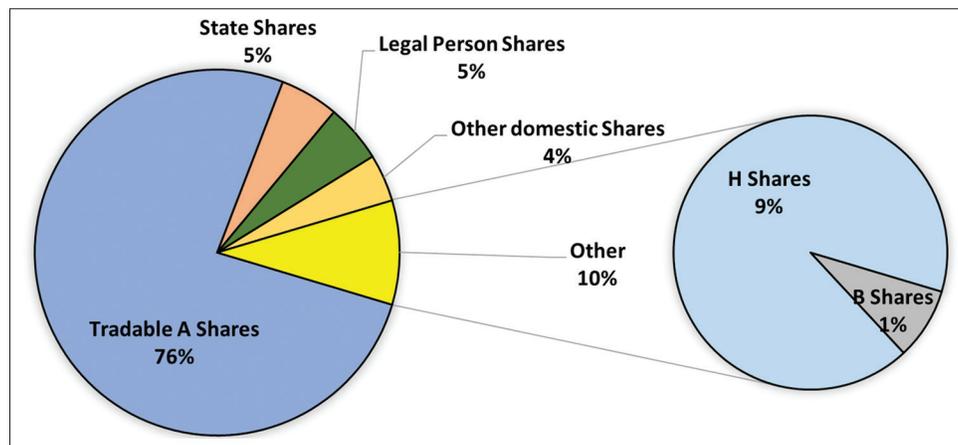
With regards to (Equation 1), performance is measured through Tobin's Q, a measure of market performance. Tobin's Q is computed by the sum of the firm's market value plus its debt's book value, all divided by the total assets' book value. The independent variables are made up of the ownership structure variables, the level of OC and control variables (Table 3). The hypotheses are tested by assessing the impact of the structures of ownership on profitability, considering the endogeneity of ownership structure and modeling separately the four types of ownership variables namely EXSH, STSH, LGLSH, NGASH into Equation (2).

5. EMPIRICAL RESULTS

5.1. Ownership structure and OC of Chinese listed firms

Nowadays, the two Chinese stocks exchanges (SSE and SZSE) are made up of only 5% of State and legal person shares and 4% of other domestic shares. They are largely dominated by about 76% of tradable A-shares and to a lesser extent by 10% of foreign shares

3 Author computation from the database on the official websites of SSE and SZSE exchanges and CSMAR database from 1990 to 23rd July 2018.

Figure 1: Layout of the registered shares in China

Source: Authors' computation from the CSMAR database for the year ended on December 31, 2017 with 3348 listed companies' data. Other domestic shares include executive shares, public offering to strategic investors and other uncategorized shares

Table 4: Ownership concentration levels

Measurement	Number of firms	Percentage
A shareholder of direct ownership over 50%	543	16.218
Top ten-largest shareholders with ownership over 50%	1897	56.661
Top ten-largest shareholders with 25% <shares<50%	869	25.956
Top ten-largest shareholders with shares<25%	39	1.165
Total	3348	100

Source: Author's Calculations. This table reports the different ownership concentration levels in 3348 Chinese listed firms for the year ended on December 31, 2017. Firm level data is collected from official stock exchange websites and the CSMAR database

as described in Figure 1. Remarkably, the ownership structure in China has mostly evolved towards the privatization of the domestic corporations (59%), the reduction of SOEs (35%) and the opening up to foreign-invested entities. Still, foreign investors face some restrictions to enter the local market (5%)⁴. This complex ownership structure arises in concern about the impact of corporate governance on firm performance in China.

Some studies conclude that investment opportunities may be driven by well-established corporate governance through OC (Heugens et al., 2009). Also, Nguyen et al. (2015) argue that a high level of OC can alleviate a feeble level of governance via control and monitoring leading to enhance the firm performance. Nevertheless, Jameson et al. (2014) reveal that the managerial decisions aiming to increase the firm performance can slow down by a high level of concentration. Thus, these two different theories unveil a threshold level at which the OC may significantly affect the firm performance.

Table 4 reveals that 16.23% of the listed Chinese companies are held by a majority shareholder who is having direct ownership over 50%. The proportion of firms with top ten-largest shareholders withholding within 25-50% of shares is 25.97%, and only 1.14% of the listed enterprises have top ten largest shareholders owning at most 25% of the total shares registered on the domestic stock exchanges. However, the ownership is more concentrated in the top ten-largest shareholders (having over 50% of shares) for about 56.66% of the listed Chinese firms.

Relating to the relationship between Ownership and Control, the size of the firm matters in the sense that there probably may be no separation of corporate ownership and control in small business because of inherent costs. However, shareholders could be isolated from control in big companies issuing a large number of shares in the limit of their rights and managerial skills. The managerial and agency theories suggest that managers could make use of shareholder resources to increase their profit to the detriment of the owners.

5.2. The link between corporate ownership and company performance

Using firm-level data for the year 2017, we investigate the impact of both the ownership mix and OC on the firm performance. The relevancy of the ownership mix on the firm performance will be assessed via the significance of the different ownership structures in the first regression. Foreign ownership shares are not addressed in the regression.

Table 5 provides summary statistics on firm performance and ownership structure variables. The average Tobin's Q ratio is 2.66, with a maximum value of 50.31 and a minimum value of 0.12. A maximum value of 79.2% and a minimum value of approximately zero are recorded for executive shareholdings while average value is 11.49%. The average state ownership shares (STSH) are 3.59% with a maximum value of 90.79% which replicates that the state-owned shares percentage is having a low influence on the ownership structure of Chinese listed companies very recently. Similarly, the average of legal shares ownership (LGLSH) is 7.74%, with a maximum value of 88.61%. The percentage of tradable A-shares held by individuals (NGASH)

⁴ Authors' computation from the CSMAR database for the year ended on 31st December 2017 with 3348 listed companies' data.

play the highest role in ownership structure with an average of 72.66%, maximum of 100% and a minimum of 9.13% values. The average of the top ten shareholder's shareholding (TOP10) is 60.18% in this sample, which indicates that Chinese firm shares are highly concentrated within particular major shareholders. The average proportion of shares held by the largest shareholder (LRGE) is 34.14% and with a maximum value of 90%. Thus, it is evident that Chinese listed firms are generally recording for highly concentrated ownership levels.

Then as shown in the Table 6 correlation matrix, the variables do not appear to be substituted for each other since the correlation between variables is <0.7 . However, the Pearson correlation coefficients indicate that many independent variables are interrelated with each other.

First, we focus on the determination of the individual variables that are predicted to have a relationship with firm performance measure. Individual six variables are used in simple OLS regressions with the dependent variable Tobin's Q ratio and other control variables. The regression results are shown in models 1-6 in Table 7. White's heteroscedasticity-consistent standard errors and covariance values were used to correct the univariate regression models from the heteroscedasticity problem. These individual regression results show that EXSH, STSH, LGLSH, NGASH, and TOP10 variables have significant explanatory power on the dependent variable.

Considering the univariate regressions 1-6, with only one variable for ownership structure, we find that executives shares (EXSH) and legal shares (LGLSH) have a positive influence on the firms' performance, contrary to the other types of ownership structure, namely State shares (STSH) and negotiable A shares (NGASH), respectively. Although the estimated coefficient of LRGE has the opposite sign effect, it is not significantly related to the firm performance, whereas TOP10 variable has a positive influence on firms' performance. In addition, we find that control variables such as SIZE and INTNG are significantly related to the Tobin's Q ratio. The coefficients on SIZE and INTNG are negative and positive respectively. On the other hand, LEV has a positive relationship on performance measure which is only significant at 5% level in the model 1 and 6. Further constant coefficients in all individual regressions are statistically significant at 1% level.

The results of the multiple regression, including together the four types of ownership structure, are given in model 7. White's heteroscedasticity-consistent standard errors and covariance values were used to correct the multiple regression models from the heteroscedasticity problem. Relating to equation 1, it is observed that all the first four variables denoting ownership structures have a negative and significant impact on Chinese firm performance, except for Legal shares, which do not have a significant influence on firm performance. The magnitudes of their impact on firm performance are relatively small, $<1\%$ decrease

Table 5: Descriptive statistics

Variable	Mean	Median	Maximum	Minimum	Standard deviation	Observations
TOBIN	2.667	2.105	50.315	0.122	2.625	3348
EXSH	11.492	0.507	79.200	0.000	17.337	3348
STSH	3.597	0.006	90.787	0.000	11.996	3348
LGLSH	7.743	0.032	88.610	0.000	15.124	3348
NGASH	72.659	77.187	100.000	9.127	24.887	3348
TOP10	60.179	60.815	100.000	16.250	15.748	3348
LRGE	34.143	32.145	90.000	4.150	14.955	3348
SIZE	22.182	22.008	30.671	17.595	1.335	3348
LEV	0.852	0.026	394.097	0.000	12.304	3348
INTNG	-5.024	-4.458	-0.469	-15.25	2.077	3348

Source: Authors' calculations. This table reports the descriptive statistics of firm performance and independent variables based on the data collected from the CSMAR database for the year ended on December 31, 2017. The sample included 3348 listed and active companies of SSE and SZSE. TOBIN: Tobin's Q ratio, EXSH: Executive shares, STSH: State shares, LGLSH: Legal shares, NGASH: Negotiable A shares, TOP10: Top ten holders' rate, LRGE: Largest shareholder rate, SIZE: Size, LEV: Leverage, INTNG: Intangible asset ratio. Detailed definitions of variables are reported in Table 3

Table 6: Correlation matrix

Variable	TOBIN	EXSH	STSH	LGLSH	NGASH	TOP10	LRGE	SIZE	LEV	INTNG
TOBIN	1.000									
EXSH	0.224**	1.000								
STSH	-0.116**	-0.132	1.000							
LGLSH	0.124**	0.078	-0.056**	1.000						
NGASH	-0.228**	-0.440	-0.316**	-0.527**	1.000					
TOP10	0.089	0.221**	0.129**	0.277**	-0.451**	1.000				
LRGE	-0.051**	0.012	0.189**	0.133**	-0.149**	0.632**	1.000			
SIZE	-0.496**	-0.335**	0.175**	-0.046**	0.167**	0.066**	0.113**	1.000		
LEV	0.069**	-0.039*	0.003	-0.005	0.030*	-0.039*	-0.013	-0.045*	1.000	
INTNG	0.148**	0.117	-0.077	-0.010	-0.019	-0.022	-0.007	-0.267	0.011	1.000

Source: Authors' calculations. Significance at the 5%, and 1% levels are indicated by * and ** respectively. This table presents the Pearson correlation coefficients for the variables considered in the study. Authors' calculation based on the data collected from the CSMAR database for the year ended on December 31, 2017. The sample included 3348 listed and active companies of SSE and SZSE. TOBIN: Tobin's Q ratio, EXSH: Executive shares, STSH: State shares, LGLSH: Legal shares, NGASH: Negotiable A shares, TOP10: Top ten holders' rate, LRGE: Largest shareholder rate, SIZE: Size, LEV: Leverage, INTNG: Intangible asset ratio. Detailed definitions of variables are reported in Table 3

Table 7: Regression results of the Equation (1) using Tobin Q's model

Model	OLS regression							2SLS regression	
	1	2	3	4	5	6	7	8	9
EXSH	0.008***						-0.006*	-0.021	-0.016
STSH		-0.005**					-0.019***	-0.028**	-0.058
LGLSH			0.012***				-0.001	-0.011	-0.014
NGASH				-0.011***			-0.016***	-0.025*	-0.032
TOP10					0.020***		0.021***	0.022***	0.015
LRGE						-0.002	-0.015***	-0.014***	-0.007
SIZE	-0.913***	-0.910***	-0.898***	-0.858***	-0.970***	-0.944***	-0.903***	-0.932***	-0.849***
LEV	0.010**	0.010	0.010	0.011	0.009	0.008**	0.012***	0.012***	0.0126***
INTNG	8.087***	4.593**	4.576**	4.951**	8.260***	8.249***	0.028	0.031	0.024
C	22.541***	22.699***	22.281***	22.219***	22.755***	23.482***	23.363***	24.875***	23.776***
Adj R ²	0.239	0.244	0.250	0.255	0.267	0.254	0.287	-	-

Source: Authors' calculations. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively. This table presents the estimates of Equation (1) based on the data collected from the CSMAR database including 3348 listed and active companies of SSE and SZSE for the year ended on December 31, 2017. Ordinary (OLS) and 2SLS regressions used the dependent variable TOBIN which refers to Tobin's Q ratio. EXSH: Executive shares, STSH: State shares, LGLSH: Legal shares, NGASH: Negotiable A shares, TOP10: Top ten holders' rate, LRGE: Largest shareholder rate, SIZE: Size, LEV: Leverage, INTNG: Intangible asset ratio. Detailed definitions of variables are reported in Table 3. White heteroskedasticity-consistent OLS statistics are reported. There is no autocorrelation and multicollinearity problem among the variables. In model 8, LGLSH and EXSH have been treated as endogenous variables. In model 9, STSH and NGASH have been treated as endogenous variables

on firm performance for 10% increase in the proportion of the various ownership structures (executive shares, State shares, and Negotiable A-shares). However, State ownership has a more significant impact on the absolute value on firm performance, followed by Negotiable A-shares comparatively to the other form of ownership structures.

With regard to the OC, the two variables have a significant impact on firm performance at 1% level, with the positive effect of TOP10 but the negative effect of LRGE. Thus, although the impact of OC is also relatively small, the TOP10 have a higher and positive impact on firm performance compared to the largest shareholder. The OC has comparatively more impact on firm performance than the ownership structures. The significant impact of OC ratios on TOBIN is in line with Shleifer and Vishny hypothesis (1986) that larger shareholders may help to lessen the free-rider problem of minor investors and is value increasing (Gomes, 2000; Kaplan and Minton, 1994; Lins, 2003). Most of the TOP10 of the stocks of listed companies in China are state government bureau and legal persons. Contrary to our expectation, Firm size has a negative and significant impact on firm performance which is consistent with a recent study by B. Wang (2018) and Demsetz and Villalonga (2001). This impact is high (about 0.90% in absolute value) relatively to the other variables. Leverage has a positive and significant impact (at 1% level) on firm performance contrary to the total intangible asset, and this is consistent with previous studies (Liu et al., 2011).

A comparison of OLS and 2SLS results will directly show whether the variable is endogenous or not. Generally, the 2SLS method is used to solve the endogeneity problem, and the OLS results become inconsistent if both the performance and ownership structure variables are simultaneously endogenous. As shown in Table 8 model 8 and 9, all the signs derived from 2SLS are almost similar from OLS in the model 7. Even though the coefficients and significance of the regressors derived in the 2SLS model 9 are different from other multiple regression results, the signs remain unchanged. Furthermore, the endogeneity test (Hausman test) shows that the considered variables for ownership structure

are not endogenous⁵. Accordingly, OLS estimates are consistent and reliable. In literature, several studies have considered the endogeneity of ownership structure into some extent with a sample of Chinese firms. None of these studies consider more than two measures of ownership structure. Wei et al. (2005) found that State and foreign ownership variables are not endogenous in their study which is consistent with our results. However, Liu et al. (2011) and Liu (2014) considered OC as an ownership structure variable and found that OC is an endogenous variable.

Further, the Wald test is used to test the joint significance of the main two hypotheses for ownership structure (H_1) and OC (H_2) based on the OLS results⁶. The results of the test indicated that the four variables (EXSH, STSH, LGLSH, NGASH) of ownership structure simultaneously explain the firms' performance. Similarly, the joint hypothesis (H_2) for OC is tested, and the results show that largest shareholder's rate and TOP10 shareholders rate together significantly influence the firms' performance. The Chi-squared value 26.182 > chi statistic (χ^2) 5.991 with $df = 2$, $\alpha = 0.05$ and the $P < 0.05$, so we reject the null hypothesis.

Finally, OLS estimates suggested that State ownership has a strong negative relationship with the firm performance and consistent with previous studies (Qi et al., 2000; Sun and Tong, 2003; Wei and Varela, 2003; Wei et al., 2005), so the H_3 hypothesis is accepted. The main reason for the negative influence of State ownership on Chinese firm performance is that the government as the single and largest shareholder may create the agency problems and increase the costs. Even though the firm size and leverage variables are having

5 The Durbin-Wu-Hausman Endogeneity test is used to test the endogeneity of the regression variables. The null hypothesis is that the subsets of the endogenous variables are exogenous. The difference in J-statistics in the model 8 and 9 are 0.5192 and 0.4193 respectively. We do not reject the null hypothesis since the calculated chi statistic (χ^2) value 5.991 ($df=2, \alpha=0.05$) is greater than test values. So, LGLSH and EXSH are not endogenous variables in the model 8, and STSH and NGASH are not endogenous variables in the model 9.

6 The null hypothesis is that the coefficients of variables are simultaneously equal to zero. The chi-squared value 45.021 > chi statistic (χ^2) 9.487 with $df=4, \alpha=0.05$ and the p-value < 0.05, so we reject the null hypothesis.

Table 8: Regression results of the Equation (2) effect of Tobin Q on ownership structure variables

Model	OLS model				2SLS model			
	EXSH	STSH	LGLSH	NGASH	EXSH	STSH	LGLSH	NGASH
SIZE	-4.421***	1.342***	-1.084***	4.427***	4.692***	-0.523	7.058***	-6.279**
LEV	-0.086***	0.010	-0.032	0.128***	-0.171***	0.032	-0.093**	0.179***
INTNG	0.189	-0.260**	-0.130	0.365***	0.053	-0.231*	-0.328	0.582*
TOBIN	0.371***	-0.134**	0.682***	-1.402***	9.306***	-2.153**	8.180***	-10.085***
C	110.209***	-26.707***	31.333***	-24.755**	-117.012***	20.042	-172.151***	241.715***
Adj R ²	0.128	0.032	0.026	0.090	--	--	--	--

Source: Authors' calculations. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively. This table reports the estimates of Equation (2) based on the data collected from the CSMAR database including 3348 listed and active companies of SSE and SZSE for the year ended on December 31, 2017. Ordinary (OLS) and 2SLS regressions used the four different dependent variables. EXSH: Executive shares, STSH: State shares, LGLSH: Legal shares, NGASH: Negotiable A shares, SIZE: Size, LEV: Leverage, INTNG: Intangible asset ratio, TOBIN: Tobin's Q ratio. Detailed definitions of variables are reported in Table 3. White heteroskedasticity-consistent OLS statistics are reported. There is no autocorrelation and multicollinearity problem among the variables

a significant relationship with firm performance, the expected signs are different. Thus, the H_4 and H_5 hypotheses are rejected. However, Firm with large size also could negatively affect its performance owing to agency problems. Finally, we hypothesized the intangible assets ratio has a positive relationship with the firm performance, but the relation is not statistically significant.

In all other four estimated regressions where we equation (2) was applied, SIZE and TOBIN variables have a significant effect on the individually considered ownership structures. In two estimations (3 and 5), TOBIN is negatively correlated with STSH and NGASH, and it is significant at 5% level. The firm's performance has a positive effect on legal persons' holdings LGLSH and executive shares EXSH significant at 1% level in the other two regressions (2 and 4). Therefore, the results indicated that firm performance which is measured by TOBIN has a significant influence on all four ownership structures considered in the regressions. Table 8 reveals that all the coefficients derived from 2SLS are different from OLS results. Notably, the signs and significance of the regressors remain unchanged except for the SIZE and constant (C). SIZE and C have precisely opposite signs in the 2SLS results. Further, STSH coefficient is statistically significant by using OLS whereas it is statistically insignificant by using 2SLS. Thus, results are inconsistent in both OLS and 2SLS models even though the coefficients of TOBIN are significant and the sign remains unchanged through all the regressions. Furthermore, the endogeneity test confirmed that TOBIN variable is endogenous in all four 2SLS regressions⁷. Hence, we conclude that the 2SLS estimates are more consistent and fit for the equation (2) than OLS estimates.

5.3. Robustness check

First, we re-estimate the multiple regressions for non-financial firms after excluding 75 financial firms from the sample as a robustness check. The empirical results are found to be not affected by the financial firms, and thus the general OLS results and conclusions are almost identical⁸. Secondly, the relationship

7 The Durbin-Wu-Hausman Endogeneity test is used to test the endogeneity of the regression variables. The null hypothesis is that the TOBIN variable is exogenous. In all four regressions, the difference in J-statistics is greater than the calculated chi statistic (χ^2) value 3.841(df=1, $\alpha=0.05$). We reject the null hypothesis.

8 The results obtained using the non-financial firms' sample are available from the authors upon request.

between ownership structures and Chinese firm performance is examined by including the effect of the three major sectors in which these listed firms operated. There are three major sectors namely, the Industrial sector (IND) with 68%, the utility sector (UTIL), 16% and the real estate sector (REAL) having 6% of listed companies on the Chinese Stock exchanges⁹.

Table 9 exhibits the results of the robustness check when categorizing the listed Chinese firms according to the major sectors. For the Equation (1) we re-estimated the OLS coefficients since OLS estimates are more consistent and reliable than 2SLS. Remarkably, the signs of all explanatory variables remain the same, unchanged even when including three dummy variables. In addition, the significant variables are almost similar to that in Table 8 and model 7. Besides, the OLS coefficients have varied very slightly. Thus, we conclude that our results are robust.

Concerning the sectorial analysis, we note that the largest sector, i.e., the industrial sector has a positive but non-significant impact on Chinese firms' performance. However, the second largest sector, the one for Utilities with an account for by only 16%, has a positive and high impact of 0.33% on the performance of the listed Chinese firm for 1% increase of the firm in this sector. Besides, this impact is significant at the 10% level. The utility sector is then the principal sector that contributes to the performance of the listed firms in China. On the contrary, the last major sector namely, the Real Estate sector negatively affects the performance of these firms but non-significantly.

Previously, we concluded that the 2SLS estimates are more consistent and fit for the equation (2) than OLS estimates. Therefore, for robustness check, we considered 2SLS regression for the other four equations of ownership structures and (Table 9) reveals that the effect of the major sectors are different in the diverse types of ownership structure. The results are almost identical in signs and significance levels as those reported in Table 8 for the 2SLS model. However, in STSH column TOBIN coefficient is no longer statistically significant as before in Table 8. SIZE and TOBIN have exactly opposite sign of directions and

9 Authors' computation from the CSMAR database for the year ended on 31st December 2017 with 3348 listed companies' data.

Table 9: Robustness check including major sectors of activities

Model	OLS model 7	2SLS model			
		EXSH	STSH	LGLSH	NGASH
EXSH	-0.006***				
STSH	-0.019***				
LGLSH	-0.001				
NGASH	-0.016***				
TOP10	0.021***				
LRGE	-0.015***				
SIZE	-0.896***	2.637*	2.196***	7.858***	-7.026
LEV	0.012***	-0.145***	0.001	-0.104**	0.187**
INTNG	0.024	0.013	-0.197*	-0.293	0.602*
IND	0.072	3.781***	-2.296***	-1.575	-0.057
UTIL	0.332*	1.502	-1.745*	-3.689*	0.515
REAL	-0.149	0.960	-1.465	1.698	-0.124
TOBIN	-	7.020***	0.806	9.175***	-10.896*
C	23.064***	-68.451*	-46.245***	-190.821***	260.510*
Adj R ²	0.289	-	-	-	-

Source: Authors' calculations. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively. This table exhibits the results of the robustness check when categorizing the listed Chinese firms according to the major sectors. Data collected from the CSMAR database including 3348 listed and active companies of SSE and SZSE for the year ended on December 31, 2017. Ordinary (OLS) and 2SLS regressions. TOBIN: Tobin's Q ratio, EXSH: Executive shares, STSH: State shares, LGLSH: Legal shares, NGASH: Negotiable A shares, TOP10: Top ten holders' rate, LRGE: Largest shareholder rate, SIZE: Size, LEV: Leverage, INTNG: Intangible asset ratio. IND: Industrial sector; UTIL: Utilities sector and REAL: Real-Estate sector. IND (respectively UTIL and REAL) is dummy variable taking the value 1 if the listed firm is involved in the Industrial (respectively Utilities and Real estate) and 0 elsewhere if not. Detailed definitions of variables are reported in Table 3. White heteroskedasticity-consistent OLS statistics are reported. There is no autocorrelation and multicollinearity problem among the variables

SIZE has a significant positive relationship with STSH which is not there before. Additionally, the Industrial sector has a significant and negative impact on STSH at 1% level. Furthermore, the endogeneity test shows that TOBIN variable is still endogenous in all four 2SLS regressions after including sectorial effects¹⁰. Hence, the results are robust.

The largest sector that is the Industrial sector has a very high positive impact on the ownership of Executive shares by 3.78% for a 1% growth of the listed company in the Industrial sector. In other words, a 1% increase in the listed companies in the Industrial sector leads to about a 4% increase in ownership of executive shares from those firms. This impact is highly significant at 1%. However, the Industrial sector does not favor the ownership of Legal shares and negotiable A-shares in China. The Utility sector followed the industrial sector, being the second to positively influence the ownership of executive shares but discourage the ownership of the other form of shares. Finally, the Real Estate sector only has a positive impact on owning executive shares and legal shares but a negative effect on the ownership of the two other forms of shares. However, this influence on the overall ownership structure is non-significant.

Accordingly, TOP10 indicates mostly the degree of OC from the State and legal persons. Therefore, the results in Tables 7 and 8 must be understood as a positive association between TOP10 with the State and legal person ownership, rather than the global OC. The explanatory power of the OLS multiple regression models 7 in Tables 7 and 9 is fair, with adjusted R² nearly 30%.

¹⁰ The Durbin-Wu-Hausman Endogeneity test is used to test the endogeneity of the regression variables. The null hypothesis is that the TOBIN variable is exogenous. In all four regressions, the difference in J-statistics is greater than the calculated chi statistic (χ^2) value 3.841_(df=1, α=0.05). We reject the null hypothesis.

6. CONCLUSION

In the period of this transitional era, many companies in PR of China indicated highly concentrated ownership; hence, major stockholders are not scared that their ownership may become diluted, even if they lose all their blocking rights. Even though state block holders do not contribute to the right novel issues fully, they are still the controlling major stockholders due to the highly concentrated ownership structure prevailing in China. According to the Chinese government and officials, the main objective of the stock exchange was to support SOEs to collect financials and expand their working capital (Carpenter and Whitelaw, 2017). Majority of listed firms emerged from SOEs, and they are still fully controlled by the government or other SOEs which are not listed on Chinese stock exchanges. With the establishment of two large stock exchanges in China in the 20th century, a significant amount of organizations change into LLC form with vast numbers of minority shareholders, but ultimate control still belongs mainly to the state. Lingmin (2016) stated that the legal protection for many stakeholders other than major shareholders is weak in China (especially regarding the creditors and minority shareholders' protection). There is a need to enforce a better stock market by having strong and independent legal regulations, to control the stock market and to ensure minority shareholder rights.

This paper studied the effect of OC levels, and different ownership structures, on company performance using data 3348 listed companies in China. Our results showed that firms' ownership structures are negatively related to company performance, which is measured by Tobin's Q ratio. Similarly, we found that firm performance has a significant influence on all major four types of ownership structures in China, which are considered in this study. Moreover, according to the OLS and 2SLS regression results, there is no statistically significant diversity of coefficients between two results which verifies ownership structure is an exogenous

variable. According to the results of TSLs, we can conclude that company performance Tobin's Q is an endogenous variable for all four ownership structure variables.

Furthermore, a strong positive relationship among firm performance and Top10 shareholders' OC rate is recognized in the analysis. In contrast, the largest shareholder's OC ratio variable has a significant negative relationship with firm performance. When the largest shareholder has more control over the firm, it can too much interference with the management decisions, and it might hurt the firm financial performance (Jameson et al., 2014). Besides, this study considered two control variables namely leverage and intangible asset ratio, which are positively related to Tobin's Q ratio. Firm size is showing a significant relationship at the 1% level between the dependent variables considered in the study. Nevertheless, the results remained robust after adjusting for sectorial effects. Finally, the Industrial sector which is the largest sector is determined to lead a positive impact but non-significant on firms' performance. The Utility sector, the second largest sector, positively and significantly influences the firms' performance contrary to the Real Estate' sector.

This study was limited to the accounting year of 2017, and we suggest to use the firm-year panel data for future studies by expanding the sample period. Further, it is essential to consider the relations with specific firm-level Corporate Governance instruments such as director board size, CEO duality, board independence, among others.

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